

Ode to E Pluribus Unum for Sunday March 24 2024

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For the Birds



Credit: Illustrated By D.W. Mitchell / The Genera Of Birds 1849

John James Audubon's *Birds of America* wasn't the only book of avian illustrations published in the 1800s, nor was it the most ambitious. George Robert Gray's [Genera of Birds](#) surveyed feathered fliers from around the world, not one mere continent.

From 1840 to 1872, the British zoologist tried to catalog every bird known, a tally that began with a privately published list of 1,065 genera and, several editions later, became a book of more than 11,000 species. This depiction of the kākāpō (*Strigops habroptila*), a nocturnal parrot from New Zealand, appeared in a volume printed between 1844 and 1849.

Page through Gray's birds, which includes lovely renderings of species, as well as detailed sketches of beaks, feathers and feet, at the [Biodiversity Heritage Library's Flickr page](#). (And ICYMI, learn about current efforts to save New Zealand's kākāpō from our story.)

Trust me, you'll want to look at this.

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Thomas Stafford, NASA astronaut dies at 93



NASA

If there was a common theme to the four missions Stafford flew, it was 'meetings in space.'

Former NASA astronaut Thomas Stafford, who flew to the moon before leading the first international space mission carried out by the United States and Russia, has died at the age of 93.

<https://bit.ly/3TL8ahO>

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What Makes NVIDIA Different from its Major Competitors



hwupgrade.it

Witnessing NVIDIA's stratospheric growth this past year and being clueless as to the underlying issues involved, I decided to ask ChatGPT for an explanation. Here's what Chappie told me.

Me

What makes NVidia's chip different from its major competitors?

ChatGPT

NVIDIA's chips, particularly those used in graphics processing units (GPUs), are differentiated from their major competitors (like AMD and Intel) in several key ways:

Architecture: NVIDIA utilizes its proprietary GPU architecture, such as the Turing architecture used in its GeForce RTX series or the [Ampere architecture](#) used in its latest GPUs like the GeForce RTX 30 series. These architectures are designed to optimize performance for various computing tasks, including gaming, AI, and scientific computation.

CUDA Cores and Tensor Cores: NVIDIA GPUs feature CUDA cores for general-purpose computing tasks and [Tensor Cores](#) for specialized deep learning tasks. This architecture allows NVIDIA GPUs to excel in both traditional graphics processing and emerging fields like AI and machine learning.

Ray Tracing and AI Features: NVIDIA has been a pioneer in introducing real-time ray tracing technology in consumer GPUs. Their RTX series GPUs feature dedicated hardware for ray tracing acceleration, allowing for more realistic lighting, shadows, and reflections in games and applications. Additionally, NVIDIA's GPUs are equipped with AI features like DLSS ([Deep Learning Super Sampling](#)), which uses AI algorithms to upscale lower-resolution images for better visual quality without sacrificing performance.

Software Ecosystem: NVIDIA provides a comprehensive software ecosystem including drivers, development tools (such as CUDA Toolkit), and libraries (like cuDNN for deep learning). This ecosystem is well-supported and widely adopted by developers and researchers, further enhancing the appeal of NVIDIA's GPUs for various applications.

Partnerships and Industry Influence: NVIDIA has established strong partnerships with game developers, software companies, and researchers, fostering a robust ecosystem around its GPU technology. Moreover, NVIDIA's GPUs are often favored in professional visualization, data center, and scientific computing applications due to their performance, reliability, and support.

Manufacturing Process: NVIDIA's chips are manufactured using advanced process nodes in partnership with leading foundries like TSMC. Manufacturing process advancements contribute to improved performance, power efficiency, and cost-effectiveness of NVIDIA's GPUs compared to competitors.

Overall, NVIDIA's differentiation lies in its cutting-edge GPU architectures, specialized features for gaming and AI, comprehensive software support, industry partnerships, and advanced manufacturing capabilities. These factors collectively contribute to NVIDIA's dominance in the GPU market and its competitive edge over major rivals.

Still confused? I am, so I asked Chappie about Turing Architecture

Me

Please explain Turing Architecture in relation to NVIDIA's GeForce RTX series.

ChatGPT

NVIDIA's Turing architecture, introduced with the GeForce RTX series of graphics cards, represents a significant leap forward in GPU technology, particularly in terms of real-time ray tracing and AI-driven features. Here's an overview of the key aspects of the Turing architecture and its relation to the GeForce RTX series:

RT Cores (Ray Tracing Cores): One of the defining features of Turing architecture is the inclusion of specialized RT Cores dedicated to real-time ray tracing. Ray tracing is a rendering technique that simulates the behavior of light in a scene, leading to more realistic lighting, shadows, and reflections. RT Cores accelerate ray tracing calculations, allowing for smooth, real-time rendering of ray-traced effects in games and applications.

