THE NEXT 50 YEARS

WHAT WILL HAPPEN TO CARS–AND THE CAR GUY–BY 2058?

BY SHEILA RONIS

The *AutoWeek* reader—we'll call him Dan the Car Guy—is enjoying a morning commute like any other. Today, he is doing what was once called multitasking but is now simply life. He listens to a podcast delivered through a tiny device implanted in his right temple. The implant was done at one of the many Cyberthetic franchises specializing in "Everyday Biomechanical-Human Interface Tech for You!" It was painless and, as guaranteed, took 30 minutes or less. To catch breaking news, Dan has paused the movie that was being projected onto the inside of his car's windshield.

Dan's macchiato was brewed to his personal liking in the part of his car that was once called a glove compartment. Breakfast was dispensed from a customized yogurt-and-granola machine next to the coffee maker.

When the news is over, Dan switches to techno music, turns on a revolving light display and works out with a miniature weight set. By the time he actually gets to the office, he'll have attended a short video conference and submitted a brief report about it to his boss.

Yes, Dan is in his car, but he is not driving it. The car drives on its own, using a combination of smart cruise control, instantaneous GPS traffic and weather information and an intelligent highway system that has recently come online after decades of construction and remapping.

The year is 2058. Much has changed in the automotive industry in the last 50 years as a result of safety, security and environmental requirements and the evolution of technology and law. Energy policy, oil prices, geopolitics, the global economy and consumer behavior all over the world have had serious implications for the auto industry—and for drivers.

What has happened to automotive enthusiasm? What has become of the Car Guy?

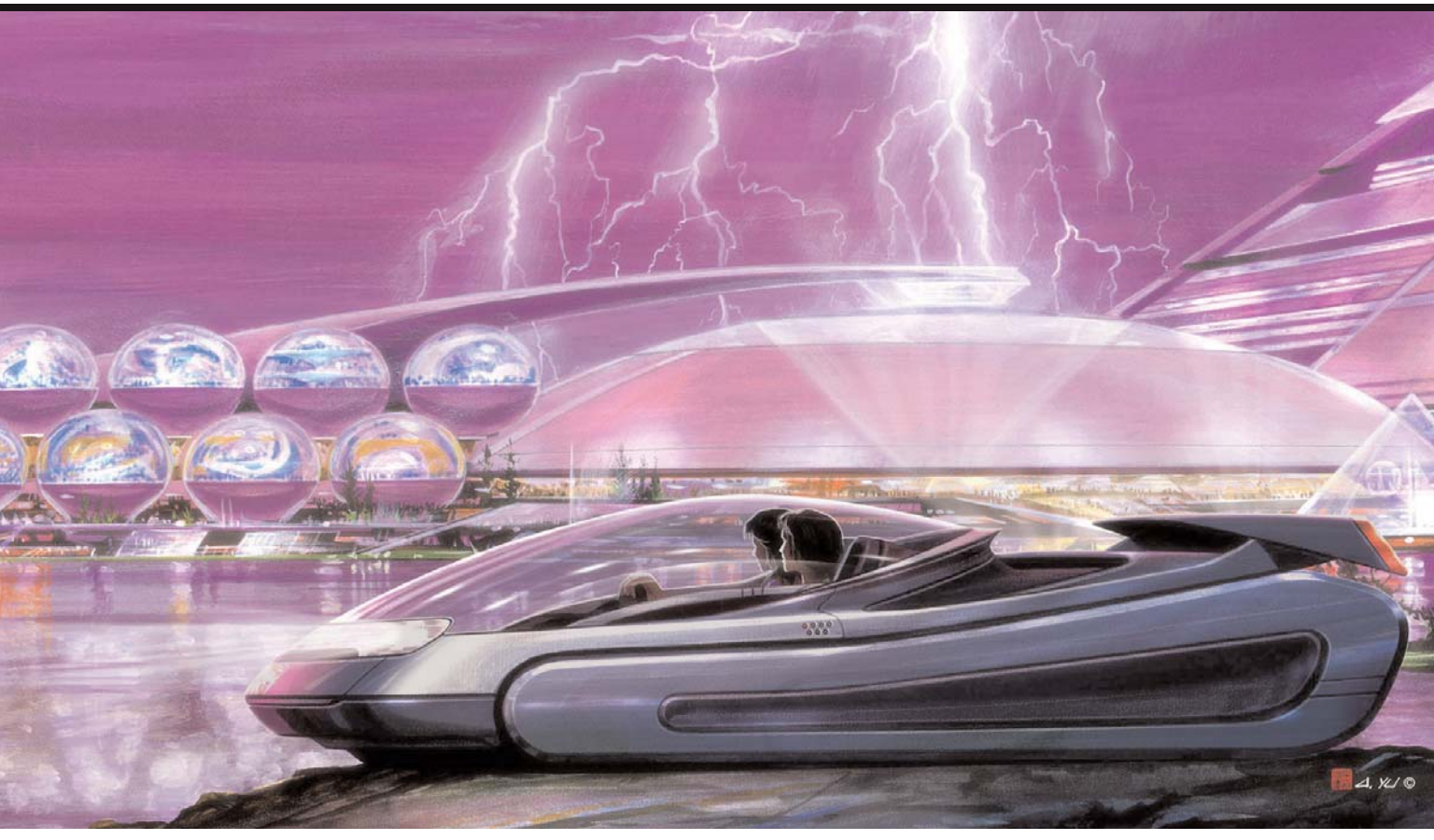
As *AutoWeek* celebrates its first 50 years and looks ahead to the next 50, we asked Dr. Sheila Ronis—director of the MBA program and the Master of Science in Strategic Leadership degree at Walsh College, who chairs a group being asked to write the next National Security Act—to give us her predictions.

