



INDYCARS IN DETROIT  CANADIAN GP
GMC/CHEVY SUBURBAN AUTOFILE

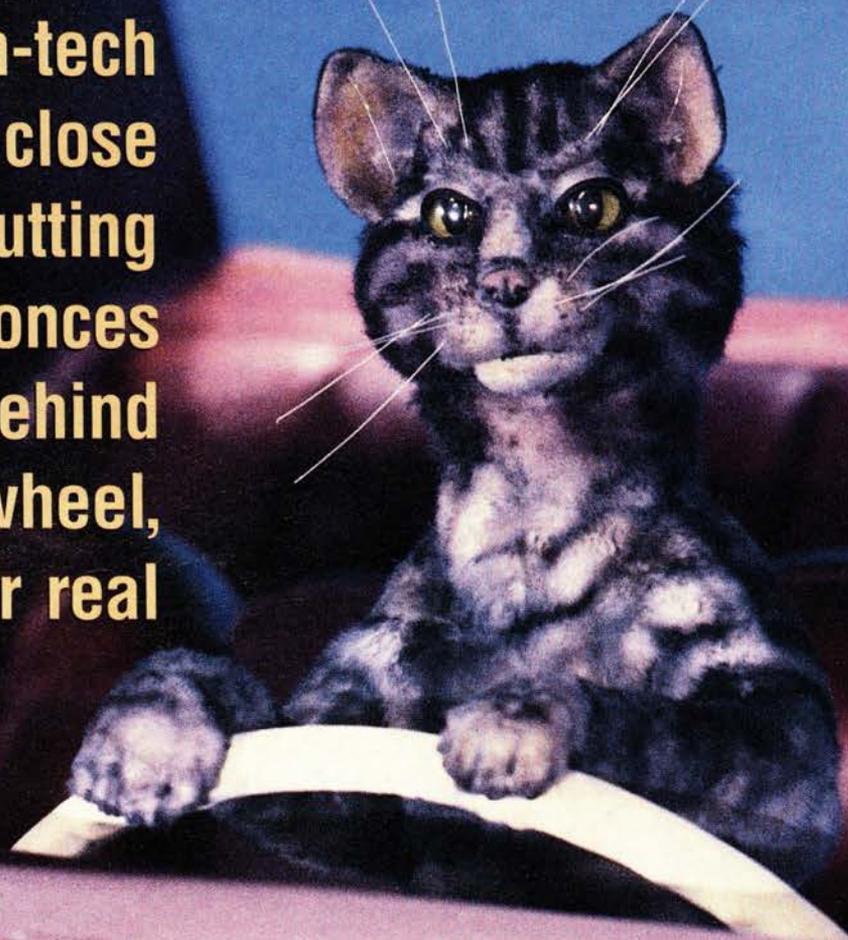
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TECHNOLOGICAL TOUR DE FARCE

High-tech
is close
to putting
Toonces
behind
the wheel,
for real



OUT OF OUR HANDS

Cars that think they can drive better than you do are on the horizon, and what may be worse is that there's not much you can do about it

By Kevin A. Wilson

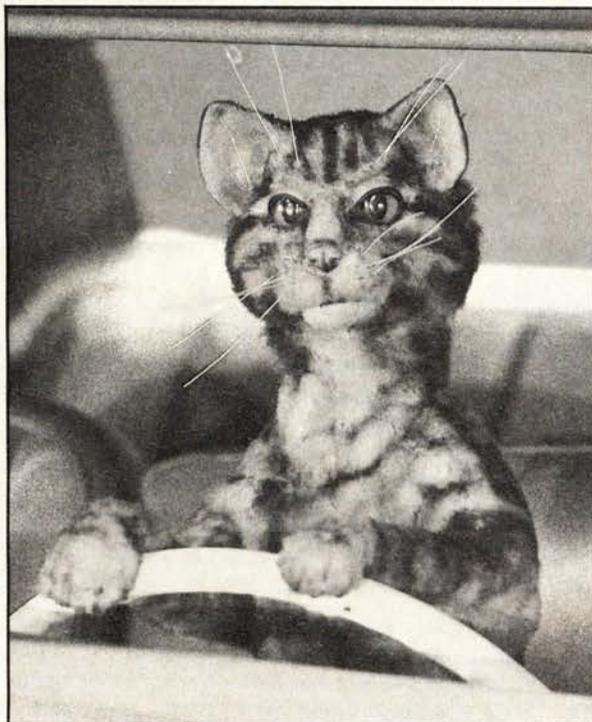
What happens to automotive enthusiasm if electronic reality does TV and the comedy writers at *Saturday Night Live* one better and makes it possible for Toonces The Driving Cat to "drive" a car from Los Angeles to New York—and without the usual scene-ending catastrophic crash over a cliff?

