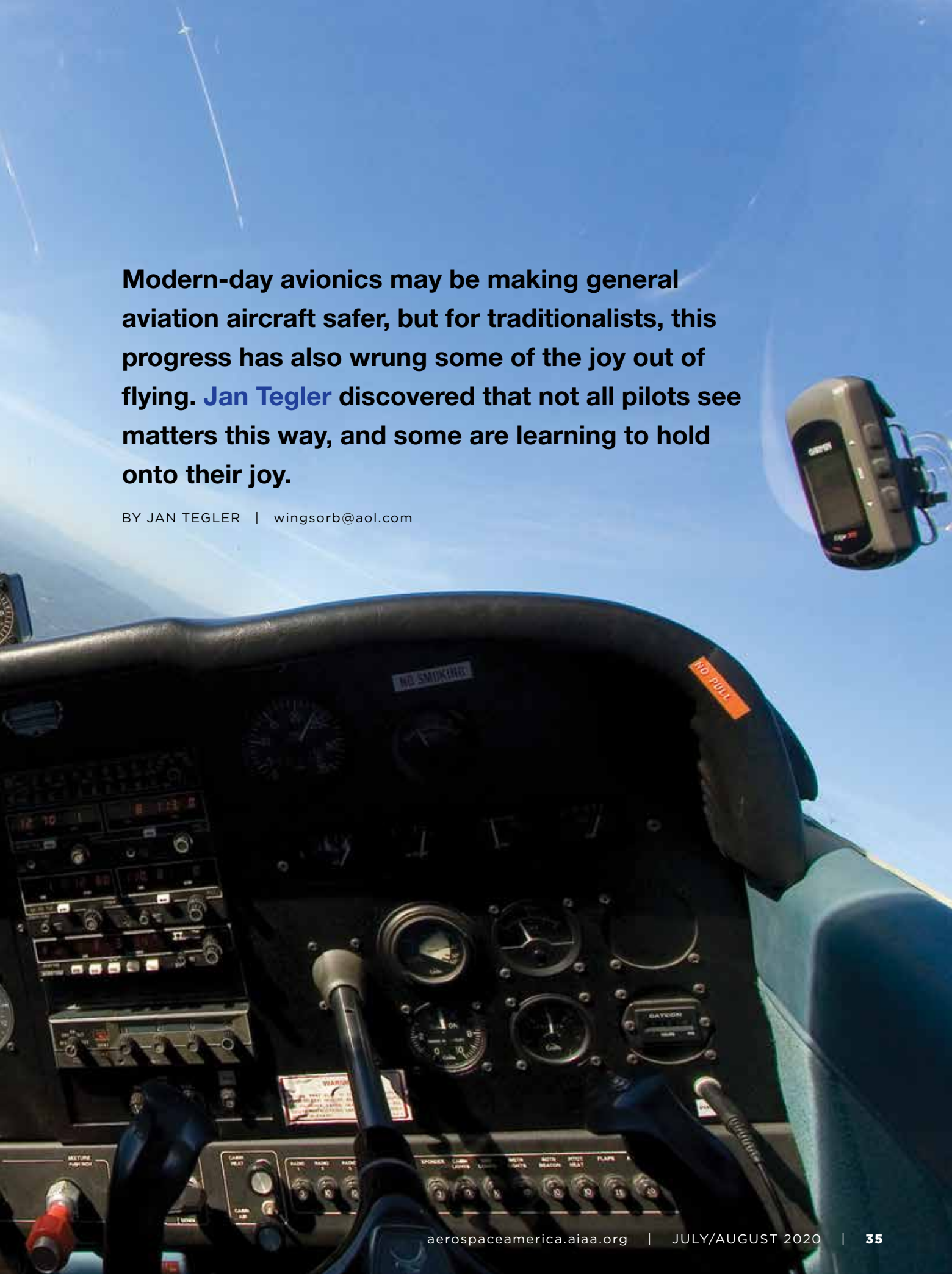
joy(less) RIDE



Modern-day avionics may be making general aviation aircraft safer, but for traditionalists, this progress has also wrung some of the joy out of flying. Jan Tegler discovered that not all pilots see matters this way, and some are learning to hold onto their joy.

