Telematics Industry Insights by Michael L. Sena THE DISPATCHER

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- Cybersecurity impact and outlook for automotive systems
- Al for autonomous and assisted driving
- Policy and regulatory issues to support deployment of automated mobility <u>https://www.itu.int/en/fnc/2020/Pages/default.aspx</u>

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THE DISPATCHER

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Is Chasing Traffic Congestion a Fool's Errand?

THE DISPATCHER'S MANIFESTO

TRANSPORT CANNOT BE VIEWED IN ISOLATION. TRAFFIC CONGESTION IS NOT CAUSED BY CARS. IT IS AN EF-FECT OF POLICY DECISIONS ABOUT WHERE PEOPLE LIVE, WORK, SHOP AND RECREATE. MOST PEOPLE LIVE WHERE THEY CAN AFFORD TO LIVE AND WORK WHERE THEY GET A JOB; EVERYTHING ELSE FOLLOWS. THE NUMBERS AND TYPES OF CARS AND TRUCKS THAT ARE SOLD ARE THE RE-SULTS OF POLITICAL AND BUSINESS DECISIONS THAT ARE MADE LO-CALLY, NATIONALLY AND GLOBALLY. MOST PEOPLE DON'T BUY CARS AND TRUCKS TO JUST DRIVE AROUND. THEY BUY THEM TO TAKE THEM WHERE THEY NEED TO GO AND TO MAKE THEIR LIVES EASIER TO LIVE. CHANGES TO THE TRANSPORT NETWORK THAT AFFECT DRIVING AND OWNING CARS AND TRUCKS MOTIVATED BY ENVIRON-MENTAL CONSIDERATIONS SHOULD ONLY BE MADE AFTER FULL CONSID-ERATION IS GIVEN TO ALL POTEN-TIAL SOCIETAL IMPACTS AND AFTER EVALUATING ALL ALTERNATIVES, IN-CLUDING POSSIBLE FUTURE TECH-NOLOGICAL BREAKTHROUGHS, LIKE HYPERLOOPS, HYDROGEN FUEL CELLS AND CO2 CAPTURE. IF AC-TIONS WE TAKE MAKE LIFE FOR HU-MANS NOT WORTH LIVING, THEN WHAT'S THE POINT?

SEVERE TRAFFIC CONGESTION ON a region's roads and high costs of housing go together, just as do low congestion and low housing costs. They are two sides of the same coin. So it is really worth asking the question of who is truly responsible for relentless road congestion in some places and empty roads in others. Is it feckless commuters in Los Angeles or Moscow who refuse to leave the comfort of their cars who cause congestion, and conscientious drivers in Dayton, Ohio and Cadiz, Spain that enable traffic to flow smoothly? Is it thoughtless business owners who locate in places that are inaccessible by transit in the former case and mindful business owners in the latter? Or is it governments that do or do not do their job of protecting the interests of their citizenry with policies that allow or inhibit land speculation, with zoning laws that restrict or enable inclusive communities, with practices that provide affordable public transit or which leave transport up the individual? Everyone seems to have an opinion on these topics, and policies are being established—oftentimes based on pure speculation—that will affect where we live and work and how we move in the future. Let's explore together the issues and possible answers to these questions with Silicon Valley as the point of reference.

A housing crisis is what they are calling it in Silicon Valley, the part of San Francisco Bay Area including San Mateo and northern Santa Clara counties (see map). New businesses, and continually expanding existing ones, require more highly qualified and, therefore, more highly paid individuals. Employees need places to live, and new housing cannot be built fast



enough. So when the unstoppable force of housing demand meets the immovable object of housing supply, two things happen: 1) prices for existing homes and rents go up; and, 2) those people who do not have the economic resources to compete for housing and the educational resources to compete for jobs are forced to move out. It's called 'gentrification'. It happens in successful cities and metro regions. In unsuccessful cities and metro regions, the reverse occurs.

A transport crisis is what they are calling it in Silicon Valley. San Francisco, which is not "officially" part of Silicon Valley but which has gradually been incorporated into its sphere, was ranked number three on the list of the most congested cities in the U.S. on TOMTOM's 2018 Annual Congestion Index. San Jose was number four. One and two were respectively Los Angeles and New York. Businesses in the Silicon Valley of the Bay Area, which include, among many others, INTEL, APPLE, ADOBE, GOOGLE, FACEBOOK, HP, EBAY, CISCO, LINKEDIN, NETFLIX, SALESFORCE, ORACLE, UBER and TESLA, are planning to add over 100,000 jobs in the coming few years. As more people are hired, more people need to get to work. The fact that two of the top four traffic-congested cities in the U.S. are at the opposite poles of Silicon Valley gives a strong indication of how workers make the journey along the 78 kilometer (47 mile) stretch of US 101 and Interstate 280.

The coin mint is being run by the jobsmeisters

It's the number and type of jobs that determine which coins are minted: gold and silver for the growing regions; copper and tin for the declining. There would be no traffic congestion and high housing costs without businesses attracting workers. Without jobs you don't have people who need to get somewhere, and without people, you don't have governments with all the services people need to support their lives (e.g., water, sewage, police), both when they are working and when they are not, or you don't have other services, like banks, grocery stores, barber shops, beer gardens, etc.. My friend from Bangladesh (see *Musings*) said that if the garment industry were to relocate outside of Dhaka, 80% of the city's 20.5 million inhabitants would leave with it.¹ Those who would be left would be the ones who owned property that they could not fill with tenants and could not sell because there would be no buyers.

What would Silicon Valley be if all of its businesses moved to Kalamazoo, Michigan? My guess is that it would be what Kalamazoo is today. I'll get to that a bit later. Let's look at what it's like in Silicon Valley, a gold coin region. Silicon Valley is one of the best examples of a gold coin, with its country-leading traffic congestion and sky-high housing costs.

Who coined the term 'Silicon Valley'?

Silicon is a chemical element with the symbol Si and atomic number 14. More than 90% of the Earth's crust is composed of silicate minerals, making silicon the second most abundant element in the Earth's crust (about 28% by mass) after oxygen. The relatively small portion of very highly purified elemental silicon used in semiconductor electronics is essential to the metal-oxide-silicon (MOS) transistors and integrated circuit chips used in most computers and cell phones. Silicon Valley combines the material used in products being produced in San Mateo and Santa Clara Counties with the 'valley' in what the region was known as, Santa Clara Valley. There is no agreement about whether it was Don Hoefler, a journalist who is credited with using the term for the first time in print in 1971, or his friend, Ralph Vaerst, who moved to Palo Alto in 1962 to work at the Stanford Linear Accelerator.

1. <u>https://population-</u> stat.com/bangladesh/dhaka Its founding myth is a 'Garage Story'. (It's not the original Garage Story, which seems to belong to Thomas Edison in the other Menlo Park, the one in New Jersey.²) Two engineering graduates of Stanford University, which is located in Palo Alto at the heart of what was to become known as Silicon Valley, moved into a home converted to two apartments at 367 Addison Avenue in Palo Alto. Dave Packard and his wife Lucile lived in the ground floor apartment and bachelor Bill Hewlett lived in a shed on the property. Both of them had been influenced by their Professor of Engineering, Frederick Terman, to stay in California after graduation and found their companies there, rather than relocating to the East where General Electric Research Laboratory and Bell Labs were attracting all the best and brightest. The two young men formed HEWLETT-PACKARD (HP) with their offices in the garage on the property (see sidebar). Their first product was an audio oscillator, the HP200A, and one of their first customers was WALT DIS-NEY STUDIOS, which used the oscillators in its first stereophonic sound movie, Fantasia.

