

Driverless cars rumble toward the starting line

By Ashley Halsey III

There is a vision of the future you may have heard about: Computer-controlled cars whizzing around the interstate at the speed limit, still bumper to bumper, in rush hour. The future may arrive so soon it will leave your head spinning. But before it does, there are a whole lot of issues to address.

The era of the automated car, something akin to having an onboard computer perform as your chauffeur, awaits its moment like a morning sun just below the horizon. There are prototypes on the streets, states that allow test models on the highway and projections that you will be surrounded by them – or inside one – in little more than a decade.

A pair of assessments last month – a comprehensive review of autonomous vehicles by the Washington-based Eno Center for Transportation, and an essay by Robert Poole of the Reason Foundation_ provide a crystal-ball glimpse of the barriers and benefits ahead.

"I appreciate the potential of autonomous vehicles," Poole wrote. "But I am amazed and appalled at some of the hype about likely benefits being spread by people who should know better."

He goes on to question predictions of a dramatic drop in car ownership, reduced need for parking, the rapidity with which the new vehicles will win the hearts of American drivers, the cost to taxpayers of equipping highways with necessary electronics and the notion that drivers will be able to nap or play games during the commute to work.

The Eno Center study, co-authored by Daniel Fagnant and Kara M. Kockelman of the University of Texas, dissects the promises and potential pitfalls.

Autonomous vehicles, also known as AVs, already are on the road. Those test models will evolve into production cars by 2020 — Volvo, Toyota,

Ford, General Motors, Volkswagen and Nissan are working on them – and be on the mass market a couple of years later. Nevada, California and Florida have taken fledgling steps toward regulating AVs.

The story of exactly how they work must wait for another day, but consider how much of the technology already is coming off the assembly lines. Each year, more cars are produced with sensors that detect lane changes, backup distances and measure the space between your car and the one just ahead.

If you've moved much beyond the Studebaker era, your car was built with a computer that keeps track of all that and a great deal more. Before you know it, home computers will be communicating directly with dashboard computers via short-range transmitters that use dedicated bandwidth to send and receive information 10 times per second about where the vehicles are and what they are doing.

That technology works – there was a test demonstration in Maryland this year – and only needs radio hookups and public policy decisions before it rolls.

Once cars and trucks begin a robust conversation about where they are and what they're planning to do – along with chit-chat that draws in stuff like traffic lights, congestion reports and some road conditions – do they really need a human to boss them around?

Maybe not, but maybe so.

On the plus side, the Eno Center report points out, 40 percent of fatal crashes involved alcohol, and an AV can't drive drunk. Overall, more than 32,000 people died in collisions in 2011, and AVs would reduce that number by a lot. A computer-linked systems of AVs could also reduce congestion and air pollution.

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AVs would increase mobility for the disabled, elderly and young people (soccer moms might be replaced by soccer AVs). After dropping off passengers, cars could be sent to park themselves in more remote, less expensive places.

Consider, however, a minefield of caveats extrapolated from the Eno report.

Would you fly in an airplane without a pilot? Why not? The "pilots" of drones mounting attacks in Afghanistan, Pakistan and elsewhere are sitting a half world away. Commercial planes can be flown the same way. Are you ready to take a back seat in your own car?

How much are you willing to pay for chauffeur-like luxury? There are all sorts of estimates, but it might add \$25,000 to \$50,000 to the sticker price in the early years of production. After a decade, the best guess is that might fall to an added \$10,000. (There might be savings on insurance and fuel costs to help balance that out.)

Are you ready to trust a bunch of computers with your life? Is that a deer, an empty cardboard box, a child, a cyclist or a pedestrian that the sensor is warning your computer about? Should the computer decide what to do or should you?

Ethicist Patrick Lin says its a variation on a classic case study.

"On a narrow road, your robotic car detects and imminent head-on crash with a non-robotic vehicle," Lin wrote. Is it "a school bus full of kids, or perhaps a carload of teenagers bent on playing 'chicken' with you, knowing that your car is programmed to avoid crashes?"

The computer decides to swerve to avoid the collision, hits a tree and you die.

"At least with the school bus, this is probably the right thing to do," Lin said, "to sacrifice yourself to save 30 or so school children. The automated car was stuck in a no-win situation and chose the lesser evil. . . It's one thing when you, the driver, make a choice to sacrifice yourself, but it's quite another for a

machine to make that decision for you involuntarily."

What will the jury decide? In a lot of situations, drivers are not held at fault if they make less than the best decision in a split second under duress. Will the legal system be just as forgiving of a computer that's using an array of sensors and software to inform its decision?

What happens if this vast computer network that controls every vehicle on the road gets hacked? The evidence du jour seems to suggest that few computer systems in the world are immune from penetration. Could al-Qaida get into the network and instruct all vehicles to accelerate to 70 mph and swerve left?

Will computers in cars put an end to hanky-panky? Will all that data being pumped about your whereabouts from your car into somebody's cloud be Nirvana for divorce lawyers? And those who follow a more moral path also have a right to know where the gathered information of their travels will be stored, who might have access to it and how it might be used.

The Eno Center report sums it up: "The proliferation of autonomous vehicles is far from guaranteed."

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