BY JAN TEGLER | wingsorb@aol.com

Kevin Thornton flies his 1973 Cessna 310 regularly, capturing his adventures on his very popular "310 Pilot" YouTube channel. Sold between 1954 and 1980, the six-passenger twin-engine plane is a classic general aviation aircraft. But if you took a seat in Thornton's 310, you'd notice that many of the round dials and gauges it came out of the factory with nearly 50 years ago have been replaced with flat display screens featuring the latest in computerized pilot aids.

"Right now I could push a button and send a flight plan from my iPad to my airplane," Thornton says. "I could take off, push the autopilot on as soon as I get to 200 feet above ground level, and then not touch another thing until I flare to land."

His partially glass-cockpit-equipped airplane exemplifies a two-decade trickle-down of digital pilot aids first developed for military and commercial aircraft, to the general aviation airplanes private pilots fly. Last year, the Aircraft Electronics Association reported that business and general aviation avionics manufacturers surpassed $3 billion in sales with over half of sales generated by fitting digital avionics to airplanes originally produced with analog electro-mechanical flight instruments. Some of the technologies are automating tasks once performed manually.

Among those who fly because they choose to, not because it's a career, opinions vary about whether all the new technology adds to or detracts from the joy of flying.

For now, avionics such as those that monitor weather and alert pilots to the presence of aircraft

▼ **YouTube personality**
Kevin Thornton, shown flying his Cessna 310 over Lake Michigan in Chicago, captures the adventure and sometimes frustrations of modern general aviation.

Courtesy of Kevin Thornton

▼ **The pilot** aids inside Thornton's cockpit.

Kevin Thornton

nearby which may pose a risk of collision remain optional but some aviators worry that FAA could issue new requirements on top of the 2020 mandate that nearly all aircraft must carry Automatic Dependent Surveillance-Broadcast radios to transmit their GPS locations and identities.

"We can't ever get to the point where technology is dominant and becoming a requirement for all flying," cautions Sean Elliott, the vice president in charge of advocacy and safety for the Experimental Aircraft Association, whose members often pride themselves on flying simple aircraft just for the joy of it. "You've got to still have the [Piper] Cubs and [Aeronca] Champs with no electrical system and simple instruments and be able to operate freely about the national airspace system," he adds. "Grassroots flying is a very important part of what aviation is."

If advanced avionics beyond ADS-B were to become a requirement, he predicts, aviation will lose the fundamental elements that make it "truly special, enjoyable and attractive."

Elliot believes the technology should fit the aircraft. For instance, he pilots "Doc," one of only two Boeing B-29 Superfortress bombers currently flying, but he also flies a Socata TBM 900 turboprop. Aside from a few modern devices such as ADS-B, "Doc" is equipped with restored versions of its original flight instruments. The Socata has a state-of-the-art Garmin G1000 glass cockpit.

Others see positives for just about any aircraft. Phil Straub, managing director of aviation at Garmin's Olathe, Kansas, headquarters, says modern pilot aids like ADS-B add to the enjoyment of flying, giving aviators situational awareness they've never had before.

Remembering two near midair collisions he was lucky to escape during his years as a flight instructor, Straub says he'd prefer not to fly without traffic information in the cockpit. "I'm never going to fondly remember the days of saying, 'Man, I don't know where those airplanes are but it's sure fun feeling lucky and missing them!'"

Indeed, there were 173,080 active private pilots in the United States at the end of 2019, according to FAA data.

Flying for fun

Mike Goulian is a renowned air show performer, a U.S. Unlimited Aerobatic Champion and an ex-Red Bull Air Race pilot who owns and operates Mike Goulian Aviation, a Cirrus Aircraft flight school in Bedford, Massachusetts.

He's among those who believe pilot aids should fit an airplane's purpose.

