

## Grush thinks outside the box when it comes to the techno revolution

Researcher, public speaker, and author of 400 scholarly papers and articles on transportation-management issues in which he makes the case that it's imperative to rethink and redeploy urban transit in the lead-up to vehicle automation.



“My message is really alarming, and I don’t think everybody likes my message,” Bern Grush said. “But I am extraordinarily confident that I have this figured out.” (Norris McDonald / Toronto Star) | Order this photo

By [Norris McDonald](#) Special to the Star  
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For years, the automobile industry has been talking seriously about the self-driving (or “autonomous”) car.

Some manufacturers, like Mercedes-Benz in Europe and General Motors in North America, did more than talk. They started to experiment. Others followed. Johnny-come-latelys like Google got a lot of ink for doing the same thing, but the established car companies have been ahead of the curve for years.

In two days, it will be 2018. Nearly a year ago, Uber had self-driving cars picking up passengers in Arizona. It's been suggested that by 2021, perhaps sooner, fleets of driverless cars led by automakers Ford, GM, and Nissan-Renault will be on the roads — first in cities, but before you know it, everywhere.

I have written several times in the last year about this approaching techno revolution, which I believe is now inevitable. With it will come great social change — and that worries me more. Governments don't seem to want to talk about that, and there are only a few people who really understand what's going to happen.

One of them is Bern Grush of Toronto. He is a researcher, public speaker, and the author of 400 scholarly papers and articles on transportation-management issues (including a recent [editorial](#) piece in the Star) in which he makes the case that it's imperative to rethink and redeploy urban transit in the lead-up to vehicle automation.

And he's working on a book, *The End of Driving: Transportation Systems and Public Policy Planning for Autonomous Vehicles*.

Because of this, I have selected Grush as Toronto Star Wheels' Newsmaker of the Year.

In being handed his honour, he joins previous newsmakers Jerry Dias, the labour leader who's president of Unifor; Sergio Marchionne, the Canadian-educated CEO of FCA; Carlo Fidani, Ron Fellows, and Myles Brandt of Canadian Tire Motorsport Park; Multimatic Engineering of Markham, and the singer Neil Young, an alternative-fuels promoter

Much like the auto companies that did more than talk about self-driving cars, Grush doesn't just muse about what might happen but takes action. Among his inventions are technologies for autonomous parking and usage-based insurance. What has him particularly focused these days, though, is what he sees as the upcoming big change in urban transportation.

I got to know Grush earlier this year when he co-authored a report (with his Seattle-based business partner, John Niles) for the **Residential and Civil Construction Alliance of Ontario**. It was primarily about the future of traffic congestion in the GTA. In case you missed it, here are two of the main points from that report:

- Self-driving cars (or AVs — autonomous vehicles) are coming, whether we like it or not.
- Two types of self-driving cars are on the horizon: semi-automated vehicles (which can drive themselves or be driven) and are owned like we own or lease cars now, and fully automated vehicles (taxis, shuttles) that are mostly shared.

Grush, who's a University of Waterloo-educated systems design engineer (he also has a degree from the University of Toronto), says he is not in the business of making predictions but that “if you do A, then B will happen. If you do X, then Y will happen.”

He is now convinced that, as a result of this thinking, municipal bus systems are living on borrowed time. Not transit, as in subways or LRTs, but feeder systems, like buses. And he says the bus system will be replaced by ride-sharing services like Uber and Lyft and that this will happen so quickly that people are going to literally wake up one day to find out that everything's changed.

"Uber and Lyft are in business to, first, get rid of the taxi business," he told me the other day. "Then, they are going to go after the bus business."

"We saw what happened in Innisfil, up near Barrie, where the council contracted with Uber rather than investing in a traditional bus system. This sort of thinking will spread. And then, when commercial providers (Uber, Lyft) begin to automate their fleets with smartphone apps that will promise 'mobility on demand,' their role in public transit and goods movement will accelerate further."