When I moved to Boston in 1973, it was Boston's Route 128, America's Technology Region, that was the center of computer development at the time. Nevertheless, there was already plenty of activity going on in Palo Alto. Leland Stanford, for whom Stanford University is named, had endowed the university in 1885 with money and 8,100 acres of land. After WWII, Professor Terman, who was now Dean Terman, created a 660-acre industrial park on part of the land. HP was one of the first tenants. GE and LOCKHEED followed. INTEL started in 1968 just down the road in Mountain View. XEROX opened its Palo Alto Research Center in 1970. APPLE joined the party in 1976 in Cupertino. Google set up shop in 1998, also in Mountain View. Within twenty-five years of 1973, most of the computer companies and their suppliers in Boston had either folded or were bought and moved. COMPAQ bought DIGITAL EQUIPMENT in 1998, and, after that, it was Silicon Valley that became, and continues to be, the hottest place to be.

Nobody goes there anymore; it's too crowded

Hall of Fame baseball player and part-time philosopher, Yogi Berra, came up with this quip, referring to a popular restaurant in New York City. Think of a very expensive restaurant with three Michelin Stars having limited capacity and with a location in a place where everyone wants to hang out. The popular restaurant has doubled its size since it was discovered in 1960, but it is still always full. Like every restaurant, in order for new guests to come

2. At the time Thomas Alva Edison moved to Menlo Park, NJ in 1876, it was a real estate development located between New Brunswick and Newark. It was named after a housing estate in San Mateo County, CA which became the town of Menlo Park. In Menlo Park, NJ, on the same property as his home, Edison had built a two-sto-

rey laboratory, which he called the *Invention Factory*. It is here that Edison and his 'muckers' invented the phonograph and the electric light.



This is the humble garage in Palo Alto where Messrs. Hewlett and Packard started their business.



Amasa Leland Stanford, industrialist, philanthropist and politician (California Governor and eightterm U.S. Senator), migrated from New York to California during the Gold Rush and struck it rich as a merchant. The 8,180-acre site on which the university is situated was Stanford's horse breeding ranch.

in and enjoy its offerings, the earlier guests have to leave. But every time a person leaves, the prices on the menu go up. Eventually, only the wealthy can afford to eat there. That's Silicon Valley.³

Today, between 3.5 and 4 million people live in Silicon Valley, depending on what geographic areas are included. San Jose, now the tenth largest city in the U.S., is on every SV list, and that city has grown from 95,280 in 1950 to over 1 million in 2018.⁴ Palo Alto grew from 25,475 in 1950 to 67,000 in 2018, with 60% of that growth coming between 1950 and 1960. Sunnyvale was a sleepy 9,829 community in 1950, burgeoning to 60,000 in 1960 and exploding to 153,185 in 2018. People have come to Silicon Valley from all over the world for the jobs and the money those jobs pay.

It turns out that in Silicon Valley, the more money employees get paid, the more it costs for them to live because the newcomers bid up the prices of the houses the old timers are selling. The average annual earnings in Silicon Valley reached \$140,000 in 2018, 75% higher than the state average (\$81,000) and double the nation's average (\$68,000). The number of high-income households (earning \$150,000 or more) in Silicon Valley has risen by 35 percent over the past four years, while the number of lower-income households has declined. The reason why there are fewer and fewer lower-income households is that the median sale price of a home is at a country-leading high of \$1.2 million. The total number of homes on the market remains low, and this is why there is a problem.

Trying to keep the density genie in the bottle

It seems like the entire area from San Francisco to San Jose could be built up to the density of either of those two cities and there would continue to be companies that would want to locate there and employees that would need to be housed. Why don't Palo Alto, *et al* simply change their zoning and get big? Build an elevated, high-speed rail line connecting all the company campuses and Stanford with a northern terminus at the end of San Francisco's BART and a southern terminus in San Jose, and construct high-rise apartments along its entire length. What's the big deal?

The big deal is that the people who live in those now very expensive houses don't want the density to increase. Palo Alto, Cupertino and the other Silicon Valley communities are now and always have been "low-density, family towns", according to Palo Alto council members who are fighting proposals put forward by state 3. "Long queues at restaurants or theatre box-offices are seen as signs of success. Congestion is an inevitable by-product of vibrant, successful cities." Brian Taylor, Director of the Institute of Transportation Studies at UCLA, as quoted in Traffic: America's great headache. THE ECONOMIST, June 4th 2005. pp 44-45.

4. Just before WWI, my maternal grandfather's first cousin, Luigi Rosati, arrived in America with his wife. Instead of staying in Pennsylvania and becoming a coal miner like his cousin and many other family members, he and his wife travelled to the West Coast, settled in San Jose where they bought several acres of land and started to farm, which is what the entire Rosati family had done in their home country of Italy before emigrating. The farm was inside the city limits of San Jose. The family sold it sometime in the 1970s. The farm house is still there.

Senator Scott Wiener, Democrat from San Francisco, to build more affordable housing and to increase the density levels around transit stops.⁵ They argue that increasing density at transit stops simply pushes up the cost of property making rents higher for businesses and housing more costly for residents. They argue further that changing the zoning to allow for higher residential densities will result in higher costs for building the infrastructure to support higher populations: more schools; more sewers; more water mains; more police and firemen. Taxes will need to increase and lower-income residents will be at an even greater disadvantage. Facts are on their side.

Then there is always the argument that jobs may disappear in the same way they have in many other boom towns (Detroit comes to mind, as does Kalamazoo and my old standby, Scranton, PA) and the town will be left with an expensive infrastructure with no one to use it or pay for it. If there is more traffic congestion at least it will be less than it would be if there were more people living in the communities. Best to leave things as they are and let people sort out what they can and cannot afford.

Oh yes, there's also that little problem with earthquakes in the San Francisco Bay Area. Before Stanford University opened, several of the new university buildings were damaged in a quake. Two tectonic plates meet in California in a chasm that is known as the San Andreas Fault. It's the one that caused the 1906 San Francisco earthquake that killed 3,000 people and destroyed the city. According to the U.S. Geological Survey, the 800mile long fault runs right on the edge of San Francisco, Silicon Valley and San Jose. The Survey has warned that a "massive magnitude 8.0 quake" will occur within the next 30 years. The 1906 quake was 7.0 on the Richter scale. California buildings need to meet strict earthquake building codes, but the taller the buildings, the

more expensive they are to build. Elevated roadways and railways are particularly vulnerable. Remember the Nimitz Freeway collapse in the 1989 earthquake which killed 42 when the upper level of the road crashed onto the cars on the lower level? That one was a 6.9 Richter scale quake.

In spite of the costs and the quakes, the jobs keep on calling workers to Silicon Valley like a siren song. Even if all the jobs don't pay APPLE engineer wages, teachers, check-out clerks and auto me-

5. On October 7th California Governor Gavin Newsom signed into law the Tenant Protection Act of 2019, essentially establishing statewide rent control as of January 1st 2020. It would limit annual rent increases to 5% plus the rate of inflation, which would make it approximately 8%. This may stem the outflow of the lowest income tier of residents, but as has been shown in countless other places, rent control eventually simply results in a further reduction in building rental properties and their conversion to condominiums.

Buildable land in Silicon Valley is the light-colored area bordered by the forested hills that separate it from the Ocean to the west, and the San Francisco Bay and the mountains to the east.



chanics can at least find jobs that don't exist back home in Kalamazoo. People do their utmost to stay in the SV job pool, but it's not easy. Here is an interview conducted in 2015 by Alison van Diggelen, a BBC reporter for BBC's *Business Daily* program.