"Unfortunately, I think sometimes manufacturers are trying to sell airplanes as cross-country platforms, even when that's not what they were first designed for," Goulian says.

He's referring to formerly basic single-engine general aviation aircraft like the Cessna 172, CubCrafters' XCub (a descendant of the famed Piper Cub), the Diamond DA40 and others originally intended for pilots looking to have fun flying near their

Jan Stefka

home airport, in back-country settings or as trainers for student pilots.

Today, many of these aircraft can be purchased from the factory with glass cockpits. Ron Draper, the president and CEO of Textron Aviation, oversees three of the most iconic brands in aviation — Beechcraft, Hawker and Cessna. An ex-Army helicopter pilot who regularly flies a Cessna 172, Draper says the famed four-seater — the most popular single-engine aircraft in history with 44,000 built and counting — is now offered with Garmin's G1000 NXi integrated glass cockpit "because it's what our customers want."

In Draper's opinion, the 172 remains the "best flight training aircraft in the world." The design is now certified by the FAA for poor visibility instrument-flight-rule conditions, which means instructors can train beginners and also experienced pilots who want to earn their IFR rating. Cessna has a backlog of orders for new 172s with flight schools "lined up more than a year in advance to buy it and they absolutely demand a glass cockpit," Draper says.

"As long as pilots have proper training and don't rely too much on the automation of modern pilot aids, I think they absolutely enhance the enjoyment of flying," he says.

As a sport aviator, Goulian is in favor of digital avionics and automation for airplanes designed for travel. But when it comes to airplanes designed for sport and aerobatic flying or for getting airborne simply to enjoy the sensation of flight, he thinks glass cockpits can be "overkill."

"What's wrong with buying an airplane to go bore holes in the sky?" Goulian asks. "So many people talk about an airplane needing to have a mission these days, but guess what: The mission can be fun. The avionics you choose shouldn't complicate an airplane you fly for stick and rudder enjoyment."

Nevertheless, for some pilots, the call of technology is irresistible. Tom Haines of the Aircraft Owners and Pilots Association, says many private pilots are choosing to "option up" the avionics packages they purchase in new general aviation aircraft, even for planes that will mostly be flown locally.

"They're opting for glass cockpits with IFR [all-weather] capabilities, which in something like an Aviat Husky you might argue is crazy," he says, referring to the popular and rugged single-engine backcountry airplane. "But that's what sells."

Jens Hennig of the General Aviation Manufacturers Association says pilots buying new aircraft with the latest pilot aids or upgrading older models are flying their planes in different ways. "They're flying longer flights, flying more often and flying in more challenging conditions."

"So many people talk about an airplane needing to have a mission these days, but guess what — the mission can be fun."

— Mike Goulian, sport aviator

GAMA's annual report for 2019 includes FAA activity survey data indicating that the average hours flown by a general aviation aircraft in a year increased from 111 hours in 2010 to 121 in 2018.

Straub of Garmin says the upward trend in sales of the company's glass cockpit avionics, including the firm's GFC 500 autopilot, indicates that some pilots are choosing to fly light aircraft over longer distances.

"Saying a Cessna 172 has an autopilot feels like an oxymoron but it's not too far away from being our number one-selling GFC autopilot sales platform," Straub notes.

He doesn't think autopilots detract from "the fun or purity of flying," reasoning that pilots can still hand fly an airplane with an autopilot. "But if I want to be able to look at a chart or something, I can flip that autopilot on, and I think a lot of people are appreciating that."

Pilot aids equal safety and fun

General aviation aircraft manufacturers and avionics makers say digital pilot aids ease the workload for private pilots flying cross country, helping them navigate and communicate more efficiently while improving their understanding of the traffic and weather they encounter. Glass cockpits, they reason, should add to pilot safety.

The newest study I could find on this question was one released in 2010 by the U.S. National Transportation Safety Board, and the results were mixed. NTSB performed statistical analysis on manufacturer records and also reviewed activity survey data and accident investigation records between 2002 and 2008. The board concluded that "light single-engine aircraft equipped with glass cockpit displays experienced lower total accident rates — but higher fatal accident rates — than the same type of aircraft equipped with conventional analog instrumentation."

