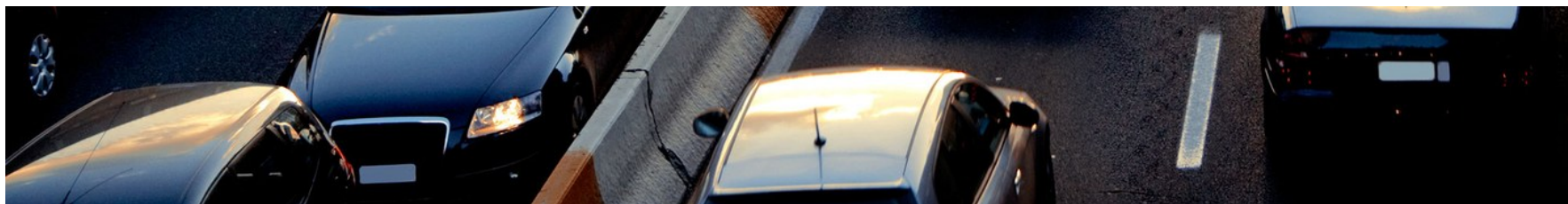February 13, 2018

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Autonomous Vehicles

How Will They Challenge Law Enforcement?

By Thomas J. Cowper, M.P.A., and Bernard H. Levin, Ed.D.

In 2017, a major automobile manufacturer announced that it soon would produce a car capable of driving itself from Los Angeles to New York without human control. The company further stated that in about 2 years, people will sleep in their vehicles while making the same journey.[1]

In fact, many of the world's carmakers plan to have fully autonomous vehicles (AVs) for sale by early next decade.[2] Prominent technology companies, such as Intel and Google, and transportation services, like Uber and Lyft, are investing billions of dollars in the trend toward AVs. Businesses plan to deploy fleets of driverless vehicles, from long-haul trucks to local taxis, to provide autonomous, on-demand transportation for hire.[3] Regulatory approvals and legal restrictions aside, this technology may arrive before most people are ready.

Each year globally, approximately 1.25 million people die in traffic accidents, and more than 90 percent of those crashes result from human error.[4] In the United States, over 40,000 individuals were killed and 4.6 million injured in accidents during 2016.[5] Experts expect AVs to reduce those numbers dramatically, which could help speed their adoption and regulatory approval. Currently, 18 states have passed legislation or enacted rules governing the use and testing of AVs.[6]

The adoption of these vehicles has significant implications for law enforcement. Agencies and officers must prepare for the autonomous revolution of the next decade.

New Technology

The Society of Automotive Engineers International developed a system for classifying automated driving into 6 levels, with 0 meaning no automation and 5 indicating a vehicle's capability of fully autonomous operation. The National Highway Traffic Safety Administration since has adopted this system.[7]

For a vehicle to operate without a human driver, it must have level 5 autonomy. One manufacturer claims to be 2 years away from developing this capability, and others have stated they will field such a vehicle by 2021.[8] Some analysts predict that AVs will become the globally dominant mode of transportation by 2030.[9]