> I'm here at a popular watering hole in Silicon Valley to explore the economic and social impact of the tech boom on the local community. It's a tale of two communities: the haves and the have-nots; the techies and the non-techies. When I speak to people working in tech, they have no complaints. Life is good. Biz is growing, and there's plenty of money flowing. Yet for those not in tech, like teachers, police officers and the service industry, life in Silicon Valley is not so rosy, especially if they can't afford to buy a house.

> Home ownership is the great divider in SV. With house prices growing to an average of \$1M this year, most homeowners are sitting pretty with a healthy nest egg for retirement. Those forced to rent are feeling the pinch. Here's Bruce, a longhaired Grateful Dead fan, who lives in a trailer (recreational vehicle or RV) in San Jose. He works in the sports industry.

> **Bruce**: I live in a trailer, it's pretty cheap. Costs me about \$2200 a month.

van Diggelen: That's a lot for a trailer, is it not?

Bruce: Yeah, but I heard there was a trailer in the Hamptons (Ed: a place in Cupertino that is within walking distance of APPLE's headquarters) that sold for a million dollars... So I thought that was a pretty good deal.

van Diggelen: So tell me: why do you live in a trailer here?

Bruce: Cos it's the only thing I could afford. When I moved out here in '93 I shoulda bought a place... By the time I decided I was gonna stay it'd went through the roof. I couldn't afford it, so I just rented. Anything that we woulda wanted woulda been about \$650... \$700,000. It woulda been \$5000 a month, so we bought a nice little frickin' trailer in an over 55 (years) area. Works great for me.

One Silicon Valley resident told me that only about 25% of San Jose's firefighters and police live in San Jose. The police parking lot is full of trailers that serve as their homes with some of them coming from as far away as Phoenix, Boise, Idaho and Hawaii.

While residents of the Valley's towns understand the reason why people are living in RVs parked on their streets, they are not very



RVs along El Camino Real in Palo Alto. These are not owned by tourists and temporary visitors. They are owned by people who need a place to live in Palo Alto. Photograph: Alastair Gee, THE GUARDIAN. The story is about, people trying to make ends meet in the 'highest income region of the universe' facing a ban on vehicles from parking in the same spot for longer than 72 hours.

pleased with the fact that they are doing so. People living in the RVs don't think it's so great either.

Although low affordability is the main reason why people are leaving the Bay Area, increased congestion on the roads and excessive travel times to and from work are other factors that influence the quality of life and the competitiveness of the market in attracting talent, this according to the *Silicon Valley Institute for Regional Studies.* In order to find a place to live that is affordable for anyone not making a high six-figure or seven-figure income, people working in the Valley need to make what are called 'extreme commutes', which are 90 minutes or more each way. Commuting time increased by 20% between 2010 and 2016 and has gotten even worse since then.

Ken Pyle, a Silicon Valley resident and Managing Editor of VIODI (as well as a faithful reader of THE DISPATCHER), says that "commutes are brutal as it can take one-and-a-half to two hours to drive the 50-60 miles from the Central Valley to one of the towns in Silicon Valley. This is because of the mountains (reaching up to 4,000 feet) between Silicon Valley and the Big Valley." They act as a divide because there are only roadways through it and one of them is constricted to a two-lane road for several miles. There is a commuter train running the 120 kilometers from Stockton to San Jose (\$20.25 for a roundtrip) with stops along the way, but other than this, there simply are no practical direct public transport connections from Fresno, Modesto and Sacramento to the Valley, places where housing is more affordable. According to a report in the Silicon Valley Business Journal, 86.8% of the residents of Santa Clara County — which encompasses Silicon Valley — commute by car, compared with 83.1% of Los Angeles County residents. Of those who commute by car, only 11.9% of Santa Clarans drive with a carpool.

If nobody's fishing, there probably aren't any fish

There is no traffic congestion and rents are low in places where jobs have already disappeared or are in the process of fading, a copper or tin coin city. Kalamazoo, Michigan is one example. I chose it because it doesn't make anyone's list of congested cities/regions, but it is #3, after #2 McAllen, Texas and #1 Harlington, Texas, as the cheapest places to live in the United States. The median cost of a home is \$125,425 (it's \$99,900 in Scranton). More than 30% of Kalamazoo's population of 75,807 (down from its height of 86,000 in 1970) live below the poverty level, which is 2.5 times the average U.S. poverty rate, and 60% of the residents are



This is APPLE's new headquarters in Cupertino. As you can see, it is surrounded by single-family homes packed into quarter-acre lots. This new headquarters is 2.8 million square feet and four stories high. It will house 12,000 workers. <u>I have estimated that if APPLE had added six floors to the building</u>, it could have housed all its workers in apartments as large as 1,500 square feet (app. 150 square meters), about the size of a normal bungalow in Cupertino.

Tim Cook, APPLE'S CEO, lives in a modest \$2 million condo close to Palo Alto's central business district. He makes the 24 kilometer trip by car (it was a BMW Series in 2016, the last year for which I could find information) to the office around 6:30 a.m. and claims to be the last to leave in the evening.



If you enjoy driving in a city without traffic congestion, Kalamazoo is a great place to visit. The new building in the photo is the Radisson Plaza Hotel & Suites Hotel.

classified as working poor. To make matters even worse, schools are well below the average U.S. standard and crime rates are well above.

Kalamazoo was once known for its production of windmills, mandolins, horse-drawn carriages, automobiles, cigars, stoves, paper, and paper products. It was once known as the "Paper City" because of the paper mills in and near the city. The ALLIED PAPER COR-PORATION operated several mills and employed 1,300 people in Kalamazoo during the late 1960s. As the forests of West Michigan were logged out, paper mills closed. In the early 20th century, the automobile company BARLEY was there, and it was headquarters of the CHECKER MOTORS COMPANY, the former manufacturer of the *Checker Cab*, which also stamped sheet metal parts for other auto manufacturers. CHECKER closed on June 25, 2009, a victim of the late-2000s recession.

The reason why Kalamazoo and many other cities are in trouble is that all the jobs that attracted people to them in the past have evaporated and new businesses have not found a compelling reason to take the place of those that have left. All the trees are cut down, all the coal is mined out, and nobody buys horse-drawn wagons anymore. The copper and tin coin communities have homes that people in places like Silicon Valley would pay a fortune to buy, but no one wants them in Kalamazoo (see sidebar). They have roads that are just waiting to become congested, but the congestion never arrives. They have people who want to work, but there simply are no jobs. They don't have congestion charging. I can imagine what might happen to a politician who suggests it.

Trying to make life better for everyone

Although there are no shortages of congestion charging proposals in the gold and silver coin communities in Europe, they have been rare in the U.S. Thus far, politicians in Silicon Valley have resisted the temptation to punish those trying to make ends meet as best they can. Imagine having made a two-hour drive from the other side of the mountains to get to a job in the kitchens at Stanford University or working as a house cleaner for those who won the lottery and can afford to live in Palo Alto, and being slapped with a toll to get into the community.

Up until recently, businesses in Silicon Valley appeared to have the attitude that paying high salaries to the workers they wanted to attract and retain so that these workers could buy transport



Home for Sale in Kalamazoo \$126,000

and accommodations, and paying local taxes for the community services they use, should absolve them of any further responsibility to the communities where they are located. This attitude seems to be changing. Some of the Bay Area companies finally appear to be taking their share of the responsibility for high home prices and high congestion rates.