FAA told me that no additional studies of this type have been completed since the 2010 NTSB study but that the overall accident rate for general aviation has decreased over the last decade. The agency says that "could be due" to the proliferation of glass cockpits and mobile devices — computer tablets and cellphones with flight planning, weather and traffic-monitoring software.

Randy Bailey, a researcher with NASA's crew systems and operations branch, says that no comprehensive studies comparing traditional and glass cockpits have been done recently for a good reason. The skills, training, attitudes and risk tolerance of GA pilots are so diverse that it's difficult to determine their "influence" on how pilots use analog or digital flight instruments.

"Who's the pilot?" Bailey asks, noting that the GA population includes airline pilots with 20,000 flight hours who fly on weekends for fun and beginners with fewer than 100 hours of experience.

Erik Brouwer

Flying for transportation and adventure

310 pilot Thornton has been flying for more than 20 years privately. He says modern pilot aids have "absolutely increased the enjoyment" he gets flying his airplane. "I'm more relaxed because I'm safer."

Thornton says he's safer in part because he upgraded his 310 with an Avidyne IFD550 digital touchscreen flight management/GPS navigation system. The Melbourne, Florida-based avionics maker's IFD550 also has a built-in attitude reference system that detects changes in aircraft pitch, roll and yaw, replicating the function of the vacuum pump driven attitude indicator common in analog cockpits. Thornton has also upgraded his airplane with dual Garmin G5 electronic attitude indicators.

▲ **Flying a Cessna 150**

Erik Brouwer/Flickr

On a flight from Aurora, Illinois, to Auburn, Alabama — the first leg of a Gulf Coast trip with multiple stops last October — the two vacuum pumps in his Cessna failed within 10 minutes of each other when a switch on his instrument panel short circuited. Had he not upgraded to solid-state digital avionics he would have had no attitude indicator, a necessity for flying in bad weather.

"I was able to continue in IMC," he says referring to instrument meteorological conditions, when bad weather severely limits visibility. "I shot multiple instrument approaches with no vacuum pumps legally," Thornton says. "If I had not upgraded to digital avionics that would have ended our trip on the first leg and potentially have been dangerous."

Haines of AOPA notes that vacuum-driven analog instruments, which also include climb indicators and turn coordinators, often fail. "Even if you're flying a basic airplane in the backcountry, having a more reliable solid-state digital attitude indicator gives a pilot more peace of mind," he says. "Isn't that more fun?"

Thornton's airplane came from the factory with a Cessna-made "Nav-o-matic" autopilot but he upgraded it to a modern digital autopilot from Genesys Aerosystems of Mineral Wells, Texas. Thornton says it's a great improvement and features envelope protection, meaning it will prevent the autopilot from flying an airplane too slow or too fast or banking too steeply. It also has emergency straight-and-level recovery software and servos that will return the aircraft to wings-level flight with the push of a button should the pilot become disoriented in clouds, for example.

The new autopilot relieves Thornton of hours of flying by hand "which can be exhausting" on a cross-country trip.

Draper says a glass cockpit isn't necessary for most recreational flying or sightseeing but these days the 172 is a multimission airplane. "On your sightseeing day, don't look at the avionics. Look out the window. But the next day, if you're in the soup, you might want all of that stuff."

Goulian flies a Cirrus SR22 with a Garmin glass cockpit to and from the air show performances where he flies his Extra 330SC that is ferried to the show site by another pilot on his airshow team. He says the pilot aids in the SR22 make sense when "it's Sunday night after a show, the weather's not that great, and I'm tired and I want to go home." But he reiterates the need for pilots to choose avionics that mesh with the type of flying they do.

"Do I need three GPS and synthetic vision to go fly in the backcountry?" he asks rhetorically. "That kind of defeats the purpose of flying like that to have fun." ★