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Telematics Industry
Insights by
Michael L. Sena

THE DISPATCHER

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Quick Transactions

Micro cars are unsafe, and Sweden's automobile association wants them banned. The EU might want to clamp down on Tesla's 365 degree camera-based theft notification system, since it appears to be in conflict with the EU's privace laws. Toyota has decided to offer its eCall in the U.S. for free while GM decided to make it a "mandatory option". Finally, STELLANTIS CEO, Carlos Tavares, says what a lot of his colleagues are thinking: time to quit China.

Conversations with the Dispatcher

*This first **Conversation** is with Robert W. Poole Jr. who wrote a book titled Rethinking America's Highways: A 21st-Century Vision for Better Infrastructure. I read his book, and I recommend that all of you who are interested in motorized road transport read it as well. Bob's thoughtful and well-written book is about how road infrastructure construction and maintenance are financed. His book makes it clear why things work the way they do today and what the difficulties are making them work better.*

What I believe is the major contribution of Bob's book is that he has documented how the private sector can work with the public sector to build and operate intercity highways as wells as arterial highways in cities. He has made the financing solution very clear for anyone who takes the time to read what he has written.

Read my thoughts on Bob's 'roads as utilities' paradigm and Bob's rejoinder.

THE DISPATCHER

Telematics Industry Insights by Michael L. Sena
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Full Self-driving Is All in the Mind, Just Like With BEVs

The truth has no defense against a fool determined to believe a lie.
Anonymous

The most outrageous lies that can be invented will find believers if a man only tells them with all his might.
Mark Twain (1867)

A lie can travel halfway round the world while the truth is putting on its shoes.
Haddon Spurgeon (1855)

There are three kinds of lies: lies, damned lies, and statistics.
Mark Twain in 1907 who said that Benjamin Disraeli said it, but who probably didn't, proving Twain correct

1. Ayer, A.J. Language, Truth and logic. (1936, 1946). First published in 1936. Republished in 1946 with a new introduction by the author.

2. https://www.britannica.com/summary/epistemology

It will exist if and when we believe it exists

AFTER EIGHTEEN YEARS of thinking, talking, and tinkering, can we postulate that there are self-driving vehicles? Or can we posit that under certain specific and verifiable conditions that there will be self-driving vehicles within a foreseeable future? Must one appeal to fantasy or suggest that all we need is a little more time, a dash more of imagination, and heaps more of money to bring vehicles that can drive themselves with no human intervention to a parking space near you? Or is talking about self-driving cars in the same category as talking about gods, making statements that are unverifiable and therefore, in the words of the Logical Positivists, "nonsense"?

This question came to me as I was rereading A.J. Ayer's Language, Truth and Logic.[1] I had struggled through it the first time during a university philosophy course and didn't understand a word of it. But I decided to give it another go because the more I tried to understand why a robot would be a better driver than a human, the more signposts I saw alongst the way pointing to the study, nature, and limits of human knowledge, that is, *epistemology*.[2] Epistemology addresses whether some human knowledge is innate (i.e., present, in some form, at birth), whether all significant knowledge is acquired through experience (empiricism, rationalism), and whether knowledge is inherently a mental state (behaviorism). Do we know how the knowledge we need to drive a car originates, how what knowledge we obtain is certified as knowledge, and how this knowledge might be obtained by a robot?

It seems that if we knew the answers to these questions we would already have self-driving cars, but there are no self-driving cars today, not which can be driven anywhere without a human who is on-board or at a remote location. Mark Twain has a word for those who believe there are. It is the second of my questions that we shall address: Can we posit that under certain specific conditions, at some

foreseeable point in the future, we will be able to verifiably experience a self-driving vehicle? There are a number of companies working on this problem, including Google's Waymo and GM's *CRUISE*, but for at least 100,000 TESLA owners who have already paid anywhere between $3,000 and $15,000 for the future promise of having a full self-driving vehicle, this is not an academic exercise; it is an empirical dilemma.[3] Will that promise be fulfilled?

There is nothing either good or bad but thinking makes it so

None of Ayer's books is on Elon Musk's "Must Read" lists (there are a number of such lists; all of them include Isaac Asimov and Benjamin Franklin, for example), but he seems to have an instinct for Logical Positivist methods. Musk seems to understand that in order to move a nonsensical statement (Cars are self-driving) into a verifiable proposition (Some cars can drive themselves), he has to manipulate how we think about something which does not exist. He has proven to be very good at this. "Space rockets can be reusable," for instance, is an example of such a transformation. Before Musk's SPACEX achieved the first vertical soft landing of a re-usable orbital rocket, we were used to seeing the first stages falling into the ocean and the second stages burning up.[4]

Let's look at how Musk made us believe that TESLA's first real electric car, the Model S, was a car. Yes, TESLA had fitted out a *Lotus Elise* with lithium-ion battery cells, but at over $100,000 and a lot of hand tooling to each sold vehicle, it was a real stretch to call this vehicle a "serial production" car. When it halted production in January 2012, 2,418 Roadsters had been produced in four years. One of them is now a piece of space scrap. When the *Model S* was introduced on the 22nd of June 2012, it was by no means an accepted proposition that some cars could be powered by electric batteries. In the language of the Logical Positivists, this is a 'synthetic' statement, one which requires verification. Up to that point, it wasn't even certain that one could apply the 'analytic' statement "A *Buick* is an automobile" to TESLA's *Model S*, substituting *Buick* with *Tesla Model S*. Was the *Tesla Model S* an automobile? Would it measure up to any automobile driven by an internal combustion engine? That statement needed to be verified.[5]

Elon Musk is a master of letting you think your way to his answer. In 2006, he wrote *The Secret Tesla Motors Master Plan (just between you and me)*.[6] The sub-title was meant to connect directly to the reader, an eventual convert to the TESLA 'master plan'. He started out in a folksy, humble way, saying his work with TESLA was his hobby, helping out Martin (Eberhard, one of the two real

3. *Tesla Full Self-Driving* was first sold for $3,000 when it was introduced in 2016. The price was raised to $15,000 in September 2022.

4. BLUE ORIGIN, owned by Jeff Bezos, achieved the first vertical take-off/landing sub-orbital rocket to return to earth with a parachute landing. It was BLUE ORIGIN's *New Shepard*, and the feat was accomplished one month before the SPACEX soft landing.

5. "Analytic" sentences, such as "Pediatricians are doctors," have historically been characterized as ones that are true by virtue of the meanings of their words alone and/or can be known to be so solely by knowing those meanings. They are contrasted with more usual "synthetic" sentences, such as "Pediatricians are rich," (knowledge of) whose truth depends also upon (knowledge of) the worldly fortunes of pediatricians.
https://plato.stanford.edu/entries/analytic-synthetic/

http://www.michaellsena.com/wp-content/uploads/2018/10/The-Dispatcher_November-2018.pdf

6. https://www.tesla.com/blog/secret-tesla-motors-master-plan-just-between-you-and-me

founders of TESLA; Mark Tarpenning was the other) and *"the rest of the team to help formulate the business and product strategy".* His day job, he says, is running a space transportation company called SPACEX. He says also that it is his money that grew the company from *"when the company was just three people and a business plan"*, without mentioning that there were other investors who had put their money on the line, including the real founders. So this is about him. He wants the reader to believe that he's totally committed, enough to bet his fortunes on the vision.