That scenario suggests fully automated cars and highways, a system that many in our government and a surprisingly large number of engineers believe is likely to happen within our lifetimes. It's also a scenario under which no one would actually drive a car on the open road, instead submitting to a central control system. And enthusiasm for driving in such circumstances would be meaningless.

But that doesn't moot the question: The more immediate issue is how the technologies leading us toward the automated highway of some distant tomorrow are sapping the fun out of driving *today*.

Before we go too far down the road of the American media's favorite theme—Be Afraid, Be Very Afraid—as is seen in stories about everything from the food you eat to the air you breathe, we should acknowledge something important: Auto enthusiasts, for all their technical knowledge and understanding, don't have a strong history of accepting technological advance and change.

You think otherwise? There were car buffs 80 years ago bemoaning that the driver was losing "control" of his car when automakers relieved us of the responsibility for manipulating fuel mixture and spark timing via steering wheel-mounted levers. Hydraulic brakes, we complained, didn't provide the direct feel of the cable-operated sort. More recently, power steering and automatic transmission met strong resistance from driving enthusiasts when they were new. Today, some say cars have gotten too good all



NEC-TV PHOTO BY ALAN SINGER

their own, without any electronic trickery—too fast, too grippy to be tossed around near their performance limits in any circumstances outside the racetrack.

That said, there is a definite and growing threat to your ability to have fun by practicing your skills behind the wheel, and that threat is rooted in burgeoning technological advances on the electronic front. Where previously engineers have worked to make the driver's job easier (i.e. more comfortable, safer, less complicated) and to enhance vehicle performance, the modern frontier aims to override the driver's own active efforts to control his car and in many cases to actually limit vehicle performance. ABS and traction control are really the first automotive technologies that intervene in this manner, overriding in the name of safety the commands the driver has issued to his machine, constraining the car's performance.

It's this loss of control over the car that threatens to take all the skill and therefore,

fun, out of driving. Your ability to lock up a wheel under braking, perhaps inducing a desired handling affect, or to kick the tail of the car out under acceleration is inhibited by ABS and traction control. But industry experts say that's just a taste of what's to come. How'd you like to have your brakes electronically controlled by a radar system that detects your proximity to an object in front of the vehicle, and hits the binders if you're too close by some arbitrary measure? What if your car could not only brake by itself, but also steer to a degree or in a direction counter to your commands, and did so without so much as a warning light?

All that and more's in the offing.

Jim Feuling, whose Ventura, Calif., Feuling Engineering consultancy is famed for innovation and high-performance advances, notes that the increasing power and speed of computers make it possible to monitor and control more and more aspects of a car's performance all the time.

"I've got a dyno here in my shop that reads out 332 channels of data acquisition, (each) monitored 25,000 times a second," says Feuling. "It'll catch things you or I would never notice—microsecond spikes in oil temperature, things like that."

Scatter enough sensors around a car and teach the electronic brain what to do in each circumstance, and you could pretty much rule out mechanical failure as a cause of accidents.

"I could see it if a sensor detected a low tire pressure, or a high oil temp in a rear axle—say the guy's run it dry, no maintenance—and shuts things down to prevent a spin. That'd be a good thing," adds Feuling.

"There are also practical limits to human perception and human reactions.

"I've spun (on the Bonneville Salt Flats) at 260 mph, and let me tell you, things happen real fast. But an electronic system that would step in and save you. . . I don't know.

That scares me.

"Airbags scared me; you can't design that stuff to anticipate every situation. What if you get hit, the bag goes off, and you can't steer just long enough that you end up on the wrong side of the highway?"

"It's the Big Brother thing isn't it?"

Although we enthusiasts may wish otherwise, one accomplished Big Three engineer reminded us that many a fast car is sold to an intense, driven business person (O.K., he used the "Y" word) who doesn't want a fast car to enjoy driving it, but to a) impress peers, and b) minimize time spent behind the wheel on a daily pre-dawn commute.

Just such a driver may have been imagined by the engineers behind GM's CERV

edge, gets a low priority when government and industry sit down at the table to negotiate the future of transportation. For good or ill, the car is this country's mass transit system. Our dependence on the automobile is the driving force behind Intelligent Vehicle Highway Systems research. The visionaries suggest that by automating major highways, we may get the best of both worlds: a safe, train-like highway system that also allows people to have their own cars, with all the implications that carries regarding individual choice and mobility, for traveling off the main routes.

