Computers in Cars

The major role that computational devices play in cars became dramatically apparent last September, when the Environmental Protection Agency announced the results of its investigation into Volkswagen. The EPA discovered that the German automaker had installed software in some of its diesel-engine cars that controlled a system for reducing the emission of environmentally hostile nitrogen oxides—but only during an emissions test. On the open road, the car belched nitrogen oxides, unbeknownst to its driver.

Computers have been stealthily controlling cars for decades. My second car, a 1993 Honda Civic hatchback, had a computational device—an engine control unit—whose microprocessor received data from sensors in and around the engine. On the basis of those data, the ECU would consult preprogrammed lookup tables and adjust actuators that controlled and optimized the mix of fuel and air, valve timing, idle speed, and other factors. This combination of ECU and direct fuel injection not only reduced emissions and boosted engine efficiency, it was also less bulky and mechanically simpler than the device it replaced, the venerable carburetor.

Unfortunately, however, the trend for computers in cars is toward greater complexity, not simplicity. Consider another Honda, the second-generation Acura NSX, which went on sale earlier this year. The supercar's hybrid power train consists of a turbocharged V6 engine mated to three electric motors: one each for the two front wheels and one for the two rear wheels. An array of sensors, microprocessors, and actuators ensures that all three motors are optimally deployed during acceleration, cruising, and braking.

And talking of braking, the NSX's brake pedal isn't actually mechanically connected to the brakes. Rather, it activates a rheostat, which controls the brakes electronically. To preserve the feel of mechanical braking, a sensor gauges how much hydraulic pressure to push back on the driver's foot.

In Formula One racing, the proliferation of computer control has led to an arms race among manufacturers, which reached its apogee in 1993. Thanks in part to its computer-controlled anti-lock brakes, traction control, and active suspension, the Williams FW15C won 10 of the season's 16 races. The sport's governing body responded by restricting electronic aids. By the 2008 season, all cars were compelled to use the same standard ECU. The 23-year-old Williams FW15C retains a strong claim to being the most technologically sophisticated Formula One car ever built.

Computers aren't confined to supercars or racing cars. The July issue of Consumer Reports ranked cars' infotainment systems, with Cadillac's being among the worst. Owners reported taking months, even years, to master its user interface. “This car REALLY needs a co-pilot with an IT degree,” one despairing owner told the magazine. And this past May, USA Today reported that consumer complaints about vehicle software problems filed with the National Highway Traffic Safety Administration (NHTSA) jumped 22 percent in 2015 compared with 2014. Recalls blamed on software rose 45 percent.

I’m not against computers in cars. Rather, I worry that their encroachment will become so complete that consumers like me will be deprived of the choice to buy a car that lacks such fripperies as a remote vehicle starter system, rear vision camera, head-up display, driver seat memory, lane departure warning system, and so on. I worry, too, that even as the NHTSA records more software problems, it’s also considering whether to mandate computer-controlled safety features.

So although I wouldn’t turn down an Acura NSX, I’d rather drive one of its ancestors, the Honda S800 roadster, circa 1968.

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