He begins with the statement: *"As you know, the initial product of TESLA MOTORS is a high performance electric sports car called the Tesla Roadster."* He says that the *Roadster* is merely a first step, and then he delivers the first insider tip: *"…some readers may not be aware of the fact that our long term plan is to build a wide range of models, including affordably priced family cars. This is because the overarching purpose of TESLA MOTORS (and the reason I am funding the company) is to help expedite the move from a mine-and-burn hydrocarbon economy towards a solar electric economy, which I believe to be the primary, but not exclusive, sustainable solution."*

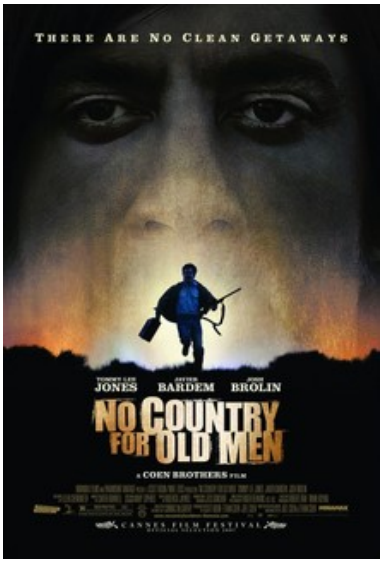
His next step is to let the reader decide if he or she is worthy to become a member of the exclusive club he is creating, a club of wealthy people who are smart enough to understand his "secret" master plan and are ready to help finance the move away from the "mine-and-burn" economy. *"Almost any new technology,"* he writes, *"initially has high unit cost before it can be optimized and this is no less true for electric cars. The strategy of TESLA is to enter at the high end of the market, where customers are prepared to pay a premium, and then drive down market as fast as possible to higher unit volume and lower prices with each successive model. Without giving away too much, I can say that the second model will be a sporty four door family car at roughly half the $89,000 price point of the Tesla Roadster and the third model will be even more affordable... When someone buys the Tesla Roadster sports car, they are actually helping pay for development of the low cost family car."*[7] In effect, he is anointing those who will follow him as disciples. In time, his Beta Drivers will bear witness to him.

Musk then puts his professional energy engineer cap on (remember, he's also a rocket scientist, which he reminds the reader of at the start) to debunk what he says are the two repeated arguments against electric vehicles: battery disposal and power plant emissions. Obviously, these are not the only arguments against

7. The base prices for the first *Model S* in 2012 was $57,400 for the 160-mile version; $67,400 for the 230-mile version; $77,400 for the 300-mile version; and $87,400 for the special *Model S Performance* version. The *Model X* was introduced in 2013 with a starting price of $132,000. The starting MSRP of a 2012 Mercedes-Benz S-Class was $91,850.

electric cars, nor are they the most important. Where do the materials for making the batteries and other electric car components come from, for example? Are they not mined and why are they not a question of "mine-and-burn"? How will the cars be charged and who will pay for building out the infrastructure? Will there be enough electricity to charge a world of electric cars? The list is long, but Musk has defined the battlefield for the insiders receiving his missive, and he sees off the two opponents. On the topic of batteries, the batteries his readers are familiar with are not the magic ones he has developed for TESLAS. *"I wouldn't recommend them as a dessert topping, but the Tesla Motors Lithium-Ion cells are not classified as hazardous and are landfill safe,"* he says. Hmmmm. This synthetic statement, uttered in 2006 when the hazardousness of lithium-ion batteries was still largely unknown, was treated as an analytic statement by Musk, that it was true by default, *a priori*.

His handling of the power plant emissions is an exhibition of his ability to redefine the game so that he wins whether the coin lands heads or tails (see sidebar). *"The common rebuttal to electric vehicles as a solution to carbon emissions is that they simply transfer the CO_2 emissions to the power plant," he says.* By calling it *"the common rebuttal"*, he is signaling that it is wrong-headed, but he tackles it head-on by comparing electricity generated by natural gas, which will drive a *Tesla,* to a *Toyota Prius* that will be driven by gasoline with an electric motor charged by the car's ICE motor, a *Honda* powered by compressed natural gas, and a *Honda* powered by a natural gas fuel cell. The text is full of statements that are delivered as facts. Those intended as the readers of this message will never check these facts. They will look at the summary table which Musk has created and read the summary statement as gospel: "*The Tesla Roadster still wins by a hefty margin if you assume the average CO_2 per joule of US power production."* he concludes. He admits that the actual CO_2 per joule of US power production results will be different in places where coal is burned to make electricity (China, for example, although China is not even a back-of-the-mind thought at this point), but then there are all those places where hydro, nuclear, geothermal, wind, solar, etc. (undefined) are used to generate electricity.



I wonder if Elon Musk has seen this Coen brothers' film. Javier Ángel Encinas Bardem plays a psychopathic assassin named Anton Chigurh. Only one of his dozens of potential victims, an elderly roadside shopkeeper, escapes his brutal killing methods, and he did it by guessing correctly that the coin Anton tosses is a 'heads'. With all his faults, Anton had principles. He kept his word and didn't make things up.

For those who didn't have the time to read all the text and just wanted the answer, he sums it up at the end with his master plan in a nutshell—his elevator speech—and a final word to the reader, who Musk is letting in on the ground floor:

- *Build sports car*
- *Use that money to build an affordable car*
- *Use that money to build an even more affordable car*
- *While doing above, also provide zero emission electric power generation options*

Don't tell anyone

It would be difficult to argue with those who claim that not only did Musk succeed with convincing consumers to purchase TESLAS, at least so far, but that he succeeded with the master plan in general for changing the minds of a very large number of people about whether electric cars are an alternative to what were "normal" cars before TESLA.[8] And whenever he had the chance, he dissed (i.e., treated with disrespect or contempt) a clearly better technology from both the standpoint of total emissions and use of minerals: hydrogen fuel cells. His response to a the survey results of 1,000 global auto executives, which concluded that hydrogen fuel cell technology will ultimately outperform battery-powered electric vehicles, was to say that hydrogen fuel cell technology is "mind-bogglingly stupid," and that "…success is simply not possible." He is expecting you to believe that his ideas are brilliant and the success of his ventures is secure, and that his competitors are stupid and will fail.[9] Verification? His word, and that word has made a lot of people who have bought TESLA stock very wealthy, including Musk himself. It does not make what he says always true.

Autopilot and Full Self-Driving are not just names

In order for Musk to sell features called *Autopilot* and *Full Self-Driving* for a price that is close to the cost of a perfectly serviceable internal combustion-powered vehicle (e.g. a *Nissan Versa*), he must do what he did with TESLA's first really commercial battery electric vehicle, the *Model S*. That was to convince wealthy car buyers that the *Model S* was a car, and that even though it was not less expensive than the *Roadster*—nor was the company's third car, the *Model X*—that they were part of a mission to save the world AND they were giving up nothing by driving a TESLA.

Musk's choice of names for driver assistance functions is the key to his strategy. He has stood steadfastly by his initial decision to call TESLA's advanced driver assistance system 'Autopilot', and its navigation with automatic lane-keeping system 'Full Self-Driving'. He has held on to those names like parents would hold on to their children if they were attacked in the forest by a pack of wolves. He has resisted all calls (including from your Editor)[10] to stop using

8. As of the end of Q1 2022, 2,645,000 *Tesla*s have been sold worldwide since the first *Tesla* hit the market. TESLA estimated it will deliver around 4 million cars by the end of 2022.

9. TOYOTA not giving up on hydrogen fuel cells. https://www.autonews.com/automakers-suppliers/toyota-hydrogen-combustion-push-attracts-suppliers

TOYOTA CEO, Akio Toyoda, was in the U.S. recently for a Toyota dealers conference. He continues to see hydrogen combustion as a compelling offering. In the short term, he says, hybrids may provide the greatest good, noting that Toyota can produce eight plug-in hybrids with 40 miles of electric range for every 320-mile battery-electric vehicle and save up to eight times the carbon emitted into the atmosphere.