But once we have radar braking, electronic steering and autonomous (no human input required) cruise control, do you imagine you'll

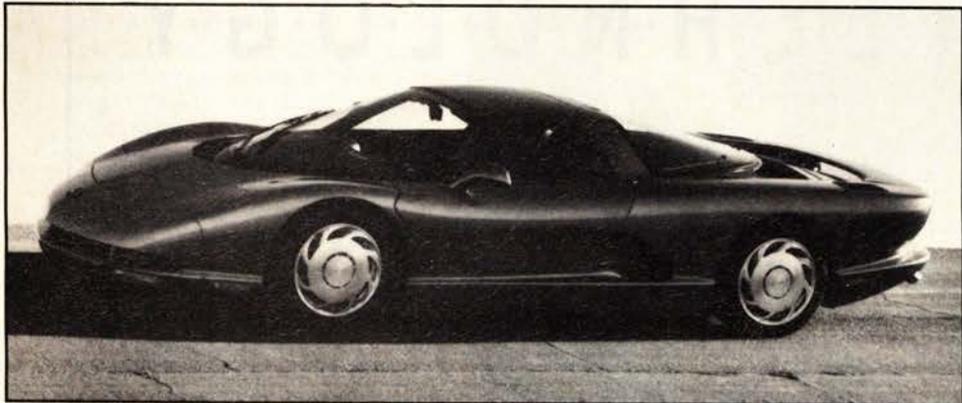
takes skill to place the car properly on the road, find the line around a corner, choose when to apply brakes and accelerator. But this is akin to saying photographers still must point the camera, choose the lens, frame the picture and time the triggering of the shutter button, even in the age of auto-exposure, auto-focus and auto-flash. Technology works to ease the task 95 percent of the time. But skilled photographers still seek out equipment that allows manual control or manual override of automated functions: There are things human beings need to do that machines can't understand.

Larrousse-Lamborghini F1 drivers Philippe Alliot and Erik Comas say that they turn off their cars' traction control systems when they need to make a pass on the race-track, because that last iota of performance is still only available out there beyond the limits set by the electronics.

But after a pass is made? "I turn traction control back on," says Alliot. "It's safer, you do not risk making the big mistake."

Fear of boneheads making the big mistake on the highway is likely to limit your ability to override electronic systems on your road car. But research continues into technology that would allow a skilled and informed driver to take matters into his own hands in situations that demand human intervention.

One engineer said feedback loops on the likes of traction control could evolve to of-



III concept car. That experimental machine, looking much like the Corvette Indy, had four-wheel-drive with electronic governance of the torque delivered to each wheel. Combine that with advanced ABS and electronic drive-by-wire steering with closed-loop yaw control, and you could develop a car that drives itself out of an incipient spin.

Sounds great... but would Danny Sullivan have wanted the car to intervene when he was full sideways in front of Mario Andretti at Indy in '85? How happy would you be if your car stopped your four-wheel drift on a snow-covered mountain switchback if it suddenly caught grip and drove off the cliff?

Toonces indeed.

The closed-loop electronic monitor-and-override systems were pioneered in the aerospace industry and are now making a big impact in F1 racing. In racing, traction control, active suspension and other electronic aids have been the focus of intense concern of late: What, after all, does the World Driving Championship mean if it's not dependent on driver skill?

"In a couple of years," Benetton F1 boss Flavio Briatore said recently in a TV interview, "we will be driving the cars from the pits. That is ridiculous. We must do our jobs and allow the drivers to do theirs."

Rules will change in racing. But Briatore points to the issue of driver control. Is that important only because racing is a sport, or is it a vital element of car enthusiasm as well?

Fun with cars, we'll have to acknowl-

be allowed to turn all that off when you leave the main road? Don't look to automakers for much assistance in keeping control in the drivers' hands. Between product liability worries and political realities, automakers are likely to find it in their own interest to profit from early involvement in the future Brave New World of transportation. Companies that cater pretty exclusively to enthusiasts may feel otherwise, but they—and we—are an extreme minority.

Is there no hope?

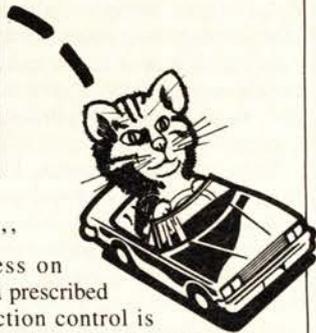
Of course there is a place in the future for automotive enthusiasm and cars that are fully under the driver's control. Just as there is a place for recreational equestrian sports in a world that no longer relies on horses for transportation. The question is affordability and accessibility—ever notice those signs at the entrance to the interstate? The ones that forbid horses?

For now, high-tech cars with performance abilities that you never reach on the open road can still be enjoyable to drive there—it



SUTTON FILE PHOTO

Wringing the last iota of performance out of an F1 machine is something still best done by a person, or so say Larrousse/Chrysler-Lamborghini drivers, who turn off their cars' traction control when making a pass



fer an "over center" position: Press on the gas up to a prescribed point and traction control is fully operative... press hard enough to overcome resistance, and you defeat the system.

If the electronic brain can be made smart enough to distinguish between a cat and a skilled driver, enthusiasts just might sign on with the new technology. Would we put money on that proposition? Not any more than we'd hire a car tester for our magazine who went by the name of Toonces. ■