DEPTH OF THE AMERICAN TRUCKER

Automated trucking promises to improve road safety, reduce fossil-fuel emissions and put up to 1.7 million people out of work. Will it also be Trump's greatest betrayal of his blue-collar base?

By Tim Dickinson

When Donald Trump sites up to a semi truck, he's usually selling policy only a plutocrat could love. Campaigning to repeal the Affordable Care Act in March, Trump pinned an | truck button to his lapel and honked the horn of a Mack truck outside the White House. "Obamacare," he said, "has inflicted great pain on American truckers." In October, at a rally before the "proud men and women of the American Trucking Associations" in Pennsylvania, Trump touted GOP plans to slash corporate taxes by 40 percent and to end "the crushing, horrible and unfair estate tax." Behind him, positioned for the TV cameras, was an 18-wheeler - emblazoned with an unlikely slogan: TRUCKERS FOR TAX REFORM. He vowed his America First agenda "means putting American truckers first."

In his campaign, Trump puts truckers on a pedestal. Behind the scenes, his administration is seeking to hasten a revolution in robotic driving that poses an existential threat to their livelihoods. We're at the dawn of the self-driving truck. The technology will benefit most Americans: Ever-alert robotic semis promise safer highways, reduced emissions, faster ship times and, for the 70 percent of goods that travel by truck, lower costs. Yet this same revolution threatens every single job in heavy trucking - 1.7 million in all, according to a White House analysis published in the final days of the Obama administration. Truckers earn $60 billion in annual wages. And trucking is now the most common profession in 39 states, according to an NPR analysis of census data, including the Rust Belt trio of Wisconsin, Michigan and Pennsylvania that put Trump into office.

Ultimately, automated driving could offer a dark replay of the decline of factory work. In Trump's misdiagnosis, "disastrous trade deals" undermined American manufacturing jobs. But the true culprit is not cheap Chinese labor as much as it's robots here at home. From 2000 to 2010, output from American factories soared, but manufacturers slashed 5.6 million jobs, with automation and other tech advances driving 82 percent of those layoffs, according to research from Ball State University.

Full automation of our highways might take decades - lessening the blow to today's drivers. But there's a gold rush on to disrupt the $700 billion American trucking industry. A report by the International Transport Forum projects a scenario in which roughly 1 million heavy-truck drivers lose their jobs by 2025. McKinsey Global Institute offers an even more dramatic possibility: 85 percent automation, or nearly 1.5 million jobs lost, by 2027. At that pace, the Trump administration and Republicans in Congress need to begin backing aggressive policies to support displaced truckers. But in its first year, the Trump administration has sided with the automators: Trump's short-lived business advisory council was stocked with CEOs pushing the envelope of robotic trucking, including Uber and Tesla. Trump's tax plan offers big breaks for investment in automation. And Transportation Secretary Elaine Chao has vowed the administration will be "a catalyst" for a driverless future. It is a revealing betrayal, exposing not the core of Trump's promises to "make America great again." Far from putting the country's forgotten workers in the driver's seat, Trump's administration threatens to make them economic roadkill.

This is a dangerous political game for the president, whose link to trucking runs deeper than the half-million MAGA trucker hats reportedly sold by his campaign. Truckers are Trump's people: 95 percent lack a college education; more than 90 percent are men; three out of four are white. This demographic voted for the president at 71 percent clip. "Anyone who has paid attention to the last two years of our politics knows you can't ignore millions of workers' voices," says Sam Loesche, the legislative representative for the Teamsters union. "Or you do so at your own peril."

Robotic trucking may go down easy - at first. Market-ready tech offers semiautonomous cruise control and other advances to ease the work burden on truckers, without making them redundant. But the slippery slope of automation leads to a cliff: Trucks with no role - or room - for a human. Eventually, "none of the new trucks will have a cab on them," predicted Anthony Levandowski, Uber's former star automation engineer, in 2016. "It just doesn't make sense to have that."

Heavy trucking has emerged as an unexpected hotbed of innovation. In Novem-
ber, Tesla founder Elon Musk stood before hundreds of superfans at an airport hangar next to his SpaceX headquarters outside Los Angeles. Wearing jeans and a barn jacket, Musk unveiled his long-haul electric rig: the Tesla Semi, featuring phenomenal acceleration, bulletlike aerodynamics (less drag than a Bugatti Chiron roadster) and a 500-mile range. The truck "will be running on sunlight," Musk said in his lilting South African accent, describing the Semi’s 30-minute recharging time at a planned network of solar-powered "megachargers."