10. http://www.michaellsena.com/wp-content/uploads/2018/10/The-Dispatcher_November-2018.pdf

the terms because they are misleading. But what can he do, call them 'Semi-Autopilot' or 'Somewhat Self-driving'? He often used the term "full electric" when describing what you get if you buy a TESLA. When TESLA has been criticized after a driver has died in a crash while Autopilot or FSD has been active, the company waves the instructions that accompany the software which clearly states that it is not really an 'autopilot' like in an airplane where the pilot can leave the cockpit for a comfort break, or does not truly provide full self-driving like the balsa wood toy airplanes with rubber-band-powered propellers. The driver must be attentive and have their hands on the wheel at all times, says the TESLA manual. At the same time, Musk is promising those growing number of Tesla buyers who have added Autopilot and Full Self-Driving as options that the fulfillment of the promise is close at hand. The end is nigh.

Double message? Of course, clearly. But this is also a sign of dissonance which was not present with his BEV messaging, and there is no stated master plan that he has shared. His implied message evidenced by his actions appears to be:

- We will build something that customers will pay for to test
- We will use the money to try to make it work better
- We will keep telling customers that the next version will be better
- We will fight any bad press and blame the drivers for crashes

With battery electric cars, belief preceded verification. You might say that 100,000 Autopilot and FSD disciples are proof that his tactic is working again, but there is a substantial amount of dissatisfaction among those who have paid a significant amount of non-refundable money for something that is less than beta-ready.[11] Is there another strategy that will work to provide initial verification of the statement, "Some cars can drive themselves?" To answer this question, I believe we must start with the driver, not the car.

Driving a car is more than rocket science

We don't know why humans are good at driving cars. We know why they are bad. As PRINCETON Professor Alain L. Kornhauser, Ph.D. reminds us as often as he can, **MISBEHAVIOR** is the main reason for vehicular accidents. We speed, tailgate, change lanes without signaling, drive under the influence of alcohol or drugs. Some people misbehave behind the wheel more often than others, and some countries have a greater incidence of misbehaving citizens. Bad behavior can be attributed to neurosis, psychosis, sudden physical disability, or simply temporary mindlessness, but it is the major cause of vehicular accidents.

11. An article was published in CNN Business on the 7th of September 2022, titled "Tesla's 'full self-driving' isn't worth $15,000, many say. CNN spoke with thirteen people who have Tesla's with FSD. Eleven said it was not worth $15,000. They said they had to pay more attention when driving with FSD on than when it is off. It is "unpredictable", they said. Those that accepted the high prices said they did so because they like testing new technologies. GM's SuperCruise, which has been judged superior to Tesla's functions, costs only $2,500 plus a monthly $25 connectivity fee after the third year. And the more standard ADAS functions don't promise that they will work everywhere, as Musk promises.

Driving a car well and avoiding accidents is difficult. A short anecdote will help to illustrate just how hard it is. On the last day of September 2022, TESLA held its AI Day. It brought on stage its general-purpose humanaoid robot, named *Optimus by Tesla*. It walked stiffly and waved with its hands at the crowd for a minute. Musk told the crowd that the robot was operating without a tether for the first time. "The robot can actually do a lot more than we just showed you," said Musk. "We just didn't want it to fall on its face." Another promise: "It's almost perfect." Driving a car is a much, much harder task than walking across a stage without falling on your face. Driving a car is significantly more difficult than landing a rocket upright after it has been in space.[12] Driving a car is in another league compared to placing telecommunications satellites in orbit or even delivering astronauts to the International Space Station. Musk admitted this in July 2021 with the following statement: *"Generalized self-driving is a hard problem, as it requires solving a large part of real-world AI. Didn't expect it to be so hard, but the difficulty is obvious in retrospect."*

The 'generalized self-driving' Musk is referring to is the same as what 'full self-driving' is supposed to be, driving a car anywhere without a human at the wheel or at the end of a tether. It is what humans do. For robots to perform the task, they must achieve artificial general intelligence (AGI), which is the hypothetical ability of an intelligent agent to understand and learn any intellectual task that a human can.[13] And yes, it is a "large part of real-world AI". AGI possesses the ability to analyze a situation on its own (without a tether) and take a calculative decision without being programmed in advance. Did Elon Musk and TESLA actually believe that cars could be driven by Weak AI?

Elon Musk is a master storyteller, and the entire battery electric vehicle industry acknowledges him as their spokesperson and their leader. Since *Tesla Autopilot* was first discussed publicly in 2013, Musk has been trying to duplicate his BEV success with the self-driving car functions. It has not gone so well. There are several reasons for this. First, there is no compelling narrative as there was for electric cars. Once you have saved the planet from ruin by buying an electric car, you are not doing much more by sitting in the back seat while the car drives you around. Second, the evidence for substituting robots for humans is limited to single tasks, such as playing chess or putting cars together on an as-

12. Lars Blackmore is the person behind the SPACEX rocket landing systems. He studied Engineering at CAMBRIDGE UNIVERSITY, and completed a Ph.D. in Aeronautics and Astronautics at MASSACHUSETTS INSTITUTE OF TECHNOLOGY (MIT), before going on to land engineering roles at both NASA and SPACEX. Unlike Elon Musk, he is a real rocket scientist. I don't know whether Lars would agree with my estimation of the relative difficulty of landing a rocket versus driving a car without a human anywhere. He completed his Ph.D. in 2007 in stochastic systems, and then spent time at NASA before joining SpaceX. It took only four years from the time he started working on self-landing the SpaceX Falcon 9 rocket in 2011 (when he was 30 years old), until his team had its first success in 2015. He had John von Neumann's and Narendra Karmarkar's algorithms as a basis for his work, and they patented their further developments in 2013. Lars has moved on to the Falcon Heavy project http://www.eng.cam.ac.uk/news/alumni-stories-meet-principal-rocket-landing-engineer-spacex

13. It's hypothetical because it has not been done, and there is not anyone seriously working with AI who would commit to saying whether it is even possible. https://www.ibm.com/cloud/learn/what-is-artificial-intelligence

sembly line. There is no compelling reason that has gained traction for taking a further step with driver assistance systems by removing the driver. Musk and others working on full self-driving have tried the line, "Imagine a car that does not crash." But then when you buy a TESLA and try it as a ground floor club member of the "FSD Beta Testers", the car crashes and your hopes that you have a super driver under the hood are dashed. So far, we cannot imagine a car being safer without a driver because deep down inside our consciousnesses, we know how hard it actually is to drive a car.

Which gene(s) makes Homo sapiens capable of good driving?