So, how did a guy like Grush get interested in this line of work in the first place? Born in Baltimore in 1949 (he has dual citizenship), he came to Canada in 1970 to attend University of Toronto and never left.

"I got interested in transportation in 2002," he said. "Paying for parking, either at a meter or at one of those machines, is such a pain in the ass. So, I designed an automatic parking system using GPS that knows where your car is and handles the payment for you."

"While researching this, I realized that the way transportation is paid for — fuel taxes, tolls, fees, and so on — is very hard to rationalize to voters, so I turned my attention to automated (artificial intelligence) vehicles as public transit, which could provide solutions to congestion and funding systems at the same time."

Grush, who drives a BMW but takes the bus to the subway when he has to go downtown, says nobody is really well-served by buses.

"I got on a bus two weeks ago, and a woman got on, and she was pushing 80. She had a cane, and she paid her fare and was about to sit down, and the bus took off, and she went flat on the floor. She got up and protested that she didn't need any help. I admired her, but I'm not doing that when I'm 80."

He said that in order to catch a bus today, people have to leave their homes and go out and stand on a corner and wait for the thing to come. It can be raining, or cold and snowing. In summer, it can be really hot. And even though bus systems are heavily subsidized, fares are not cheap.

"So, for just about the same amount of money, maybe a dollar or two more," he said, "an Uber or a Lyft will come to your door and pick you up and take you to the subway. Just thinking about that, if you had a choice, which one would you choose?"

In his papers and reports, Grush urges governments to prepare for what's coming. "The key is for governments and the private sector to work together to implement a system that will enhance mobility for everybody," he said.

But there are governments — and he pointed directly at the one in Toronto — that get so hung up on single issues that they miss seeing the bigger picture.

"Lyft and Uber will wind up deciding our ground transportation system for us," he said. "They will take over our bus systems because city councils will be arguing about LRTs vs. subways and this will be happening right in front of their eyes."

Grush says that before you know it, as soon as two or three years from now, consumers will be faced with a choice — owning and making use of a semi-autonomous car or calling a fully autonomous car to come pick them up.

"You'll be able to buy a Cadillac with self-driving technology," he told me. "Actually, you can buy one like that now. It requires that you stay in the car, though. You can't send it home to take your spouse shopping. You have to keep it with you. But that will change. Before long, that Cadillac will be so automated that you'll brag to your friends that you haven't touched a steering wheel in six weeks.

"Or, if ownership isn't for you, you'll be able to call a robo-taxi — a little minibus — that you hear Uber talking about. They're actually in use in some cities around the world. They will be constrained as to where they can go. They won't be able to go just anywhere. Your Cadillac will be able to go anywhere — through snow or over a dirt road to the cottage. But your robo-taxi won't.

"So, it's 2022, and you call for a ride. Their computer instantly sees where you live and where you want to go. It sends you a robo-taxi because where you want to go is mapped out. It sends you a car with a driver if where you want to go isn't mapped out."

But Grush says that as the years go by, the self-driving car — the robo-taxi — will reach the point where it, too, will be able to go anywhere and there won't be any more use for a driver. "You'll hear about this happening in places like Phoenix or San Francisco first, because they have better weather, but it will get just about everywhere else, eventually."

Being a car nut, I finished our conversation by asking Grush about all those people out there who just like to drive cars. What will happen to them?

"It took roughly 40 years to go from mostly horses for transportation to no horses," he said. "But that wasn't the end of the horse. There were, and are today, people who like to ride horses, and so, they go to places where they can keep horses and where they can ride them. They're called riding stables.

"The same thing will happen with cars and people who like to drive. They will go to places — race tracks, perhaps — where they can keep their cars and where they can drive them.

“How long will this take? Five years? Fifty years? I don’t know — but it will happen.”

Grush is aware that many people don’t like to hear what he’s saying.

“My message is really alarming, and I don’t think everybody likes my message,” he said. “But I am extraordinarily confident that I have this figured out.”