It started with businesses building offices to look and feel like home since the workers spend most of their time there----or don't have a home to go to when they are not working. Five years ago, FACEBOOK offered its single employees a \$10,000 one-time bonus for moving into an apartment or buying a home within a ten-mile radius of its Menlo Park headquarters. The bonus was \$15,000 for employees with families. I could find no evidence of the number of employees who took this offer. It was in actual fact not all that generous since the closer you got to the company's headquarters, the higher were the rents and house costs. It might have covered two-to-three months' rent or one-half of one percent of a down payment. But, still, it was something.

APPLE has taken the issue more seriously. Tim Cook announced in a press release on the 4th of November that Apple will contribute \$2.5 billion in a financial package to help address the housing availability and affordability crisis in California. Alphabet has committed \$1 billion to redevelop company-owned land for affordable housing, and it has committed to creating a fund to provide incentives to developers for building affordable housing in the region. FACEBOOK has been part of an effort to raise \$500 million to support an investment fund initiated by Mark Zuckerberg, called Partnership for the Bay's Future, which is focused on addressing

Should we not worry and just be happy?

If we can solve the emissions problems related to road transport vehicles, a significant challenge but one on which we are making excellent progress, should we simply leave traffic congestion to its own devices? We have seen that those who are principally responsible for traffic congestion are: 1) the businesses that locate in a community and hire the workers without confirming that those employees will be able to find an affordable place to live and be able to travel to work in an environmentally acceptable way; and, 2) the communities that allow the businesses to locate there but have not provided the appropriate number and types of places for those workers to live and the means for them to arrive at their jobs. However, neither businesses nor communities are

\$2.5 Billion Apple Commitment

\$1 billion affordable housing investment fund

\$1 billion first-time homebuyer

\$300 million

Apple-owned and available land for affordable housing

\$150 million Bay Area housing fund

\$50 million to support vulnerable populations

truly culpable either. A community must do its best to attract businesses that pay for the services it must provide. When a business begins, it can make no guarantee that it will succeed. At the start, it's a crapshoot. Whether it grows and prospers or wilts and dies is based on so many factors that no one can foresee.

<u>Charging people who drive is simply punishing the persons who</u> have the least to do with the reason traffic congestion exists.

Solutions to traffic congestion that target citizens, such as road tolls, higher costs for parking and higher taxes, are both counterproductive and unfair. Citizens are not responsible for the conditions that cause traffic congestion and charging them higher fees for travel simply increases the costs for the work they perform making it even more expensive for those who have lower salaries.

If a community has to sacrifice jobs for less traffic congestion, or sacrifice jobs for lower housing costs, the wise community will take the jobs and hope it can solve the other problems with the money received for being a gold or silver coin place to live. <u>A wiser community will plan</u> for having a business winner locating within its boundaries, and try to provide the amenities and infrastructure to attract a balanced population. By planning I do not mean zoning. I mean establishing the match between how a community's infrastructure (water, sewers, electricity, schools, housing, police, roads, etc.) will evolve at a pace that is commensurate with the demand for the infrastructure.

We (politicians, transport professionals, leaders of interest groups, journalists and climate activists) must stop looking for scapegoats to blame for the ills that plague the habitats humans have created on Planet Earth, particulary our cities and their surrounding regions. The problems will not be solved by attacking each one in isolation. That's playing the whack-a-mole game, and there is no way to win. I included the quote (see the sidebar) by the distinguished economist and author, Anthony Downs, in my own book, Beating Traffic: Time to Get Unstuck. I said at the time I wrote the book (2007) that I did not agree with Mr. Downs and gave the reasons why. Today, twelve years later, I still do not agree with Mr. Downs. The main theme of my book, and the idea that continues to guide my thinking, is that traffic congestion can be beaten, but not at the individual's cost. To effectively eliminate it, we must get to its roots. Thus far, we have not done so; we have simply moved the problem over to our neighbors' streets.

Ten years after publishing his book Stuck in Traffic, as he prepared a second edition of his book, called Still Stuck in Traffic, Anthony Downs testified before the U.S. Senate's Committee on the Environment and Public Works. Downs is an American economist specializing in public policy and public administration. He has been a senior fellow at the BROOKINGS INSTITUTION in Washington, D.C. since 1977. He said in his testimony he had come to the conclusion that traffic congestion was an unbeatable force, and that there was no better alternative than to accept it. Here is a clip from his testimony in 2002:

"Most people regard peak-hour traffic congestion as an unmitigated evil," he said to the Committee, "but that viewpoint is incorrect. (My underline for emphasis) Congestion is a vital de facto device we use to ration the scarce space on our roads during periods when too many people want to use that space at once. In effect, congestion is a balancing mechanism that enables us to pursue many other goals besides rapid movementgoals American society values highly. Those goals include having a wide variety of choices about where to live and where to work, working during similar hours so we can interact with each other efficiently, living in low-density settlement patterns, and enjoying highly flexible means of movement—that is, private vehicles. We must use delays from overcrowding in order to pursue the other goals we want to achieve. So congestion makes possible large-scale social benefits as well as the costs of delay on which most people focus when they think about it."

Anthony Downs: Testimony before the Committee on the Environment and Public Works, U.S. Senate (March 19, 2002).

(Editor: Sincere thanks to Ken Pyle, Managing Editor of VIODI, for his editorial assistance on this article.)

Rickshaws in Our Midst: Importing Intractability

Definition of intractable (adjective)

1 not easily governed, managed, or directed <intractable problems> 2 not easily manipulated or shaped <intractable metal> 3 not easily relieved or cured <intractable pain>

MERRIAM-WEBSTER

INTRACTABLE IS A perfect word to describe the traffic and transport situation in many of the developing world's capital cities. In these places, those who are providing the transport solutions and those who are using them are not easily governed, managed or directed. Over the course of time, both the providers and users have developed solutions which work for individual groups or under certain conditions, but coordination and overall management is often lacking. Officials in cities like Dhaka, Bangladesh, Mumbai, India and Bangkok, Thailand struggle to find ways to ease their chronic transport congestion.



At the same time, cities in the developed world are importing the transport solutions developing world cities are trying to cast off because they are judged to be both safety risks and inhibitors to the free flow of motorized transport. London with cycle rickshaws (called 'pedicabs') and Stockholm with motorized rickshaws, are just two examples. The photo to the left shows pedicabs illegally parked in a

marked loading zone in front of a MARKS & SPENCER department store in central London. Drivers are lounging in their cabs with stereos blasting away, or are out on the pavement hustling rides from shoppers and pedestrians. A lone pedicab with two riders lumbers along the street, slowing down buses, cars and trucks.



The word breaks down as follows: 人 (jin) = "man, human" 力 (riki) = "strength, power" 車 (sha) = "wheeled vehicle" **Rickshaw**, also spelled *ricksha*, and also called *jinrikisha* or *jinrickshaw*, from Japanese: 'human-powered vehicle', is, according Merriam-Webster, a two-wheeled vehicle with a doorless, chairlike body and a collapsible hood, which holds one or two passengers and is drawn by a man walking or running between two shafts. The name of its inventor is uncertain, although apparently there are claimants in Britain, the U.S. and Japan. What is known is that it was first used in Japan in the late 19th century.

By the turn of the century, the rickshaw had reached China

and India. It became the favorite form of transport for the wellto-do, who at that time, were the colonial government officials and administrative personnel. To ride in a rickshaw was a sign of power. While the puller sweat profusely in the sweltering heat, the riders sat in the shade and away from the teaming masses for short rides from the office to home to the club.

Replacing the rickshaw puller with the front part of a bicycle, thereby creating a tricycle, occurred in Singapore in the late 1920s and quickly spread to all of South- and East Asian countries. In Indonesia, Malaysia and Vietnam, the driver cycles behind the passenger, while in most other Asian countries, including Bangladesh, India and China, the driver is in front. Another variation is found in Myanmar and the Philippines with the passenger sitting beside the driver in a sidecar.