What will make a good robot driver is what makes a good human driver. The term 'good' comprises both the moral/ethical meaning (i.e., not evil) and the extra-moral meaning (i.e., a good mechanic or a good driver). We should have expectations that any robot, weak or strong, will be programmed to NOT be evil, and that a robotic car will be able to perform the mechanical acts of driving, but those two traits alone will not make a robotic driver a *good driver*. There are plenty of lists with titles like *What Makes a Good Driver?*.[14] They all contain essentially the same characteristics:

- Anticipation - a prior action that takes into account or forestalls a later action
- Concentration - direction of attention to a single object
- Confidence - a feeling or consciousness of one's powers or of reliance on one's circumstances
- Consideration - thoughtful and sympathetic regard for others
- Patience - the capacity, habit, or fact of bearing pains or trials calmly or without complaint
- Adaptability - the capability of being easily modified to suit other conditions, needs, or uses
- Knowledgeable – having facts acquired by study, investigation, observation, or experience[15]
- Mechanical skills - dexterity or coordination especially in the execution of learned physical tasks
- Experience - something personally encountered, undergone, or lived through
- Fitness – ability to physically or mentally perform an activity

There is one more trait that is not mentioned on any of the lists I have seen. This trait is part of some of the qualities on the list and is the foundation for human interaction: ***reciprocal altruism***. Humans place a large amount of faith in the actions of others, that, for example, a person driving a car toward them on a two-

What's Behind FSD

What is Musk's motive for developing a self-driving option for his *Teslas*? Only 5% of his current buyers have opted for the option, even when it was only a couple of thousand dollars. I believe he has accepted the simple fact that his cars are not all that special. When every existing automobile company can produce a better car that is also a BEV, and when the Chinese can deliver a car-on-a-skateboard for a fraction of the cost, and when governments around the world have built charging networks (which Musk has criticized as 'socialistic'), what does he have to sell? His answer is a chauffeured limo, which he has said people will pay at least $100,000 extra to own. FSD is a must for Musk.

14. https://www.traffic-counsel.com/10-qualities-of-a-good-driver-how-many-do-you-have/ https://blog.ingenie.com/parents-guide/what-makes-a-good-driver

15. https://www.psychologytoday.com/us/blog/theory-knowledge/201312/what-is-knowledge-brief-primer

lane, undivided road will stay on their side of the road and not crash into them head-on. We are told to "drive defensively" in order to be prepared for the possibility that other drivers will do something stupid, like pass in a turn or on a hill, but, with experience, we learn not to freeze or slow down to a crawl whenever the road ahead is not totally visible.

Are any of these traits, including reciprocal altruism, innate in the human race, or are we a blank slate, like an unprogrammed robot out of the box? Empericists extending all the way back to Aristotle claim that all knowledge is learned and begins with the senses. Plato and Descartes believed that humans enter their time on earth with ideas. The empericists had the upper hand until research in neuroscience conducted around 2010 by the BLUE BRAIN GROUP in Switzerland began to show that groups of neurons appear consistently in the Neocortices of animals, including humans, and are used as building blocks. Learning, perception, and memory are believed to be the result of putting these pieces together, according to this research. One of the researchers states: "This could explain why we all share similar perceptions of physical reality, while our memories reflect our individual experience.[16]

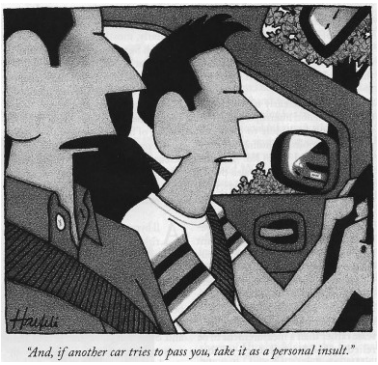
Humans don't just see. We also think and plan. We are cognitive. *Cogito, ergo sum homo*. "I think, therefore I am human." We could also say, *Automobile expello, ergo homo sum*, which roughly translates to: "I drive a car, therefore I am human."

Would you let your child be driven alone in one?

We will not have self-driving cars until enough people believe that self-driving cars are not nonsensical—unnecessary, preposterous, dangerous, and a waste of money. The Musk approach to obtaining a quorum large enough to make continued development of self-driving car functionality economically viable is clearly not working. It's missing the compelling reason to inspire people to want to believe in what is still an unverified synthetic statement, that some cars can drive themselves.

Ask yourself what would make you want to get into a car without a human behind the wheel. Or better yet, ask yourself what it would take to put your child in a car that drove itself. If you do a search on "Why would anyone want to ride in a self-driving car," you get a long list of articles by bloggers, academics, and investment strategists that start with the "95% of all accidents are

THE NEW YORKER Cartoon



"And if another car tries to pass you, take it as a personal insult."

16. https://www.traffic-counsel.com/10-qualities-of-a-good-driver-how-many-do-you-have/ https://blog.ingenie.com/parents-guide/what-makes-a-good-driver

caused by human error" trope. My wife thought about her answer when I asked her that question and then responded: "If I didn't have another choice. But then it would have to have its own lanes and it would have to be inexpensive." She provided a motive and two norms. The need is that someone needs a ride, but cannot drive themselves and there are no alternatives which meet their time and affordability constraints. They don't have another choice. The problem is that the driver (i.e., the human behind the wheel) makes the ride unaffordable. Besides having their own lanes (minimizing danger), there are many other norms that would make acceptance of self-driving cars verifiably safe.

There are sufficient numbers of individuals who need an affordable ride to justify developing a solution to meet that need. Companies attempting to develop self-driving car solutions should be applying their time and both their mental and financial resources to addressing the technical norms which are being developed by standards bodies, like UNECE, and creating designs that allay the fears eventual riders would have of being a passenger in a car with no driver. Accept the fact that self-driving cars will have Weak AI for the foreseeable future. They will not approach the skills of a human driver. Work with that limitation. Don't do what Waymo does every time their self-driving function disengages, blame the other cars on the road, the ones driven by humans, for being at fault. Don't do what TESLA does when their FSD fails and blame the driver for doing what TESLA has told him he can do, not pay attention. Limit the routes the vehicles will be allowed to take in order to reduce to an absolute minimum the events that require human intelligence.

Gradually, we will begin to believe that it is possible, in certain places at certain times and under certain conditions, for cars to drive themselves, and that in doing so they can satisfy a need that has been neglected or considered not capable of being satisfied: providing rides to people who need them but cannot afford them. And the more we believe, the more we will find it to be true. But not before.

The Awen is an important symbol in Celtic culture, as a symbol of creativity, imagination, and aesthetic sensibility. Awen means essence or inspiration in the Celtic language. While seemingly simple in appearance, the Awen holds deep symbolic meaning.

Dispatch Central

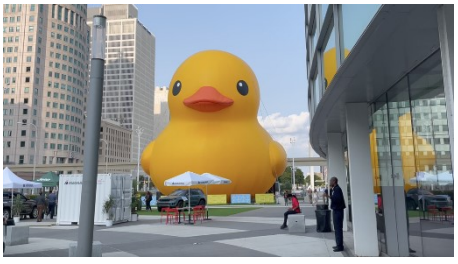
No new BEVs at Detroit Auto Show

THE NORTH AMERICAN INTERNATIONAL AUTO SHOW, better known as the DETROIT AUTO SHOW, was held for the first time since January 2019. Like many large gatherings, COVID-19 put the kibosh[17] on the show's last two events. It has come back, unlike the GENEVA INTERNATIONAL MOTOR SHOW, which seems to have decided that the future of cars is in the deserts of the Middle East. But it was a very scaled-down version of what it had been, with many major automotive brands staying on the sidelines watching, rather than taking an active part. The decision made by the DETROIT AUTOMOBILE DEALERS ASSOCIATION (DADA), organizers of the show, to move the show out of the bitter cold month of January to the milder month of September, had actually already been planned for the 2020 show. The move did not appear to make a difference, at least not this year. Part of the idea with the month change was to make it possible to use outdoor space, which is hardly inviting in Detroit's frigid January temperatures.

17. 'Put the Kibosh on' means to shut something down. There is no agreement on where the phrase came from. It's just there.