The Tesla Semi is also automation-ready. It incorporates "Enhanced Autopilot" technology already at work in Tesla’s cars. Rellying on radar and an elaborate system of cameras mounted about the rig, the Semi will robotically follow the speed of traffic, maintain and change lanes, and even come to a controlled stop should the driver fall asleep or become incapacitated. An animation projected behind Musk teased the Semi’s convoy capability, where a lead Semi with a human driver is followed by a pair of self-driving trucks. "You’re more like a train driver," Musk said. Called "platooning" by competitors, this technology synchronizes the human smarts and intuition of a lead driver with the steering, acceleration and braking of the autonomous trailing trucks. "This is something we can do today, 10 times safer than a human driver," Musk said. "I want to be clear: This is something we can do now!"

The first Tesla Semi will not roll off the production line until 2019. (PepsiCo, Anheuser-Busch and Walmart, among others, have reserved nearly 300 trucks.) But platooning is already being road-tested by industry giants including Volvo and Daimler. In a diesel scenario, platooning also offers big fuel savings even for manned trucks; each trailing rig uses 10 percent less fuel. But with advances in autonomy, trucking companies will be able to shed costly drivers, until even the lead vehicle in a virtual train of autonomous semis is piloting itself by artificial intelligence. A software engineer working for Daimler tells Rolling Stone that employment for truck drivers in a world of platooning will soon get Darwinian: "It’s adapt or die."

TRULY DRIVERLESS TRUCK technology has already made a great leap from the test track to the open roadway. On a chilly night in October 2016, an Uber subsidiary called Otto dispatched an automated rig with all-American cargo: 2,000 cases of Budweiser. The robotic truck hauled 120 miles south along the base of the Rockies from Fort Collins to Colorado Springs, navigating a tricky curve by Denver’s Mile High stadium without its trailer drifting from the lane. The only human on board, a sandy-haired driver named Walter, sat in the cab’s sleeper berth. Radar, cameras and GPS systems mounted about the airfoil and bumper—combined with lidar, a technology that creates a view of the road with reflected lasers—fed a torrent of data to an on-board computer, guiding the AI autopilot through each decision: accelerating and braking, turning, changing lanes.

A police convoy accompanied the pre-dawn run, but the ride went off without a hitch. When it was time to exit the freeway, Walter took the controls and finished the drive to the distribution center. Dan Murray, vice president of the American Transportation Research Institute (ATRI), who observed the Otto run, says, "The technology is almost ready for prime time."

Otto was the brainchild of Levandowski, a former top engineer of Google’s self-driving-car unit, who early on saw the disruptive potential in trucking. City traffic can bedevil AI driving systems—does the wandering cyclist want the vehicle to slow down or to speed up and go around? But highway driving is as much as 50 times simpler. "It’s really silly to have a person steering a truck for eight hours just to keep it between two lines on the highway," Levandowski told reporters at Otto’s launch.

Illustration by DANIEL DOWNEY
In his race to market, Levandowski didn’t attempt to build a brand-new semi. Instead, he created an aftermarket kit to automate existing diesel trucks. His dirty-fast-and-first ethos was a cultural fit for Uber, which bought Otto for $680 million in August 2016. But Levandowski and Uber have since landed in legal jeopardy. Google’s self-driving unit Waymo has sued Uber, estimating damages at $1.9 billion – alleging Levandowski stole lidar technology when he left the company. Levandowski has pleaded the Fifth in court, and Uber has been humbled by a cascade of legal and sexual scandals leading to the ouster of CEO Travis Kalanick.

The industry’s jack rabbit may have stumbled, but competitors are surging ahead. Embark is a Silicon Valley start-up founded in 2016 by Alex Rodrigues, a 22-year-old with blue eyes and a shock of black hair, who built his first automated robot as a 13-year-old wunderkind. Embark includes a military-grade GPS that could enable driving in low-visibility conditions. In November, Embark announced it had begun shipping refrigerators as far as 650 miles – from El Paso, Texas, to Palm Springs, California – “the longest automated freight route in the world today,” according to Rodrigues.

In Embark’s business model, long-haul highway robots work in concert with local drivers at either end of a route. These humans act like harbor pilots – ferrying trailers from a staging area by the freeway’s edge to the warehouse or box store and back. For now, a human driver sits behind the wheel of Embark’s trucks as a fail-safe. But Rodrigues insists his goal is “a fully autonomous truck.”