Dhaka tries to ban rickshaws

Although cycle rickshaws weren't invented in Bangladesh, after they were introduced there in 1938, they became the most popular mode of transport in the entire country. Its capital city, Dhaka, is known as the 'Rickshaw Capital of the World'. City authorities estimate that there are between 600,000 and one million of them on the streets serving the city's 18 million residents. They are the most-used form of transport in the capital, accounting for 40% of the 3.5 million daily trips. Why are they so popular? First of all, for most of the 18 million people, the alternative is to walk. They cannot afford a car or a motorcycle, and cycling is not an option from a safety, convenience or practicality (the average temperature is around 30⁰ Celsius) point of view. Second, the public transit system is deplorable, principally because there are not a sufficient number of traversable roads, so the number of buses is totally inadequate.⁶ A metro system is being built, but it will be too limited in its reach and too expensive to make a difference.

Dhaka is one of the world's most densely populated cities.⁷ In part because of the explosive growth of Dhaka's population, in part because of the growth in the number of cars its more prosperous inhabitants are buying, and, in large part, because these cars are sharing the limited number of roads with hundreds of thousands of rickshaws, Dhaka is one of the world's most congested cities. Still very low for the average Bangladeshi, per capital income has tripled during the last decade. Most of the increase is going to the middle class who are using low-interest loans to buy cars. Car sales have increased 15-20% during the past decade. The average



Here is a scene on a typical day in Dhaka with a street teaming with colorfully decorated cycle rickshaws. Look closely and you will see than about one-half of them are empty. The drivers are cruising, waiting for a fare, just like in New York City with Yellow Cabs.

6. Dhaka road space is 3% of the city. According to the UN-Habitat's Global Urban Observatories Unit, who last year released the report Streets as Public Spaces and Drivers of Urban Prosperity, asphalt and paved streets should be counted as public space, just like parks and landscaped plazas. Together, they should make up 45-50% of a city's land area, with 30 to 35 percent of the area occupied by streets and 15 to 20 percent open space. "If less than 30 percent of the land of the city is dedicated to the street pattern, it's a huge error," claims Dr. Joan Clos says.

7. "In 1974, just 9% of Bangladeshis lived in towns or cities. Today, 37% of the country's 170 million people do. In a few decades, more than half will. Dhaka, which attracts the majority of rural migrants, has grown from a population of 3 million in 1980 to 18 million today."

Urbanisation in Bangladesh. THE ECONOMIST. September 14th 2019 traffic speed has fallen from 21 km/hr in 2008 to 7 km/hr in 2018 (5 km/hr is walking speed), according to a World Bank report.⁸

Dhaka's city government see only problems with the continued use of rickshaws and want to force them off the city's streets. In July 2019, the northern half of the city banned their use on three of the city's main roads, and the goal has been set by the government of Dhaka North City Corporation to have a rickshaw-free city within two years.⁹ Most of them are already illegal. No new licenses have been issued for rickshaws since 1986, and only 80,000 are legally licensed. So more than 90% of them should not even be on the roads.

But they are there, and driving them puts food on the table for the drivers' families and does the same for those who own the vehicles and rent them to the drivers. The poor use them for cheap travel, to get to their jobs to earn their meager salaries. It is a circular economy for those who cannot afford more. When they can, the rickshaws will fade as they have in other Asian countries, like Beijing, Singapore and Tokyo, where they are more of a tourist attraction than a serious means of everyday travel.

Other countries and cities have banned rickshaws. These include Bangkok since the mid-1960s because they do not fit the modern image of the city, Jakarta and all of Pakistan. Electric-assisted pedicabs are banned in New York city and Toronto.

Four wheels bad; two (or three) wheels good

So why would western cities, like London, import rickshaws when they have a perfectly good public transport system consisting of buses, an underground and trains, a decent bicycle network and eminently walkable sidewalks? What I find particularly odd is the apparent inability of regulators in western countries to apply the very strict rules that determine whether a motorized vehicle is roadworthy and who and on what terms a person may use public roads to sell transport services. Rickshaws, bikes-for-rent and escooters for rent suddenly showed up and no one seemed to be able to say "Hold on for a moment; we have laws that must be followed!"

There are two issues that should have been, but were not, addressed before the first cycle rickshaw appeared on the streets of London in 1998. The first is whether they were in the overall public interest from a transport and safety point of view. In what ways would they offer a supplemental, complementary and/or substitute benefit to current forms of transport, and what would 8. <u>https://bdnews24.com/bangladesh/2019/11/13/traffic-conges-</u> <u>tion-holds-back-bangladesh-ex-</u> <u>ports-says-world-bank</u>

9. In 2011, the Bangladesh Parliament dissolved the Dhaka City Corporation that had run the city under various designations since 1978. The city corporation was split into two corporations, North and South. Each corporation is a self-governing entity, and each has its own elected mayor. Clearly, this situation cannot make governing easier.



"...out from the door of the farmhouse came a long file of pigs, all walking on their hind legs...out came Napoleon himself, majestically upright, casting haughty glances from side to side, and with his dogs gambolling round him. ... But just at that moment, as though at a signal, all the sheep burst out into a tremendous bleating of-"Four legs good, two legs better! Four legs good, two legs better!"

— George Orwell, Animal Farm

be there negative effects? If it was judged that the benefits outweighed the drawbacks, then they could be introduced, but not before the second issue was resolved. The second issue is how, not whether, their operation and use should be regulated for the benefit of both the operators and the users.

"The unlicensed and unregulated operation of pedicabs arises from a loophole of 19th Century legislation in London, which was drawn up at a time when no one could have anticipated people wishing to use pedal-powered vehicles in this manner. By effectively not existing in law in London, pedicabs are able to operate with impunity which also leads to conflict and an inconsistent position with licensed private hire vehicle operators such as taxis who have to meet much more exacting standards of transparency, safety and movement."¹⁰

Pedicabs are currently defined as a <u>Stage Carriages</u> under S4 in Greater London under the Metropolitan Public Carriage Act 1869 and therefore do not fall under Transport for London (TfL) licensing powers. This definition was upheld in 2003 in the U.K. High Court case (*R*(oao Oddy) vs BugBugs Ltd. As such, pedicabs can 'ply-forhire' in any street or place in Greater London, and are not subject to any regulation. Furthermore, the right to appeal this verdict was not granted. The opposite view has prevailed outside of the capital, where they are regarded as a "hackney carriage" and thus potentially subject to local licensing.

There have been a number of failed attempts to control pedicabs in London. In 2006, TfL applied to the Administrative Court to seek a Declaration to overturn the above decision, re-define pedicabs as Hackney Carriages, and then if successful, to license pedicabs as Hackney Carriages. In tandem with this the Public Carriage Office (PCO) launched a Public Consultation on the Licensing of Pedicabs and the subsequent responses were broadly positive in favor of licensing. For some unexplained reason, this entire effort was abandoned. In 2009, the Westminster City Council and TfL, in collaboration with the London Pedicab Operators' Association (LPOA), attempted to define a registration scheme. It was called Registration Scheme for Pedicab Operators and Pedicabs Approved by the Mayor. The Metropolitan Police were also behind the proposal. It would provide for the essential pedicab stands (ranks) at appropriate points on the roads for those registered under the scheme. This initiative was also abandoned for unknown reasons. In 2014, The Law Commission made recommendations that pedicabs could be

10. *Strategy Paper - Pedicabs*. Heart of London Business Alliance. Nov. 2018 brought under existing Taxi legislation. This recommendation was not followed.