Cars are not enough (they thought)

Another decision made by DADA was to make it more than an auto show, apparently because they believed that an auto show on its own was not enough to attract the public. It brought in flight demonstrations and displays from six air mobility companies. There was an electric vertical take-off and landing aircraft, amphibious sport planes, hoverbikes, hoverboards and jet suits. There were even a life-size dinosaur display, a monster truck throwdown and, if that wasn't enough, 61-foot tall rubber duck.



We could spend time on discussing who wasn't there and why. I'd rather discuss <u>what</u> wasn't there (new battery electric vehicles) and what <u>was</u> there: plenty of ICE.

CHRYSLER unveiled the limited edition 2023 Chrysler 300C at Spirit Plaza in downtown Detroit on Sept. 13, 2022.

CHRYSLER, which in its heydays in the 60s was the king of muscle cars, unveiled its limited edition *2023 Chrysler 300C* at Spirit Plaza in downtown Detroit on the eve of the opening of the Show. Brand executives said that the car

pays tribute to the end of the gasoline-powered era. The company's *Dodge* brand will also be offering special editions of its gasoline-powered *Charger* and *Challenger* models.

FORD MOTOR COMPANY had the global debut of the all-new, seventh-generation *Ford Mustang*. FORD organized a parade of *Mustangs*, which they called a 'Stampede', from Ford World Headquarters in Dearborn to Detroit's Hart Plaza. *Mustang* owners were able to register to participate in Stampede, and they were out in full force. Ford says that the new Mustang is an entirely new breed of Mustang that won't be going gently into the night. "(We will) stick with internal combustion engines, for now. Available options will include a coupe and convertible, with a 4-cylincer or V8 engine. The first high-performance variant of the new *Mustang* has been revealed: *Dark Horse*."[18] In the photo to the right, that is Ford Chairman, Bill "Mr. Green" FORD on the left of the *Mustang Dark Horse*, and CEO Jim Farley, who doubles as the President of FORD's *MODEL E* electric car division.

18. Ford says that the name "Dark Horse" is the company's acknowledgment that it is now an underdog, both on the race track and in the new electric car industry. Ford announced recently that it will return to the 24 Hours of Le Mans race in France starting in 2024 with a GT3 version of the new Mustang. Ford says it is aiming to replace Tesla as the top-selling electric car brand. It's got a long way to go, admits Farley.

The *Mustang* is a product of the other division called *FORD BLUE*, which is responsible for all ICE and hybrid vehicles (i.e., nothing with charging cables). Kumar Galhotra is President of *FORD BLUE*. He stood up for an interview with *CNN BUSINESS* following the new *Mustang* introduction. What's going on, they asked: No new BEVs, but a completely new ICE? Galhotra said that Ford's ICE division is "booming". *"For someone who might be nursing (a dying division), I'm spending a lot of my time and investment expanding production capacity of all our Ford Blue vehicles,"* said Galhotra. He said that FORD is benefitting from the fact that other automakers are stopping the production and sale of their ICE models. In other words, in the land of the blind, the one-eyed man is king.

FORD has not drawn a line in the proverbial sand and given a date when it will stop producing ICE and hybrid vehicles, like its rival GM. GM says it's moving to BEVs and leaving ICE behind by 2035. Fine, says Galhotra. He and FORD management believe there will still be a market for ICE and they plan to satisfy it. Besides the Mustang, it has the *Bronco, Escape, Explorer* SUVs, and the *F-series* and *Maverick* trucks. Galhotra says they can't make enough *Maverick*s to keep the pipeline filled. What is most interesting is that the majority of customers for both the *Bronco* models are new to FORD, "conquests", in auto sales parlance.

It seems that reports of the death of ICE vehicles is greatly exaggerated. There was plenty of evidence of this in Detroit.

Where is ACEA headed?

ACEA is EUROPEAN AUTOMOBILE MANUFACTURERS ASSOCIATION.[19] It currently represents Europe's sixteen major car, van, truck, and bus manufacturers. By the end of 2022, it will represent two fewer. STELLANTIS and VOLVO CARS have informed the ASSOCIATION that they are leaving the fold. What's going on?

Before we get to the reasons each company has given for leaving, let's be clear about who the departing companies are. STELLANTIS is a blend of American (CHRYSLER), French (CITROËN and PEUGEOT), German (OPEL), and Italian (FIAT, MASERATI) vehicle manufacturers. When OPEL was American-owned (GM), it was an odd duck in the European pond. VOLVO CARS is a Chinese company. Yes, it completed an IPO which delivered $2 billion to VOLVO and/or GEELY, but GEELY retained an 82% share of the company's ownership. VOLVO CARS' interests are determined by its owner, and its owner is in China, not Europe.

In a statement released on the 8th of July 2022, VOLVO said: *"After much consideration, we have concluded that Volvo Cars' sustainability strategy and ambitions are not fully aligned with ACEA's positioning and way of working at this stage. We therefore believe it is better to take a different path for now. What we do as a sector will play a major role in deciding whether the world has a fighting chance to curb climate change. We have one of the most ambitious plans in the industry, but we can't realize zero-emission transport by ourselves."*

The issue is that VOLVO has made a public commitment to stop selling ICE vehicles, or anything other than BEVs, by 2030. ACEA is committed to a zero emissions policy by 2035, in line with the EU's goal. However, ACEA has demanded "technology openness", which means it wants to leave the door open to hydrogen fuel cells and other technologies.

STELLANTIS CEO, Carlos Tavares, who was ACEA president in 2018-2019, has said the EU's proposal to phase out ICE would "carry environmental and social risks", and he has criticized BEVs as a technology "chosen by politicians, not by the industry". His reason for taking STELLANTIS out of ACEA is to focus on another industry initiative started by STELLANTIS, called *Freedom of Mobility Forum*.[20] The company said the ACEA exit "should also be understood as a transition from lobbying to a more direct interaction with citizens and stakeholders". It seems clear that the main mo-

19. The EUROPEAN AUTOMOBILE MANUFACTURERS ASSOCIATION was founded in 1991 under the French name L'ASSOCIATION DES CONSTRUCTEURS EUROPÉENS D'AUTOMOBILES, which explains the widely used and recognized acronym still in use today: ACEA. Its founding members were: BMW, DAF, Daimler-Benz, FIAT, Ford, General Motors Europe, MAN, Porsche, Renault, Rolls Royce, Rover, Saab-Scania, Volkswagen, and AB Volvo (which included Volvo Cars at that time). Non-European car manufacturers, Honda, Hyundai and Toyota, were allowed to be members.

20. STELLANTIS is launching the Freedom of Mobility Forum "to address the most urgent mobility issues facing today's society". It is planned to be a yearly open meeting committed to fact-based decision-making that identifies how to bring clean, safe, and affordable freedom of mobility for society in the face of global warming implications. The first Forum is planned for early 2023.

tive for leaving ACEA is that it does not want to be bound by commitments made by other members, such as VOLVO, or by consensus agreements reached by ACEA with the *EUROPEAN COMMISSION* concerning ICE vehicles.

So what happens now with ACEA? VOLVO CARS could have left without anyone noticing. But STELLANTIS is another matter, especially since Tavares had been the ASSOCIATION's president and the company is the second-largest supplier of cars in Europe, just after VW. It is a clear sign that the *EUROPEAN COMMISSION* has been riding roughshod over the European automotive industry for many years, ignoring the fact that it has been and continues to be a major source of employment and innovation within Europe. The *COMMISSION*'s attitude of disdain was clear in how it treated the entire e-call issue, completely ignoring what the automotive industry was doing and, in the end, forcing through a dead-end solution that now must be replaced as a result of the closing of the 2G and 3G networks.[21] With its backing of BEVs, it is once again forcing deadlines on technology, rather than setting standards and allowing the industry to decide how to meet them. ACEA has stood up to the *COMMISSION*, but it has only been when countries like Germany and France have raised their voices that the *COMMISSION* has been forced to back down—at least temporarily. Tavares is basically saying that ACEA has outlived its usefulness and it's time to move on. I have a feeling that there will be more hands abandoning the ACEA ship in the not-so-distant future.