Full autonomy will happen gradually. Within the next decade, many vehicles will be capable of both completely autonomous and solely human operation, with varying stages of assisted driving in-between the two extremes. Once vehicles with levels 4 and 5 autonomy enter the highways, distinguishing human responsibility, liability, and culpability will prove difficult.
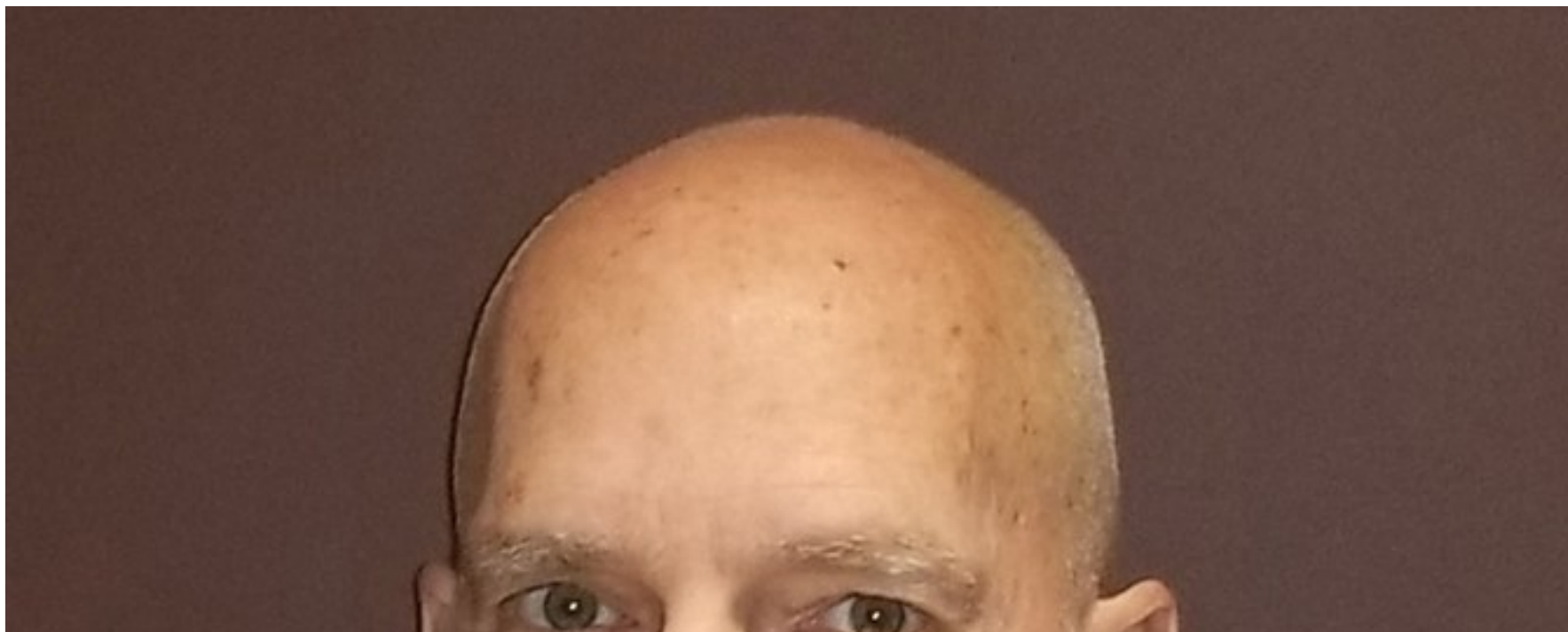
Mr. Cowper retired from the New York State Police as a staff inspector and regularly speaks and writes about emerging technology and policing.

Dr. Levin, a visiting scholar at the FBI Training Division, retired from the Waynesboro, Virginia, Police Department as a reserve major.

Changes on the Road

As AVs emerge, what happens to traditional driving? At present, human operators make all decisions—speed, direction, stop, go—and accept all responsibility. AVs will change that paradigm so that a vehicle becomes a conveyance, similar to a commuter train, allowing people to get in, sit or lie down, and pass the time until they reach their destination.

Today, people view driving someplace as an active process. But, humans make mistakes, and their decision making leads to crashes. In the future, there will be no driver, and speed largely will become irrelevant. Going from one point to another simply will act as a time extension for whatever else individuals do (e.g., work, sleep, read, daydream) when not traveling.