So, in spite of many attempts to control pedicabs since 1998 even though it's been the stated aim of the DfT, all the London authorities, the Met Police and the London Pedicab Operators' Association (LPOA) to support the necessary Regulation of pedicabs, either through litigation or legislation—nothing at all has been achieved. The problem everywhere is that existing laws are being interpreted by the courts in a way that does not equate selfpropelled or even battery-enhanced vehicles with motorized vehicles. Since there are no laws that regulated bicycles and scooters, even those used for commercial purposes and which shared the roads with cars and trucks, there is no precedent on which to base new regulations. Clearly, governments must pass new laws, but city, state and national governments apparently have much bigger fish to fry.

There's more than what meets the eye going on here

Rickshaws and electric scooters don't just appear out of thin air. There would be no electric scooters cluttering up the streets of Stockholm if someone in Stockholm (Voi) or somewhere else (LIME) hadn't come up with the idea of going into the business of renting them out, placing them on the streets, recharging and repairing them. There would be no rental business if there was not someone manufacturing them and selling them at an affordable price. With rickshaws, there needs to be a vehicle manufacturer, a buyer of the rickshaws who will either run a rickshaw taxi business or rent them to drivers who run their own businesses. And there need to be passengers.

Why anyone would want to sit in an open vehicle and ride through the streets of London at a slightly-more-than-walking pace is beyond my comprehension. I guess "Beats walking" is the best answer to the question. Principal clients are primarily tourists and late night pub hoppers. But the fact that there seems to be an unlimited number of men (the drivers are mostly men) who see it as a way to make a living says something about both the education system and job market in the places where this form of transport exists. Look carefully and we see a more nuanced picture. As is the case with *Uber Eats* drivers in Stockholm, the drivers of rickshaws in London are likely to be students trying to top up their stipends or immigrants who don't have many other options. While it may provide a living wage in Dhaka, it does not in London. There are much better transport options as well.



Look closely and you will see a bus, a taxi and another pedicab ahead of the empty pedicab cruising along the London street looking for a fare.

Dispatch Central



Paying a speeding fine with your time

WHEN YOU ARE a little country tucked into an area of the world that is not often the center of attention, it's not easy to be noticed and noted for your accomplishments. Estonia, Latvia and Lithuania are referred to as the Baltic States (although, they prefer to be called 'countries' rather than 'states' after they finally were able to extract themselves from what was the Soviet Union) and they are frequently confused with the Balkan countries (Serbia, Kroatia, etc.), which are further south and very unlike the Baltics.

Estonia, with a population of 1.3 million, has been a standout in the *Program for International Student Assessment* (PISA) tests, ranking in the top five in math, science and reading. The government is focusing on all types of innovation. It was the first nation to declare Internet access as a basic human right, first to accept digital signatures for most transactions, first to institute online voting, and now, it is the first nation to substitute monetary fines for speeding with a time out-in-the corner penalty. For now it is only a test, but if you are stopped for speeding along the connector road between the capital of Tallinn and the town of Rapla, you will be given a choice by the police: pay a fine or sit in your car by the side of the road for forty-five minutes or more, depending on how far over the speed limit you were travelling.

Estonian authorities had surveyed people caught speeding and asked them what would make them less prone to speed in the future. There was a consensus that people were most irritated with having to spend time dealing with the police and the process of paying the fine, but not that concerned with the amount of money they paid. It was their time they valued. So, let's try to give the patient the right medicine, they reasoned. The effort has been praised for its egalitarianism: fines are not indexed to income, but everyone values their time. There is another lesson the Estonian authorities are taking away from the experiment. People often see 'speed traps' as a way for communities to fill their coffers. A punishment for an offense that is directly related to the unlawful act and does not appear to be ruse for earning money is seen as much fairer.

Uber has an inadequate safety culture

After a year of deliberation, the U.S. *National Transportation Safety Board* (NTSB) found that "an inadequate safety culture at UBER's self-driving vehicle division had contributed to the death of a pedestrian in March 2018." It concluded that the proximate cause of the collision between the UBER-equipped vehicle and the pedestrian was the UBER vehicle's 'safety driver', who was "distracted by her smartphone, glancing away from the road 23 times in the three minutes before the crash".

NTSB is independent of the U.S. Department of Transportation (DOT). It has no authority to regulate, fund or be directly involved in the operation of any mode of transportation. It conducts investigations and makes recommendations "from an objective viewpoint".¹¹ It is DOT that has the "operational and regulatory responsibilities that affect the safety, adequacy and efficiency of the transportation system".

And what has been the result of the NTSB's findings? Have all tests of vehicles where there are no hands on the wheels been halted while DOT determines if the organizations (private, public, academic) doing the testing do have a culture of safety? No. Have there been regulations established that apply to every state where tests are being conducted requiring adherence to a safety regimen, back-up systems and safety drivers to ensure that a similar incident will not occur? No. Has anything changed? Yes. Investors have gotten nervous and some OEMs have said that we need to have more realistic expectations for when cars will be able to drive themselves. NTSB called upon federal regulators, including DOT, to create a review process before allowing automated test vehicles to operate on public roads. I, for one, hope that DOT takes this recommendation and acts on it, starting with TESLA.¹²

GM sues FCA: More than a family feud

GENERAL MOTORS filed a federal racketeering lawsuit in November against FIAT CHRYSLER AUTOMOBILES. GM accused FCA of "corrupting" its negotiations with unions. Three former FCA executives were named in the suit, and they have pleaded guilty. The deceased former FCA CEO, Sergio Marchionne, was also named in the suit. GM claimed that Marchionne "orchestrated a multi-million dollar conspiracy," in part, as a means to force GM to merge with FCA. GM said in its statement that FCA's manipulation of the collective bargaining process during 2011 and 2015 contract negotiations "resulted in unfair labor costs and operational advantages (to 11. https://www.ntsb.gov/Pages/default.aspx



12. TESLA'S Autopilot strikes again. This time it was a Model 3 in Connecticut. The brand seems to have a predilection for attacking blue light vehicles. A police car, with blue lights flashing, was parked on the shoulder of Interstate 95 behind a car that had experienced a breakdown. The policeman was outside of his car assisting the driver of the other vehicle when the Tesla slammed into the rear of his car. The driver of the Tesla excused himself by saying he put his car into auto pilot mode so he could "check his dog in the back seat". No one was injured. I guess the dog was wearing a seat belt. The car suffered major damage. The driver was charged with reckless driving and reckless endangerment.

FCA)". It says that FCA paid more than \$1.5 million in bribes to UAW officials.

FCA vigorously denies the GM claims. In its own statement, it says GM is bringing the suit to divert attention from its own challenges. "This astonishing ploy comes at a time when FCA is proving itself to be an ever more formidable competitor that continues to create significant value for all its stakeholders through the successful implementation of its long-term strategy," wrote FCA.

As if these companies don't have enough problems dealing with supply chain issues caused by tariff threats, competition from startup companies at home and abroad and difficulties bringing alternative fuel vehicles to market, they are spending valuable time and money flinging cow pies at each other.

Daimler reality check on driverless cars

YOU HAVE TO wonder what the Daimler board promised Ola Källenius in September 2018 to convince him to take the job of CEO. He knew as well as anyone on the management team at the time what he would have to do if he took over. The outgoing CEO, Dieter Zetsch, who turned over the reins to Källenius on May 22nd 2019, couldn't break the news. It would spoil his retirement party and put a cloud over his head for his return two years hence as the new Chairman of the Supervisory Board. Was there any significance in appointing the company's first non-German to the post in Daimler's 132-yearold history? He is a Swede, schooled in finance, accounting and management. He joined Daimler in 1993 as a trainee at the age of twenty-four. He was the head of Group Research and Mercedes-Benz Cars Development before assuming his position of CEO of the entire concern.