21. If you buy a new model of car, approved for manufacture after 31 March 2018, it must have the 112-based eCall system installed. This rule applies both to cars with no more than 8 seats and light commercial vehicles. This system is based on 2G and 3G network technology. A new Ecall regulation based on 4G, 5G IP protocol (new generation – NG) should be published in 2022 with an application date from 2024 or 2025. However, telecom operators have started to progressively plan the shutdown of their 2G and 3G networks to liberate frequency bands for more efficient 4G and 5G networks. There is therefore a high risk that eCall coverage will degrade in the short term and then disappear progressively in the medium term while there will still be millions of vehicles on the roads in Europe equipped with this technology.

Quick Transactions

I have brought back the short clips I included in the early version of *THE DISPATCHER*, when it was a six-page newsletter.

Sweden's auto club calling for ban on micro cars

MOTORMÄNNENS RIKSFÖRBUND, now simply known as M SVERIGE, has asked the Swedish Parliament to consider phasing out and completely banning micro cars, known as *mopedbilar* (moped cars) in Sweden. M's reason is that the cars have a minimum of crash safety features, they are more polluting than a standard gasoline or diesel vehicle, and one-in-four of them is involved in an accident. One micro car emits as much particular pollution as is allowed by four standard passenger cars.

Their tendency to crash be more a result of their drivers than the cars, but when they do crash, people inside are more likely to get hurt or die. The legal age to obtain a standard driver's license in

A new *Ligier JS60 Ultimate* micro car has a sticker price of 205,900 SEK (€20,000). The manufacturer is French, started by a former Formula 1 race car driver, Guy Ligier. The company also makes the *Ligier EZ10* self-driving minibus in a joint venture with another French company, ROBOSOFT TECHNOLOGY PTE LTD.

Sweden is 18, but for a micro car or a moped, the driver need only reach the age of 15 and obtain a moped driver's license.

Having shared the road with more and more of these vehicles during the past three years, as parents saw them as a better alternative during the COVID-19 period than letting their children take public transport, I can confirm that when I see one on the road, I am especially watchful. One of them slammed into a car in front of me on an icy patch of road when the little car, packed with four teenagers, zoomed around a corner travelling at too high a speed. No one was injured, but the little car was demolished. These cars are supposedly limited to driving at only up to 45 kph, which on urban roads where they are now mostly used, is way too high.

There is another class of vehicles in Sweden that can be driven by children under 18. They are called A-Tractors, and they are supposed to be limited to driving at a top speed of 30 kph. Initially, the A-Traktor license was meant to make it possible for younger children to operate farm machinery. This evolved into a cult of low-speed hot rods, like the car to the right painted in the orange color of the former state-owned, now privatized, telecommunications operator, TELEVERKET. These vehicles were physically unable to travel faster than 30 kph, and they were restricted to the dimensions of an old tractor. A 2020 change in the law made it possible to convert standard, street-legal vehicles, like the Porsche Cayenne in the sidebar, to A-Tractors. Predictably, many of the drivers—or their parents or unscrupulous mechanics—deactivate the governor so the vehicles can drive at any speed. And, unfortunately for the teenagers driving the cars and other drivers on the roads, these cars with inexperienced drivers are causing fatal accidents. Since the law change, 7,800 A-Tractors have been registered, an increase of 27% over the number that were on the roads previous to the change.

Above is an old version of an A-Tractor, a rebuilt Volvo PV444. The Porsche Cayenne below has been converted to an A-Traktor which is supposed to be driven at 30 kph.

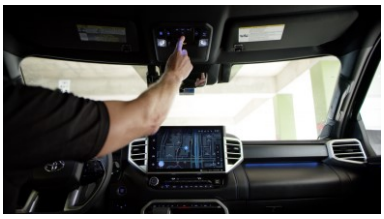
Tesla Sentry Mode might be illegal in EU

IN 2019, TESLA announced *Sentry Mode*, a feature intended to protect owners of its cars from break-ins and thefts. Unlike most car alarm systems, which are activated by motion sensors, Sentry Mode combines both motion sensors and cameras. If someone leans on a Tesla equipped with Sentry Mode, the system enters an 'alert' state and displays a message on the big dashboard screen warning that the car's cameras are now recording. If a window is broken the system switches to an 'alarm' state, which activates the car alarm, increases the brightness on the display, and plays music load enough to wake ghouls from the grave.

Well, it seems that someone at the European Commission decided that since the thief was not asked if he/she agreed to be photographed, Tesla's Sentry Mode may not comply with the EU's General Data Protection Regulation. Is it Tesla or the owner of the particular Tesla performing the surveillance who is responsible for what happens to those images of the perp? The Commission, ever vigilant, has opened up a case to determine whether to haul Tesla and read it the riot act.

Toyota's connected services free for 10 years

In the September 2022 issue of The Dispatcher, I reported that GM was making its *OnStar* service a "mandatory option" on *Buick, Cadillac* and *GMC* brands. Moving to the opposite end of the spectrum, TOYOTA MOTOR NORTH AMERICA has announced that its *Safety Connect* and *Service Connect* systems will be offered free in North America for ten years, beginning with the 2023 *Toyota* and *Lexus* models, along with some 2022 *Toyota Tundras*, which are equipped with TOYOTA's new "built-in-house" infotainment systems.[22]



22. Automatic Crash Notification and Emergency Assistance Button services are free within the EU and other European countries that have adopted the European eCall system that became active in April 2018. Roadside assistance and other non-emergency services are not included in European eCall.

This means that human-assisted services, including automatic collision notification, stolen vehicle location, vehicle service and health alerts, and emergency roadside assistance will be delivered free of charge for at least a decade, even if the vehicle changes owners. And it comes just a few months after GM began charging a mandatory one-time $1,500 subscription fee for its similar OnStar service in some vehicles.

"The reason we provide all this functionality and this connectivity for safety is what customers care about," said Steve Basra, group vice president for connected technologies at TOYOTA MOTOR NORTH AMERICA. *"I think it's our duty as OEMs that we provide this, where the customer doesn't have to think about them, doesn't have to subscribe to them, and we've figured out a way to do that, because it contributes to society."*

Previously, the service was delivered free for at least one year, after which it was subject to a subscription plan that had a price tag of $8/month. Older vehicles will retain the previous arrangement, Basra said, in part because existing third-party agreements would be disrupted. TOYOTA's current plans vary by model in terms of availability. Basra said that call centers are expensive for automakers, but he claims that providing the connected assistance services free for ten years "pays for itself in helping to cement the bond between automaker and customer".

"It's not just about making money; it's about providing these beneficial services that really help customers in a time of need," Basra said. *"You hope that most customers never need to use these services, but the one time they do, they can know there will be someone at the other end of the call."*

Toyota will still continue to offer subscription-based services. For example, its *Drive Connect* cloud-based navigation system currently has a $16 monthly subscription, and its remote start subscription sells for $8 per month. Basra said he believes TOYOTA can cover its ongoing operations costs with that revenue, enabling it to give away the more critical safety and service connected services. *"I've prioritized around safety and security because I don't think people should pay for that,"* Basra said.