Society of Automotive Engineers Automation Levels
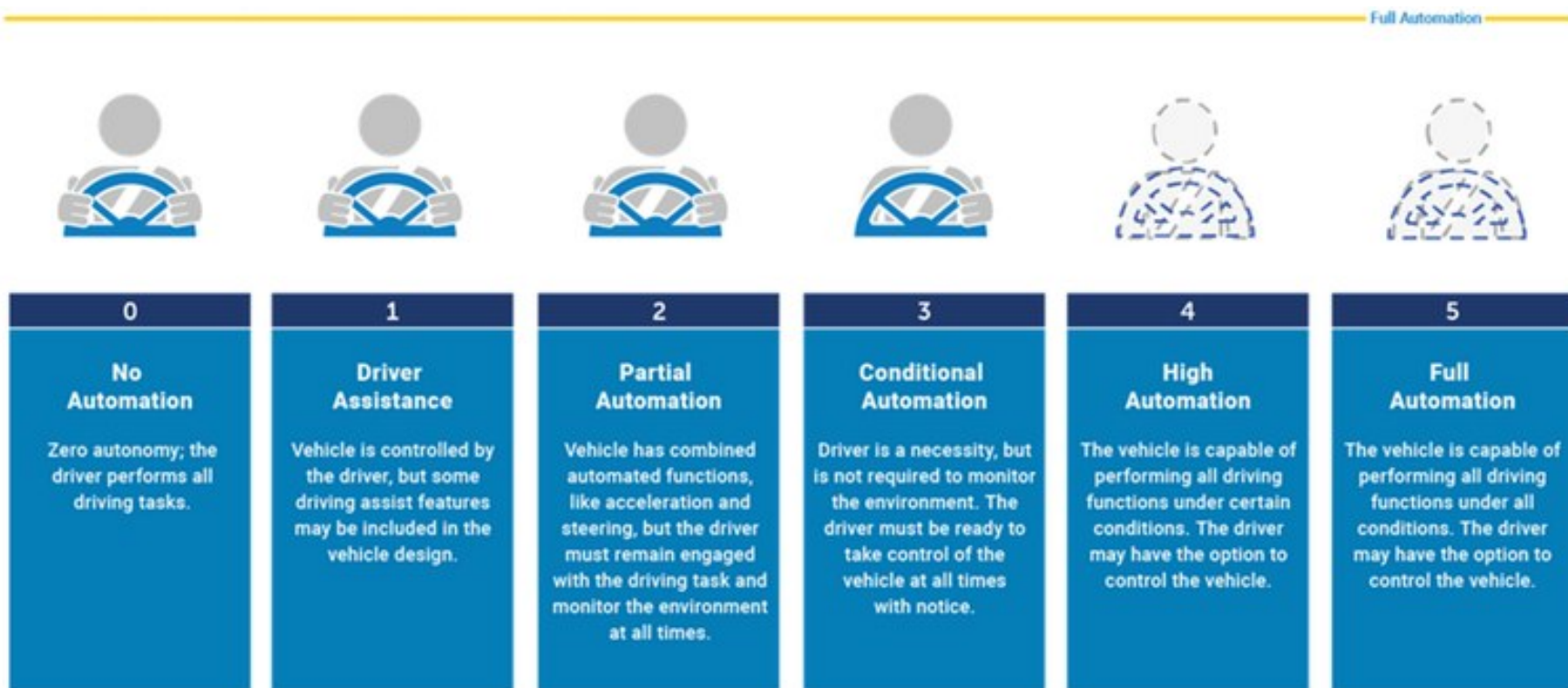
Source: U.S. Department of Transportation, National Highway Traffic Safety Administration, Automated Vehicles for Safety, *accessed February 2, 2018,* https://www.nhtsa.gov/technology-innovation/automated-vehicles-safety.

Impact on Policing

With both human-operated and driverless vehicles on the road, the purpose and methodology of traffic enforcement will need to change. Today, officers make such decisions knowing that a person is driving. Tomorrow, they cannot make that assumption. Soon, an increasing number of vehicles with varying levels of human involvement will occupy the road.

Some will continue to have a person fully engaged as the driver and solely responsible for the vehicle's actions. But, from there, traffic enforcement becomes much less straightforward. Already, vehicles with levels 2 and 3 autonomous systems control aspects of driving, while humans retain full responsibility for what the vehicle does or does not do. Level 4 autonomy begins to blur the lines of accountability. Level 5 eliminates them.

