

Hype or Ripe?

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In 1911, eight years after the Wright Brothers flew the first airplane, a French general named Ferdinand Foch dismissed the new technology. "Airplanes are interesting scientific toys," he observed, "but they are of no military value."

Just three years later, the start of World War I marked the first large-scale conflict that would see air power play an important tactical role. Today, autonomous vehicles are the subject of a "hype or ripe" debate similar in spirit to what the airplane experienced in 1911.

For example, recently the chairman of the National Automobile Dealers Association (NADA), Wes Lutz, challenged the media to rigorously question the hype associated with driverless cars. Meanwhile, Waymo CEO John Krafcik announced his company had safely achieved 10-million-miles of driverless vehicle learning on public roads, and seven billion miles of simulated learning, taking Waymo another step closer to beginning commercial operations in Chandler, Arizona.

So, will transportation services based on electric and autonomous vehicles replace personal car ownership, or is all this talk just so much hype? These are critical questions for businesses that will be disrupted by driverless cars and for investors hoping to catch their wealth-creating wave.

Technical experts who strive daily to make what's possible real are best positioned to assess when technology-driven opportunities might reach market tipping points. Toyota engineers, for example, led the way with hybrid electric vehicles, enabling the Prius to realize a dominant market share for decades to follow. Tesla engineers did something similar with lithium-ion battery-based electric vehicles. While autonomous vehicle experts vary in their timing assessments, nearly all conclude that AVs are inevitable and will lead to widespread disruption of transportation. It is not a question of whether, but when.

Americans drive over three trillion miles per year and encounter an enormous range of roadway situations that must be safely navigated. We all like to believe we are good drivers, but nearly 40,000 people are being killed on US roadways annually with over 90% of the crashes caused by human error. Society has accepted this epidemic for more than a century, so it is natural to be skeptical about whether robots can be taught to do what we haven't mastered ourselves. However, this is exactly what the experts are doing: teaching cars to drive by systematically learning what works and proving their solutions in real-world traffic. While much remains to be done, the progress has been impressive, and first-generation commercial services are on the threshold of launching.

Regular, paying customers in the Phoenix area will be able to pay for a ride in one of Waymo's Chrysler Pacifica hybrid

minivans later this year. Cruise Automation is targeting the release of its own commercial service in San Francisco sometime in 2019. And Ford Motor Company has set itself a deadline of 2021 to begin offering rides in autonomous vehicles in Washington, DC, and Miami. Expansion to other cities around the United States, and the world, will follow soon after.

The stakes in the quest to build the driverless car could not be higher. Based on my research at Columbia University, \$4 trillion per year of the U.S. economy could be redistributed among companies and consumers when autonomous vehicles become commercially viable.

Business leaders in general can opt to prepare for potential disruptive change either *sooner* or *later* by educating themselves about new technology, testing out future business opportunities and approaching the most innovative companies to establish strategic collaborations. If you bet right, no problem. However, the consequences of betting wrong are quite different in the two cases.

If you bet on *sooner* and it happens *later*, you would be prepared early. Perhaps you spent some money before it was necessary, but at least you are prepared. The other scenario is considerably more dire. If you bet on *later* and it happens *sooner*, you risk being left behind. Betting that a promising technology like autonomous vehicles is over-hyped, and behaving as if it remains far in the future, poses significant risk.

Business leaders must deeply understand what is possible with new technology and new business models. This requires having a “seat at the table” with the players engaged in creating cutting edge knowledge and know-how. They also need to avoid trying to forecast the future and instead aim at what must be true for a new technology to reach its market tipping point, that is, that magic moment when customer value exceeds market price and market price exceeds product/service cost. When this happens, customers want to buy it, suppliers want to produce it, and the hype becomes ripe.

A lot of people reject what they don't understand, so I'm not surprised that many business leaders have been cautious about jumping on the AV bandwagon. Nevertheless, getting in front of the inevitable appears to be the prudent strategy regarding AVs. Technology can be a hard thing to predict. Consider that, throughout their entire lives, the Wright Brothers traveled a total of only three miles by air — and yet the technology they invented revolutionized warfare and the way we get around. The same will happen with autonomous vehicles.

Lawrence D. Burns is the author, with Christopher Shulgan, of the bestselling history, *Autonomy: The Quest to Build the Driverless Car—And How It Will Reshape Our World.*