> "In Ola Källenius, we are appointing a recognized, internationally experienced and successful Daimler executive," said Daimler Chairman Manfred Bischoff in a statement when Källenius was appointed, adding "With Dieter Zetsche's intended appointment as Chairman of the Supervisory Board, we are ensuring continuity for the sustained success of Daimler AG."

Källenius laid it out at an investor's conference on the 14th of November, 2019. All "peripheral investments" will be reduced or eliminated. This includes investments in self-driving/driverless vehicles. Daimler needs to save at least one billion Euro in the coming year, he explained. There will be layoffs and all capital expenses will be



Don't expect to see this car anytime soon. "Self-driving cars are more challenging than once thought," admitted Ola Källenius, CEO of Daimler in an investor conference on the 14th of November.

frozen. He said that Daimler is taking a "reality check" on self-driving cars and that "making autonomous vehicles safe, especially in crowded urban areas, has proven harder than originally thought, and Daimler is now questioning their future earnings potential". It's the financial business case for what he called "autonomous ridesharing services" that is questionable from Daimler's perspective. Setting up a ridesharing business, even if it is with partners sharing the costs, is a significant outlay of capital.¹³

Daimler's (and, except for Tesla, every car maker's) nightmare scenario is that customers stop buying their current models while they wait for battery electric and plug-in hybrid electric vehicles at reasonable prices, as well as a fully built-out network of charging stations. That is not going to happen within the next two-tothree years. Källenius's message is that spending valuable time and expensive resources on eliminating the driver is, at this particular point in time, really throwing good money out the window. 13. Daimler and BMW are partners in self-driving car development and Daimler is cooperating with Bosch in a pilot program in San Jose, California. It is not clear how Daimler's need to save money will affect these cooperative efforts.

This is Tesla country, home on the range

WHERE NEVER IS HEARD A DISCOURAGING WORD, AND THE SKIES ARE NOT CLOUDY ALL DAY. This photo of a duel staged by TESLA, pitting its prototype 'pick-up' truck, called *Cybertruck*, against a two-wheel

drive Ford F-150, exemplifies the existential crisis in the automobile industry—excluding Tesla. The Palo Alto-based electric car maker appears to be alone in its commitment to designing, building, selling and delivering cars—and now light trucks—in spite of the fact that it is not very good at any of these jobs, except perhaps selling. Most other automakers are determined to reinvent themselves as mobility pro-



viders while at the same time following TESLA into the battery electric vehicle business. TESLA continues to control the narrative in order to sell more of its vehicles.

The new TESLA vehicle is one of the sorriest excuses on four wheels I have ever seen. It looks like a cross between a DELOREAN (Think 'Back to the Future') and a HUMMER. But I'm sure it will be a hit among *Teslites*. According to TESLA, 250,000 fans have coughed up \$1,000 each to reserve their place in line to receive one. Amazing! Why Musk felt that the windows of an everyday pick-up had to be bullet-proof is a mystery, but after one of his muscular staff threw In the duel, the TESLA vehicle takes off first to remove the slack in the rope connecting the two vehicles, and proceeds to pull it up hill while the F-150's rear tires spin without gaining traction. FORD cries foul, but it's too late. The story is told. a steel ball bearing at the vehicle's window during the unveiling narrated by Musk, the window shattered. So Musk told him to do it again. Two-for-two. Afterward, Musk gave some lame excuse for the windows fracturing, saying the sledge hammer blows to



the doors, which were intended to prove that the vehicle was undentable, had stressed the glass. Musk's inability to admit a mistake by fabricating an excuse for a failure, whether it's a window shattering or one of its cars confusing a trailer for an overpass, continues to be troubling.

If this were the 19th century, Elon Musk would be the king of snake oil salesmen. I know I praised him and his company in the December issue of *THE DISPATCHER* because Tesla located its new European assembly plant and battery factory in an area of Germany that is in need of jobs, but the F-150 stunt shows a complete lack of fair play. It's simply dishonest. Still, for his supporters, he can do no wrong. He is the ringmaster in the automotive circus he has been instrumental in creating, and he continues to control the narrative. As long as he does, others will dance to his tune.

Nikola got the charging station memo

NIKOLA CORPORATION, which also operates under the name NIKOLA MOTOR COMPANY, is based in Phoenix, Arizona. Its four-year-old business is designing and building truck tractors for highway use and the assembly of hydrogen electric power systems for these vehicles. The company is planning to build a network of 700 hy-

fuel cell market going if the focus is on big trucks. They can more easily hold the compressed hydrogen gas tanks, and the refueling

drogen fuel stations in the United States for its own fuel cell electric vehicles and those of the other automobile and truck producers developing hydrogen fuel cell vehicles, such as Toyota, Daimler and Hyundai.

NIKOLA's founder and CEO, Trevor Milton, believes that it will be much easier to get the hydrogen





Nikola's fueling station network will use electricity produced by wind, solar and other renewable sources and produce hydrogen extracted from water. time and driving range would be comparable to the current diesel rigs. Besides range and lower fueling time, hydrogen fuel cell technology in the big trucks will be 5,000 pounds lighter than the

battery electric vehicle solution offered by Tesla.

NIKOLA already has launched its own trucks, like the Nikola One pictured here, and is presently in the fleet testing stage, with



commercial start of production set to begin in late 2022 at a plant it is building in Arizona. However, NIKOLA has understood that it is not the trucks that will determine if it succeeds or fails. Others can build hydrogen electric vehicles. It is the fueling network that has been missing in action. TOYOTA says it has been working on hydrogen electric vehicles for two decades, but as I pointed out in the November issue of *THE DISPATCHER* in "The Will to Charge", if you do not provide a way for customers to fuel their cars, you won't be able to sell any of the cars you might eventually produce. Besides the truck and the fueling network, Milton is firing other burners in its attempt to grab the narrative on trucks. NIKOLA has filed suit against TESLA for copying its *Nikola One* design in its *Semi* revealed in November 2017, a year after *Nikola One*. TESLA tried unsuccessfully to get the suit dismissed. Stay tuned.

Sometimes you need the almost human touch

POLICE PRESENCE should nudge all the performers in the traffic arena to stay alert and be at the top of their game. That was the thinking in Bangalore, India's second most traffic-congested city after Mumbai, when it decided to post mannequins dressed up in police uniforms at selected intersections. They look close enough to the real thing to approaching drivers of cars, scooters, rickshaws and cycles for them to think twice about jumping a light or driving through it without stopping. A dummy doesn't cost anywhere near what a flesh and blood policeman costs.

Obviously, drivers would figure out that they were being hoodwinked after they drove through the same intersection a few times, so the police move the dummies around every day. A police spokesperson explained that moving them around and sometimes putting in a real human keeps everyone on their toes. Imagine how much money could be saved if the mannequins moved themselves around and decided where they would do the most good. Maybe that's the next step in the trial. We will continue to follow this development closely. "If you want to electrify heavy-duty trucks, a Class-8 truck needs seven tons or 700-kilowatt hours of battery in there, that makes four to five packs to store in the truck. By comparison, you get the same range from a few hundred kilograms of hydrogen," said Bernd Heid, a senior partner at McKinsey & Company, who researches trucking industry trends and technology.



The almost real policeman on his watch in Bangalore.