There’s already stiff competition. In China, a startup called TuSimple is striving to introduce road-safe autonomous semi by 2020. In Sweden, Volvo has been putting a new robotic truck through the paces in the dark twists and turns of an underground mine. Mining, in fact, is the clearest place to see where heavy trucking is headed. In 2016, Rio Tinto deployed dozens of autonomous trucks – each the size of a small house – to haul iron ore in Australia. The rigs run 24 hours a day, with no breaks, and eliminate minor human errors that slow production. “We’re going to continue as aggressively as possible down this path,” Rio Tinto’s productivity chief told MIT Technology Review. The trucks in the mine today still have cabs, but Rio Tinto’s supplier, Komatsu, showcased a new line of Autonomous Haulage Vehicles last year in Las Vegas – with no place for any driver.

The race to automate our highways could be good for the nation as a whole – increasing productivity, sparking GDP growth and raising living standards. “At an economy level, we’d like automation to happen as quickly as possible,” says Victor Bennett, a Duke economist and lead author of the Obama White House study on automation. “But that’s really difficult for people whose jobs are in trucking.”

At the Lunch Counter of a Country Pride restaurant in Troutdale, Oregon – inside a truck stop by Interstate 84, connecting Portland to Salt Lake City – I meet Louis Pribble, who has been driving trucks since 1987. The shaggy-haired Pribble, 52, sports a Bone Collector camo hunting cap. His red T-shirt has a silkscreen of a bullet and the slogan SHARE A ROUND WITH ISIS.

Like the drivers of dozens of rigs in the parking lot, Pribble is idled here on this drizzly afternoon for a federally mandated rest. These long breaks are a key drag on the economics of trucking that innovators hope to disrupt. If robots are doing the driving, says Murray of ATRI, “suddenly the mandate that 10 hours off is required for fatigue management and safety – it has nothing to do with that anymore.” Embark recently persuaded Peterbilt to add enough diesel capacity on test trucks to run 48 hours straight. And that’s not an upper limit. “When you no longer need a driver in the cab, there’s all this room where you potentially can add fuel capacity.” Embark chief operating officer Mike Reid says. That voids the need for having to pull over to refuel the truck.

Pribble drives “all 49” contiguous states, running 12,000 miles a month in a 2016 Volvo, delivering packaged meals to grocery stores, and he makes decent money – up to $55,000 a month. In an America of stagnant annual wages, trucking is a rare bright spot, rising 5.7 percent last year to more than $52,000, according to Glassdoor. With his disposable income, Pribble collects abstract art created by drummer Steven Adler of Guns N’ Roses – “my retirement account,” Pribble jokes. And he had recently splurged on a test-track drive of a Lamborghini at a facility across from a truck stop in Las Vegas. Pribble spends his downtime playing Xbox in his cab and his off days at golf courses across the country. He’s cycled out of trucking in the past, he says, but found it impossible to get ahead working in his hometown of Hermiston, Oregon: “Last job I had, it took two and a half weeks of work to just make a pickup payment.” Trucking, he says, is “better money than any other job out there.”

The wage premium for truckers compensates for work that is taxing, tedious and not infrequently deadly. According to the Department of Labor, heavy-truckers “have one of the highest rates of injuries and illnesses of all occupations” – about three times the average worker – owing to long hours, sedentary time behind the wheel, road accidents, and dangerous tasks around the truck, like securing cargo. Trucking is America’s deadliest job in pure numbers – 765 fatalities in 2015 – and deadlier on average than even electrical power-line work. It’s also lonely. Pribble sees his girlfriend back home only a few days a month. “It’s hard on both people,” he admits.

Pribble is a Trump supporter, culturally and economically. He’s angry that Hermiston is, in his words, “full of illegal Mexicans.” He bristles at regulation of the truck industry and loves Trump’s proposal to cut two regulations for every new one put in place. Above all, Pribble is confident the president will bring jobs roaring back in America. “Trump is trying to keep his promises,” he tells me.

When it comes to the threat of automation, Pribble is skeptical that a robot will soon take his job away. “Everybody is all worked up about it,” he says, but Pribble thinks the boy wonder of Silicon Valley have yet to grapple with the down-and-dirty parts of his job. “I’d like to see that driverless truck put chains on,” he says with a laugh. “I’d like to see that driverless truck in snow.” Maybe younger guys should think twice about a career in trucking, he concedes. As for him? “By the time we get to the George Jetson era, I’ll be long retired,” he says. “Probably dead.”

Next to Bad Weather – Snow can blind laser and optical sensors – the greatest technical hurdle to deploying autonomous trucks is the complexity of urban driving. But Kyle Vogt, the head of Cruise, GM’s self-driving-car unit, has been testing a fleet of autonomous Chevy Bolts on the streets of San Francisco and will soon tackle New York. Vogt recently posted a video of a Cruise car autonomously navigating a notorious six-way San Francisco intersection – with the traffic signal out. “Self-driving cars have 360-degree vision – there’s no blind spots,” Vogt
saying, "They're looking everywhere, all the time. And able to process complex scenes at a much higher rate than a human could."