Early next decade, some vehicles will have a human driver not fully engaged with their operation, allowing level 3 or 4 autonomy for some or all of the driving. Others will have a person in the driver's seat who has turned over complete control to a level 5 autonomous system. Additional vehicles will have passengers and no driver or perhaps no human occupants at all.

Empty AVs will cruise around town running errands, such as picking up kids from school, going to the grocery store for food ordered online, or finding a place to park after dropping off the owner and passengers at a restaurant for dinner. Other times, they will transport sleeping owners on a daily commute.

Police administrators need to plan for this fast-approaching reality. In the transition from human-operated to driverless vehicles, AVs most likely will be programmed to obey traffic laws and control devices, such as stop lights. It also appears probable that levels 4 and 5 systems will adhere to those constraints more precisely than human operators, lessening the priority of traffic enforcement within a law enforcement agency. In the future, traffic control will become increasingly irrelevant, with driverless vehicles seamlessly coordinating their movements with each other in accordance with passenger requirements and environmental constraints.

However, criminals also will use AVs. For instance, they will transport illegal aliens and victims of sex trafficking, as well as unlawful guns and drugs, complicating investigations and interdiction efforts. Considering recent high-profile terrorist attacks in which individuals employed vehicles to kill pedestrians, it is easy to imagine the potential for destruction if someone hacked and programmed one or more AVs to aim for persons on sidewalks.

For law enforcement agencies, AVs could serve as mobile observation platforms equipped with cameras, license plate readers, radar, and gunshot detection systems. Departments could deploy them when and where needed or program the vehicles to patrol autonomously based upon current threats, criminality patterns, or community requests. Criminal surveillance may be another purpose. Police personnel could program a number of nondescript AVs to follow a suspect or surveil a location, using complex algorithms to maintain observation while remaining undetected.

Many questions need an answer before AVs arrive. Some examples provide a starting point.

- Is an AV involved in breaking traffic laws malfunctioning or "violating"? Should officers stop these vehicles, or should a technical system identify when one malfunctions and violates established rules of the road?
- How will officers know if a human or an autonomous system operates a vehicle involved in a violation? Does it matter in terms of justification for a traffic stop?
- Should speed limits, stop signs, traffic lights, and highway markings apply to AVs?
- How will officers stop an AV with no human driver behind the wheel? A complex system of cameras, sensors, and computer software control these vehicles. Without a human operator, safely conducting a traffic stop—for whatever reason—could prove challenging.
- What rights do passengers in an AV have when stopped by the police?
- How will AVs impact drug and other criminal interdiction efforts?
- Will police agencies deploy AVs in some way? How?

> **"With both human-operated and driverless vehicles on the road, the purpose and methodology of traffic enforcement will need to change."**

Answers to these questions currently elude experts and likely will evolve as autonomous vehicles and their attendant technologies enter the mainstream marketplace. Some professionals may speculate that the industry would hold responsibility for malfunctions or so-called violations, rather than human occupants of such

vehicles. Although, if owners modify the vehicle or technology, other individual liabilities may emerge.

How the public, the police, or even criminal enterprises employ these vehicles and where advantages or liabilities for any outcomes may lie remain in the realm of speculation at present. Such supposition, like many future technology debates, while beyond the scope of this article, is important to ponder if for no other reason than perhaps to shape avenues for solutions to such questions.

Conclusion

At present, fully and accurately predicting how this technology will develop and impact society is difficult if not impossible. Some expectations and intuitions may not become reality. However, many seem nearly inevitable and will directly or indirectly impact most, if not all, law enforcement agencies. Now is the time to engage this technology and work with regulatory agencies and vehicle manufacturers to plan a future that creates greater safety and security for the nations' communities.

> **"At present, fully and accurately predicting how this technology will develop and impact society is difficult if not impossible."**

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Endnotes

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