Here is her view of how the future just might unfold.

TODAY, IN 2058, ALMOST ALL VEHICLES are ultragreen and electric. No internal-combustion engines have been built anywhere on the planet for a couple of decades. Cars that already had them now require a box retrofitted to the exhaust that keeps pollution from fouling the air. Cars use many different energy sources to run their electric powertrains; hybrid electrics that plug into the energy grid let Americans get the equivalent of hundreds of miles to the gallon of gasoline, but most of them aren't burning gasoline.

Smart vehicles talk to the roads and to other vehicles, and the roads and other vehicles talk back. All cities are networked—vehicles as well as residences. Almost all homes use fuel cells partially powered by solar panels and their own wind turbines. That's why, as Americans plug their daily drivers into the electrical grid, the national system doesn't crash.

All vehicles built today use drive-by-wire technology. In fact, federal and state officials passed regulations that make it against the law to drive, except in emergencies. For this reason, and thanks to intelligent highway systems, motor-vehicle accidents are extremely rare. Computers monitor navigation, engine controls, HVAC and steering, and the task of motoring is more carefree than ever.



But don't think people don't love their cars. They do. Today's vehicles have personalities; most owners have taken to giving them names. (Dan calls his "Mario.") Exterior skins are made of new materials that breathe, repel the elements and keep snow and ice from forming on the windows. Based on how you might feel or what your needs might be, hydrogen skate chassis are frequently married to many different body types and styles.

It's just that simple.

THIS CONVERGENCE OF TECHNOLOgies really started to gather momentum at the end of the first decade in the 21st century. That was when the National Security Act of 2010 brought energy independence into the U.S. national security equation. Before that, military capability was considered paramount to national security; after the new act, however, it was defined as the integration of all of the elements of national power—economic, political, military and diplomatic—to support American interests, people and property around the world. Also with the new act, the economic element and the systems nature of national security began to be better understood, including the need for energy independence.

Americans' love affairs with their cars, their SUVs and their internal-combustion engines were seriously stressed. As the price of oil began to climb, many asked, "When will the alternative-fuel vehicles and their infrastructures be ready?" Hubbert's peak oil theory, which described the availability of oil, was proven valid when production failed to keep up with spiraling global demand. (M. King Hubbert, more than a century ago in 1956, accurately predicted that U.S. oil production would peak around 1970. His logistical model, sort of a dipstick for the Earth, has since been used to predict the peak and decline of petroleum production of many other countries.)

In 2009, as the U.S. economy began to crumble in earnest, the nation recognized it was in serious trouble.

It was energy-driven. While the price of energy soared, the country's economy went into a deep recession; jobs were lost, and quality of life began to deteriorate. This led to strife on many different levels.

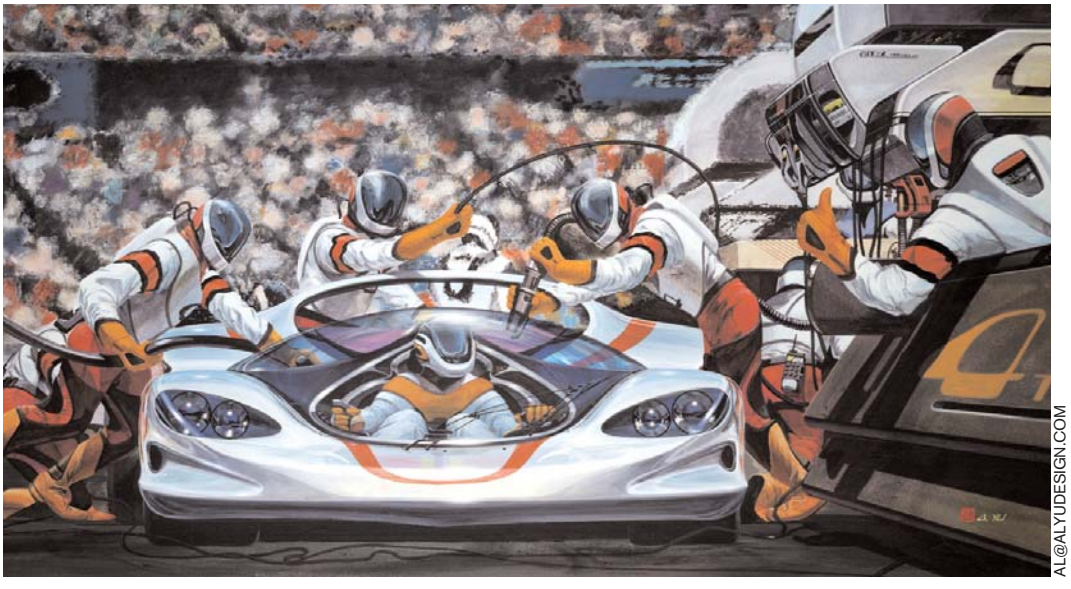
At the time, because of the nation's energy dependencies, the U.S. economy was at risk. The stark realization hit: Americans could not sustain the kind of economy they had enjoyed if they continued their oil dependence. The U.S. national security community recognized that the ability of the country to remain a world leader, let alone a superpower, was at stake.