Thinking the unthinkable: Leaving China to China

YOU HAVE READ it many times in these pages, but it has not been openly discussed by automakers. It has taken the straight-talking STELLANTIS CEO, Carlos Tavares, to say it out loud: China is no country for non-Chinese brands.[23] It was reported in the 18 October 2022 issue of *AUTOMOTIVE NEWS EUROPE* where he was quoted as saying that STELLANTIS may stop manufacturing cars in China as geopolitical tensions escalate and western manufacturers cede market share to domestic players.[24] BYD and GEELY are muscling their way into Europe and the U.S. while Chinese government restrictions are making it difficult for non-Chinese automotive OEMs to compete in China. Tavares has asked European authorities to make the European playing field as uneven for Chinese manufacturers as China has made its field uneven for non-Chinese brands.

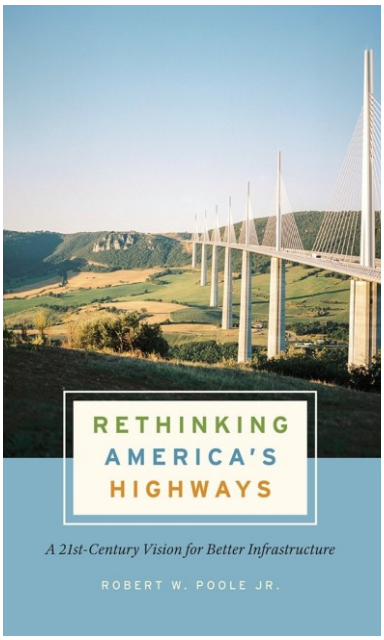
I believe that at some point people have to start asking themselves where they feel comfortable sending their money. That's not a typo. I meant 'sending' not spending.

23. Tavares said Chinese brands must pay tariffs of 10 percent to import cars into the European Union, while European automakers pay tariffs of between 15 percent and 25 percent to import Europe-built cars into China. Chinese brands such as BYD, SAIC's MG, Great Wall and Polestar are establishing a foothold in Europe with their cost-competitive electric vehicles built in China. Chinese brands account for 5 percent of Europe's electric vehicle market, according to a report published on Monday by environmental lobby group Transport & Environment. Tavares said Chinese automakers could establish themselves In Europe by selling their cars at a loss during the initial stages of their push into the region.

24. https://europe.autonews.com/automakers/stellantis-mulls-halting-all-carmaking-china-after-jeep-exit?utm_source=daily&utm_medium=email&utm_campaign=20221018&utm_content=article10-headline

https://europe.autonews.com/automakers/stellantis-terminates-jeep-joint-venture-chinas-gac

Conversations with The Dispatcher



Robert W Poole Jr. wrote that the idea for his book did not just spring into his head one day. It evolved over several decades of public policy work, which began with research into competitive contracting for municipal public services in the 1970s. In the course of that work, he learned that a considerable number of 20th-century North American Toll bridges had been privately financed, though hardly any had survived as private bridges past the Great Depression.

Bob is co-founder, Director of Transportation Policy, and Searle Freedom Trust Transportation Fellow at REASON FOUNDATION. An MIT-trained engineer, Bob advised the Reagan, G.H.W. Bush, Clinton, and G.W. Bush administrations on infrastructure issues.

Poole, Robert W. Jr. **Rethinking America's Highways: A 21st-Century Vision for Better Infrastructure**. The University of Chicago Press (2018).

A discussion with Robert W. Poole Jr.

The idea for Conversations *came to me one morning during breakfast after I had finished reading Bob's book. I was staring at one of my bookshelves, the one that is filled with books from my architecture and planning years. My stare fixed on The Letters of Lewis Mumford and Frederic J. Osborn: A Transatlantic Dialogue 1938-70. (Michael R. Hughes, Editor, 1971). Mumford was a New Yorker, Osborn a Londoner. Mumford was a writer and literary critic, best known for his study of cities and urban architecture. Osborn was a proponent of the UK Garden City Movement. What they had in common was a devotion to Ebenezer Howard, the British originator of the Garden City concept. Michael Hughes, with the assistance of both Mumford and Osborn, collected the letters the two men wrote to each other between the 12th of December 1938 and the 16th of December 1970, which filled 487 pages.*

MY FIRST CONTACT with Bob Poole was an e-mail from him in in September 2020 in which he said he had been reading articles in *THE DISPATCHER* for the past year via the link in Alain Kornhauser's weekly SMARTDRIVINGCARS e-letter. He appreciated the articles, and even cited several of them in his own newsletter, *SURFACE TRANSPORTATION INNOVATIONS*, but the reason he finally decided to contact me was my 'confession' of being a model railroader. This, he said, had been his main hobby for most of his life. He sent me photos of his layout, and it was clear he was a serious model railroader, while I am merely a collector at this point. But that note started a conversation which has continued. He has patiently commented on my thoughts whenever I have written about road tolls. However, when I wrote the article in the September 2022 issue of *THE DISPATCHER*, *Funding Roads*, he apparently decided it was time to ask me to read his book. I decided that it was time to do that as well, so I did. This *Conversation* is the result of that reading and the exchanges between Bob and me which followed. In the first *Conversations*, my reflections on Bob's book and his rebuttal and clarifications on my points will take only five pages. I trust that our exchange will pique your interest in reading the book. I recommend it highly.

30 September 2022

Dear Bob,

It was a pleasure to read your book, **Rethinking America's Highways**. Your writing style made it easy to understand the information you were providing, even when discussing issues with a high degree of regulatory complexity. You do an excellent job of explaining what the shortcomings are in the U.S. of the current system for financing new roads and maintaining existing ones. For the transportation student, lay or professional, you offer a textbook full of the kind of information about the history of roadbuilding financing that makes it clear why things work the way they do and what the difficulties are that the transportation planners have faced and endured in the past.

You state on page 10 that the purpose of the book is to *"suggest a new paradigm, one aimed at overcoming all the now evident shortcomings of the system that worked pretty well under the different conditions of the 20th century but is increasingly unsuited to the 21st century realities"*. I believe your main point is stated on page 11, that America has made a *"category mistake in the belief that highways are the kind of thing that only government can provide"*.

If I can simplify your thesis, you believe that private enterprise was disqualified from being the primary provider of road building and operation because the state and federal governments decided at a relatively early stage to use the gasoline tax as the main source of funding, rather than user fees. Second, you believe that by not labeling roads as utilities, like electricity, water, gas, and telecommunications, we have missed the opportunity to infuse the minds of road users with the thought that they should pay for the service they receive when they drive on roads, just like they pay for the water, electricity, gas and telecommunications minutes they use.

As I wrote in the September issue of *THE DISPATCHER*, after fifteen years of railing against road tolls, particularly city entrance fees (aka congestion charges) rather than highway tolls, I have modified my thinking. My objections have been principally because road tolls are a regressive tax on top of the fuel tax, another regressive tax. I objected to the fact that road tolls of any kind mean that the individuals who must leave the roads are those who cannot afford to pay the tolls. This results in improved mobility for the wealthy at the cost of the less wealthy, who must find other transport alternatives or forego travel altogether. I am against

such culling, and will continue to be so. However, as you clearly point out in your book, and as I admit in *THE DISPATCHER* article, technology can now solve these problems. Everyone's payments can be tailored to whatever conditions we decide to place on them, and low-income road users can pay according to their means. This may not solve the problem of congestion, but it will go a long way to solving the problem of how we pay for our roads.