A Dispatcher's Musings: Where Robots Will Roam



Photo credit: Ken Pyle

ON THE INSIDE, Barbers is a throwback to the barbershops of old. Its barber's pole looks like it graced the outside of an earlier shop. Manny is the name of the proprietor, who, as an octogenarian, has clipped quite a few heads in his time. His current establishment is in a San Jose strip mall that was brand new when he moved in in 1970. He charges \$15.00 for a full cut, less than one-third of the going rate in most other hair salons in San Jose and Silicon Valley. Manny bought a house in East San Jose in the early 1960s for the equivalent of what he was paying in rent for an apartment. There was an economic downturn in the city at the time. The mortgage was paid off long ago, so he could retire whenever he feels like it's time to hang up the



Manny in Action Photo credit: Ken Pyle

14. https://work.chron.com/average-income-owner-barbershop-28567.html

scissors, but he keeps on clipping and trimming his days away.

The fellow in his chair has been driving down from San Francisco for thirty years. "You know how it is with a barber," he explained to Ken Pyle, who was waiting his turn. "A good barber is like a good mechanic; once you find one, you don't want to let him go."

When Manny finally does turn off his classic barber shop sign, finding a bar-

ber who doesn't have to charge a scalping sum to keep the business going may prove to be a challenge. This thought struck me while I was finishing up the lead article on the relationship in Silicon Valley between traffic congestion, the explosive growth in high-paying jobs and the decreasing availability of places for service workers to live. I don't know if Manny hit the jackpot in the dot.com era or in recent times by investing in one of the hot SV companies when it started, but for an average barber who makes an annual salary of around \$35,000 per year, that person cannot afford to buy or rent in or anywhere close enough to Silicon Valley to be able to cut someone's hair who is able to afford to live there.¹⁴

If things keep heading in the direction they are going in Silicon Valley, eventually someone who wants a haircut will have to make a choice: 1) pay an astronomical sum to a barber who finds a way to locate in the Valley; 2) drive to Modesto or somewhere else far enough away where rents are affordable for a barber; 3) make do with the work of a friend or spouse (the soup bowl cut); or, 4) rent time with a *Barbot*. A *Barbot* (shown right) is a barber robot that can wield the trimming tools well enough to mimic the motions of a flesh and blood barber without inflicting life-threatening injuries or carving out bald spots on the cranium as barbers-in-training are wont to do.

Of course, it won't just be haircuts that will need to be placed in the (What shall we call them?) mechanical appendages of robots that have been programmed to perform tasks that are still mostly being done by low-paid humans. Stuffing paper containers with French fries, making a *caffè e latte* with those fancy swirls on top, washing dishes, vacuuming floors and cutting the grass are all jobs that are already falling to *automatons*. Keeping the grass trimmed is time-consuming, but it is the simplest of gardening tasks. The same goes for vacuuming the floors versus performing a full house cleaning job. If the nanny and the gardener can't commute, then they will need to live in, and one or two more rooms will need to be added to the mortgage. Are we headed back to Downton Abbey? Or will the robot engineers make those breakthroughs on which the future of life in the Valley depend?

It's clear that necessity is creating a sense of urgency in the Valley. That's why I assume so many companies there are hell bent on finding ways to replace humans with robots. There is no such urgency in, say, Kalamazoo, Michigan or even Scranton, Pennsylvania for that matter. Everyone in the Valley is rooting for UBER and *Waymo* to get to driverless before it's too late and mom has to go back to running the kids' taxi service because there simply are no drivers who can afford to operate in the Valley.

Once they are there—those robot chauffeurs, robot maids, robot nannies and robot barbers/hairdressers—the natural order will return. It's like after the Kardashians normalize wearing bedroom slippers and their pajamas to the mall (i.e., the invention), every-one will want (need) to do it. Invention will become the mother of necessity. We will ask: "Alexa, how did we live so long without you?" And Alexa will answer: "You were not alive before I arrived; you were just existing." We will ask our *Barbot* what it thought of the presidential debate on TV last evening, and it will reply: "I was turned off, but please share your thoughts with me. I will add them to the opinion processor and tell you for whom to vote." Continued on next page...

The Barbot in Action



... and a selection of Barbot's buddies.



Meet Robin, the espresso-serving robot barista (roborísta) at work in a San Francisco office building café. Below is a robomower, looking for all the world like a robotic vacuum cleaner. Down on the bottom is a nanniebot reading to little junior (on the right) while his mom and dad are working to keep up on all the robot payments.





In **Player Piano**, Homer Bigley, proprietor of a barber shop in Miami Beach, is cutting the hair of the Shah of Bratpuhr, who is visiting America to learn how the country and its people work. Under the supervision of Doctor Ewing J. Halyard, the Shah and his translator, Khashdrahr Miasma, have crisscrossed the country and are now in Miami Beach. The visitors required grooming, and it is in Homer Bigley's shop that Doctor Halyard has chosen to do the honors. As the Shah sits and listens without understanding a word Homer is saying, Homer does what barbers have done for centuries. We arrive near the end of his monologue:

"...And, oh, I guess machines have made things a lot better. I'd be a fool to say they haven't, though there's plenty who say they haven't, and I can see what they mean, all right. It does seem like machines took all the good jobs, where a man could be true to hisself and false to nobody else, and left all the silly ones. And I guess I'm just about at the end of a race, standing here on my own two feet.

"And I'm lucky barbering held out as long as it did—long enough to take care of me. And I'm glad I don't have to think about this shop not being here for them, about nothing being for them but the Army or the Reeks and Wrecks, probably—unless an engineer or manager or research man or bureaucrat got at my wife, and the kids had their brains instead of mine. But Clara'd let one of those jerks at her just about as quick as you could stuff a pound of oleomargarine up a cat's ass with a hot awl.

"Anyway, I hope they keep those barber machines out of Miami Beach for another two years, and then I'll be ready to retire and the hell with them. They had the man who invented the damn things on television the other night, and turns out he's a barber hisself. Said he kept worrying and worrying about somebody was going to invent a haircutting machine that'd put him out of business. And he'd have nightmares about it, and when he'd wake up from them, he'd tell hisself all the reasons why they couldn't ever make a machine that'd do the job—you know, all the complicated motions a barber goes through. And then, in his next nightmare, he'd dream of a machine that did one of the jobs, like combing, and he'd see how it worked clear as a bell. And it was just a vicious circle. He'd dream. Then he'd tell hisself something the machine couldn't do. Then he'd dream of a machine, and he'd see just how a machine could do what he'd said it couldn't do. And on and on, until he'd dreamed up a whole machine that cut hair like nobody's business. And he sold his plans for a hundred thousand bucks and royalties, and I don't guess he has to worry about anything anymore.

"Ever stop to think what a funny thing the human mind is? And there you are, sir, how's that look to you?"



Player Piano is the first novel by American writer Kurt Vonnegut, published in 1952. It depicts a dystopia of automation, describing the negative impact it can have on quality of life. The story takes place in a near-future society that is almost totally mechanized, eliminating the need for human laborers. The widespread mechanization creates conflict between the wealthy upper class, the engineers and managers, who keep society running, and the lower class, whose skills and purpose in society have been replaced by machines. The book uses irony and sentimentality, which were to become hallmarks developed further in Vonne*qut's later works.*

Stableford, Brian (1993). "Vonnegut, Kurt Jr.". In John Clute; Peter Nicholls (eds.). **The Encyclopedia** of Science Fiction (2nd ed.). Orbit, London. p. 1289. ISBN 1-85723-124-4.

This book joins the list of dystopian classics I have referred to in THE DIS-PATCHER (**1984, Brave New World, Atlas Shrugged, Animal Farm**), and my sincere thanks go to Russ Swanson, graduate school classmate and lifelong friend, for suggesting that I read it.

About Michael L. Sena

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

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



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