Understanding the complex systems nature of national security and why the economy and energy policy were parts of the equation was crucial. The world was a small place. The peak of Hubbert's curve had come and gone, and it became clear to those in charge that the world needed to live without oil by investing in new infrastructures on a full scale.

Of course, there would be other effects. Traffic congestion in the world's cities needed to be reduced or eliminated. The environmental impact of emerging world powers, especially China and India, and their increasing use of energy became major global issues by 2015.

America needed a better understanding of sustainability—both economic and environmental—and its relationship to national security and the security of the world. Americans' addiction to powerful cars and the gasoline they used was problematic and expensive, driving the United States toward bankruptcy.

America's entire economy was based on inexpensive petroleum. For that reason, the country was especially vulnerable to oil-supply disruptions and high prices. With the political and economic instabilities in the oil-producing countries of the Middle East, along with Russia, Vene-



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zuela and the "Stans" of central Asia, America was forced to learn how to reduce its dependence on foreign oil. Yet the United States was defending its oil interests in the Middle East and elsewhere, supporting nondemocratic and frequently corrupt regimes to ensure energy stability.

The cost of this oil dependence for the United States, including wealth transfer to oil producers and loss in gross domestic product for a 30-year period at the end of the last century and the beginning of this one, was an estimated $7 trillion (1998 dollars). That money could have funded many items in the federal budget.

By 2015, when gasoline at the pump cost $20 per gallon, federal spending went for energy alternatives, alternative-fuel vehicles and basic R&D. The technologies pursued included hydrogen, biomass, nuclear and a combination of many identified energy sources that would support the economy.

The United States had several peer competitors by 2040, including the EU, China and India. Their appetites for petroleum had an enormous effect on global oil prices. China became the manufacturing center of the world; India became the IT and "backroom services" capital of the world. To remain a leader, the United States had to do something to win in this economic world war. It came to this global battle with the same spirit of innovation and unified commitment that had served the country in earlier crises.

Because of work done by the automakers, the United States was able to change the world paradigm by coming up with an alternative to fossil fuels with its plug-in electric-vehicle portfolio. This gave the country an edge for nearly a generation as others raced to catch up.

The U.S. Congress began to work in a nonpartisan way as well when it came to embracing energy independence. First, legislators supported increased research into and development of alternative fuels, such as those from biomass that used renewable energy technologies. They also put together a "Manhattan Project" for alternative energy for transportation and electrical-grid residential needs. Congress gave incentives to industry to invest in technologies that would assist in getting to a hydrogen economy and increase the use of solar and wind energy. Congress also made permanent the production tax credit supporting wind projects.

As a younger generation looks to the future in 2058, everyone is talking about nuclear-fusion solutions, which appear promising. It has been a century since the fusion studies began, but most experts see the world's energy future coming from the new technologies that nuclear fusion offers, since generated electricity will power everything on the planet, including all modes of transportation—at least for the foreseeable future.

AS FOR OUR CAR GUY, Dan, and other *AutoWeek* readers, their enthusiasm for automobiles has been channeled into personalizing the cars that they don't actually drive. Still, they do have outlets for their driving passion.

Private clubs have sprung up that cater to this undying passion, where members can drive their vintage and collectible internal-combustion-engine cars. The latest cars on the lust chart: Audi's R10 and R12 diesel.

People can still drive in certain gated communities—with strict limits on both speed and energy use—which have become fashionable places to live or visit. Club fees are high and include an energy security tax that helps fund partnerships between vehicle companies and government laboratories.

As Dan's car pulls into the company garage and plugs in for recharging and reprogramming, the beep of the sliding door nudges him awake. He has nodded off, dreaming of the weekend, when he'll head to the club—a theme park run by his favorite car magazine, *AutoWeek*—to drive some real, honest-to-goodness Porsches, Ferraris and Corvettes on a real, honest-to-goodness racetrack, at full speed, to his enthusiast heart's content.