There are also regulatory, social, and security hurdles. The U.S. now has a patchwork of state regulation — where any exists — controlling the deployment of autonomous trucks. The Otto beer run in Colorado would have been prohibited in Ohio, where a human is required to remain in the driver's seat. And while automation promises to eliminate human error, no one is sure who pays for an automated crash — particularly in the transitional phase, where a human still sits inside the cab. "What happens if a driver is supposed to take control in a split second, and for whatever reason there's a crash?" asks Lamont Byrd, the Teamsters' safety and health department director. "That hasn't been worked out." Terrorists have killed dozens of civilians in New York, Barcelona and Nice by weaponizing trucks. "Imagine three vehicles controlled by a guy with a laptop halfway around the world," says Loesche, the Teamsters' legislative representative. "Those are monster, monster hurdles — especially in D.C." Finally, even if self-driving vehicles are proved safer as a matter of statistics, they may not feel safer to fellow drivers on the road. "Driving next to any car or truck, and not seeing a human in it," says Murray, "is certainly going to freak out Grandma."

But none of these obstacles are likely to keep truckers from becoming the new coal miners. The gut punch of job loss will be heightened by a decline in next-job wages. Truckers "currently enjoy a wage premium over others in the labor market with the same level of educational attainment," the 2016 White House report says, and are unlikely to "regain this wage premium if displaced." The traditional fallback for a trucker — another driving job — will also be vanishing in this revolution. Uber, to name one example, signed a pledge to buy 24,000 self-driving SUVs from Volvo. More than 3.7 million Americans make a living behind the wheel, and 3.1 million of those jobs are at risk. A report by Goldman Sachs found that when autonomous vehicles reach peak deployment, 25,000 drivers a month will be out of work. And that flood of unemployed drivers, says Bennett, the Duke economist, would also "push down the wages of other low-wage jobs."

Trump has shown little concern for this threat to truckers. Treasury Secretary Steven Mnuchin insisted in a March 2017 interview that job loss from automation is "not even on our radar screen," adding, "I'm not worried at all." Meanwhile, Trump's budget outline aims to slash the Labor Department by more than 20 percent, including deep cuts to job-training grants that might help drivers laid off for robots.

At the Transportation Department, the Trump administration is championing automation in driving. "I want to issue a challenge to Silicon Valley, Detroit and all other auto-industry hubs to step up and help educate a skeptical public about the benefits of automated technologies," Secretary Chao told the National Governors Association conference in 2017. She was met with unexpected resistance from Republicans in attendance. Michigan Gov. Rick Snyder pressed Chao to look "far enough ahead so we don't create job-loss opportunities." Massachusetts Gov. Charlie Baker was more blunt: "I can't urge you enough — autonomous vehicles have tremendous opportunity, but at the same time there are some big-time workforce issues," adding the administration should take policy steps now to avoid "a tremendous amount of economic hardship along the way."

Chao validated the governors' worries: "As a former secretary of labor, I'm very, very concerned about that," she said. "We do have to transition people." (Chao declined to comment.) But even under Democratic administrations, America has a bleak history of retraining blue-collar workers. Factory workers pushed out of $25-an-hour jobs with generous benefits often can only find service-sector jobs that pay half as much. Dislocation has created a loss of purpose — death rates among middle-aged white men have risen, largely due to suicide and substance abuse. Ironically, argues Arthur Brooks, president of conservative think tank AEI, it is this "dignity gap" that Trump exploited to win the White House. Washington's lack of interest in policy solutions is ceding the arena to icons of tech and local government. Bill Gates has called for taxing robots to generate revenues equivalent to the taxes paid by displaced humans — funds to be invested in subsidizing labor where automation is less useful. Musk has called for a universal basic income to offset the sting of automation. "It's going to be necessary," he advised the World Government Summit in Dubai. In an interview with Rolling Stone, California Gov. Jerry Brown agreed: "Income assistance is something that needs to be looked at carefully. ... We need to get at it sooner rather than later."

Other interventions could include auctioning permits for self-driving vehicles to slow adoption. Or levying a vehicle mileage tax to capture social costs of driver displacement; Americans would still get cheaper goods, just not at the expense of human drivers. "What we'd like very much is to have to make a trade-off between 300 million people getting lower prices and safer roads and 3 million people losing their jobs," says Bennett. "The question is: Is there a way to not make that trade-off?"