I do not believe that the "utility" analogy is a necessary point in your argument. Traffic management books tend to use the 'water-through-the-pipe' comparison when explaining why blockages occur on roads, but with roads there is no company or authority using coal, gas, nuclear energy or water to power turbines to generate electricity. Each driver is his or her own power plant. The road is there once it is built, like a school or hospital or ice hockey rink. It requires maintenance like any facility. Dropping the utility language does not reduce the effectiveness of the argument in favor of usage fees. We pay taxes to keep the schools operating, and we pay for health insurance to be able to use the hospital facilities.

What I believe is the major contribution of your book is that you have documented how the private sector can work with the public sector to build and operate intercity highways as wells as arterial highways in cities. You have made the financing solution very clear for anyone who takes the time to read what you have written.

If only citizens and their elected officials in democratic societies could agree on the need to build and properly maintain roads, and could muster the will to do so, those societies would be well on their way to having transport systems operating all modes for the benefit of all. Unfortunately, there are multiple interest groups, from environmentalists to NIMBYS and to those longing for a time before cars who question the right of anyone, private or public, to use any form of financial resources to build roads. They are even fighting for the removal of roads that have been built. Perhaps, as you argue, a better financing model will satisfy those who object to paying any form of fees for what they view as a public service already paid for with their taxes, but it will not address those who wish that all forms of road-based transport (except for bicycles and scooters) disappear. But that, as they say, is another book.

I look forward to your thoughts on what I have written. If you agree, I would like to include what I have written above and your

Congestion and Capacity

"(The) idea that we can't build our way out of congestion is widely believed—by transportation planners, by editorial writers and other pundits, by chambers of commerce, and by a great many politicians. As a result, the long-range transp0ortation plans of most large metro areas these days are premised on attempts to "get people out of their cars." Adding any significant amount of roadway capacity generally gets low priority, while major emphasis (and planned spending) focuses on expanding mass transit, and on encouraging "active transportation" (biking and walking)…(However), the TTI Urban Mobility Report 2022 shows a strong correlation between increased capacity and smaller increases in congestion. The 17 metro areas that expanded freeway capacity the most now had 2012 congestion only about 60 percent worse than in 1982, whereas the 56 metro areas whose gap between demand and capacity was the greatest ended up with congestion about 200 percent worse than in 1982"

***Rethinking America's Highways**, page 17.*

response to me, and further exchanges on the subject, in the next issue of *THE DISPATCHER* with the first page sidebar introducing you. Otherwise, we can simply hold this between the two of us. Let me know what you think.

Kind regards,

Michael

6 October 2022

Hi Michael,

Here is a response to your commentary on my book. You may use this in your next issue of *THE DISPATCHER*.

Thanks very much for your words of appreciation for my book. In your first two paragraphs you accurately summed up the book's thesis, which is that highways (not necessarily local streets and roads) should be recategorized as utilities, and operated on the same general principles as electric, water, and telecom utilities. In particular this means that customers should be billed for the kind and amount of service that they use, and the highway utility should use the revenue stream for the capital and operating costs of its highway assets.

In a slight correction to your third paragraph, it was only state governments that opted to pay for roads via dedicated user taxes on motor fuel, starting with Oregon in 1919 and adopted by the other 47 contiguous states within a decade. Those user taxes were dedicated by law to highway purposes, in some cases by amendments to state constitutions. The federal government adopted a modest gasoline tax during the Great Depression, but solely as a general revenue source. The first federal fuel taxes dedicated to highways came about in 1956, with the legislation that authorized federal support for 90% of the cost of building Interstate highways. Those fuel tax receipts were allocated to the newly created Highway Trust Fund solely for the purpose of building the Interstate highway system. Alas, elected legislators at both state and federal levels by the latter decades of the 20th century relaxed the restrictions on fuel-tax use. Today Congress shifts more than 20% of federal fuel tax money to transit, sidewalks, recreational trails, and other popular things, and most states also divert a portion of their fuel-tax revenues to non-highway (and occasionally non-transportation) purposes.

Hence, another theme in the book is politicization of the US highway system. That's not limited to undercutting the original users-

pay/users-benefit principle. It also extends to decisions on how to spend the money. Legislators are biased toward creating ribbon-cutting opportunities in their home districts, so they tend to allocate more funding to new projects than to a proper level of ongoing maintenance. Much of the US highway system suffers from deferred maintenance as a result. Moreover, unlike the practice of other utilities, most large capital-spending is done out of annual cash flow. Long-term financing of major projects is standard practice in other utilities, but not for America's highways (except for the 10% or so that are toll roads).

I share your concern over tolls being charged in addition to highway fuel taxes, and in the book and my transportation policy work I argue that this is unfair. In my ongoing outreach to the US trucking industry (which is strongly against tolling on the grounds that it constitutes "double taxation"), I argue that where toll revenues fully cover a highway's capital and operating costs, customers of those highways should receive rebates of the fuel taxes they pay for the miles driven on the tolled routes. This forms the core of my (and REASON FOUNDATION's) proposals for how the US should go about replacing fuel taxes with per-mile charges—which is what most of the US transportation policy community agrees is necessary. In fact, we argue that the first step should be having a per-mile electronic toll replace fuel taxes for all limited-access highways, which are the easiest to charge customers for via all-electronic tolling.

Regarding equity, a toll is no more inequitable than the fuel tax, nor is it less equitable than phone bills, water bills, or electric bills (though I acknowledge that some of these utility rate structures offer "lifeline" rates for a modest amount of monthly usage). Ending "double taxation" (as the truckers call it) would improve the equity of highway funding.

For reasons I summarize above, I disagree with the idea that once a road is built, all we need be concerned with is maintenance. Excuse me for noting that this sounds like the Marxist conception of "the means of production" which are assumed to be always there, can be seized and operated by the state, and will never need to be modernized or rebuilt. That idea failed dismally in the former Soviet Union (and Eastern Europe) and is based on a very static view of the world. Transportation is part of a dynamic economy, which requires ongoing investment in technology, selective ex-

pansion where growth is occurring, as well as simply modernization to keep up with emerging trends such as vehicle autonomy, vehicle telecommunication, etc.

I appreciate your pointing out my extended discussion of how the private sector can work with the public sector to finance, build, operate, and maintain highways. Long-term public-private partnerships for highways, as pioneered in France, Italy, Portugal, and Spain, have generally worked well, and in recent decades have been implemented in much of Latin America, Australia, and parts of Asia. Here in the United States, we are still in the early days of getting comfortable with the idea of these long-term highway P3s, but they are generating an impressive track record. And this is not that "foreign" an idea. The large majority of US electricity is provided by investor-owned utilities. Unlike most businesses (which are perpetaul as long as they remain viable businesses), our investor-owned utilities generally operate on long-term "franchises" of up to 99 years. This is very analogous to long-term toll concessions, though this analogy is not yet widely appreciated.

Finally, I share your concerns about organized anti-highway groups, both green and NIMBY. Countering their arguments is part of REASON's ongoing transportation policy agenda. Thanks again for your thoughtful comments about my book."

Best wishes,

Bob

Where does this conversation go from here?

Ideally, you will add your voices to the conversation. What do you think about the utility analogy? What do you believe the chances are for changing the paradigm of building and maintaining roads as Bob has recommended? Is the toll-concession model working in Europe to build roads and keep them maintained? Have we focused too much attention on trying to keep from building capacity by trying to apply intelligent transport solutions, and have these solutions appreciably reduced congestion and improved safety?

Rethinking America's Highways *now has a place on my bookshelf next to Lewis Mumford's and Frederic Osborn's Letters, as well as my other books by Mumford.*

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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