Tensor Cores: Turing architecture also incorporates Tensor Cores, which are specialized units designed for deep learning tasks. These Tensor Cores accelerate AI-driven features such as deep learning super sampling (DLSS) and AI-enhanced denoising. DLSS, for example, uses AI algorithms to upscale lower-resolution images, improving performance without sacrificing visual quality.

CUDA Cores: Like previous NVIDIA GPU architectures, Turing features CUDA cores for general-purpose computing tasks. These CUDA cores handle traditional graphics rendering as well as parallel processing tasks, contributing to overall performance and efficiency.

GDDR6 Memory: Turing-based GeForce RTX GPUs typically use GDDR6 memory, which offers higher bandwidth and improved memory performance compared to previous generations. This allows for faster data transfer between the GPU and VRAM, enhancing overall gaming and computing performance.

Variable Rate Shading (VRS): Turing architecture introduces Variable Rate Shading (VRS), a technique that enables selective rendering of different parts of the screen at varying levels of detail. This improves performance by allocating rendering resources more efficiently, focusing processing power where it's needed most while reducing workload in less critical areas.

Advanced Shader Model: Turing architecture supports the latest DirectX 12 Ultimate API, offering features like mesh shaders and sampler feedback, which enable more advanced rendering techniques and optimizations for developers.

In summary, the Turing architecture powers NVIDIA's GeForce RTX series of graphics cards, providing significant advancements in real-time ray tracing, AI-driven features, memory performance, and rendering techniques. These innovations have enabled more immersive and visually stunning gaming experiences while also expanding the capabilities of GPUs in other fields such as content creation, scientific computing, and AI research.

It's a fascinating world, isn't it?

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Demystifying How GPT Works: From Architecture to...Excel!?!



<https://youtu.be/FyeN5tXMnJ8>

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Why AI Systems Still Confound Researchers



Quanta Magazine

An open secret about artificial intelligence systems like ChatGPT is that they all have an unsettling quirk: Not even the researchers who build them fully understand how they work. These large language models, or LLMs, are special computer programs based on mathematical structures called neural networks. Although neural networks are now ubiquitous in scientific research and daily life, and researchers have studied them for over half a century, their inner workings remain mysterious. How is that possible?

<https://bit.ly/4csV8Nc>

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Is something Wrong with Our Understanding of the Universe?

Depending on where we look, the universe is expanding at different rates. Now, scientists using the James Webb and Hubble space telescopes have confirmed that the observation is not down to a measurement error.



Illustration of the expansion of the Universe.

(Image credit: Mark Garlick/Science Photo Library via Getty Images)

Initially, some scientists thought that the disparity could be a result of a measurement error caused by the blending of Cepheids with other stars in Hubble's aperture. But in

2023, the researchers used the more accurate JWST to confirm that, for the first few "rungs" of the cosmic ladder, their Hubble measurements were right. Nevertheless, the possibility of crowding further back in the universe's past remained.

By Ben Turner for LiveScience

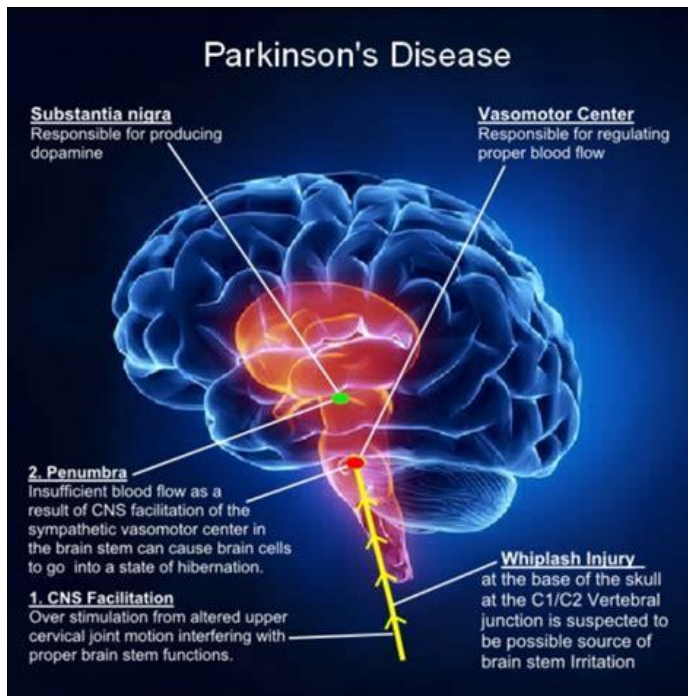
<https://bit.ly/3Vjbu4Q>

Reading comments at the end of the article is equally interesting.

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Redefining Parkinson's Disease

Stanford neurologist Kathleen Poston describes a sea change in Parkinson's research — and a cause for clinical optimism.



pouted.com

It's familiar to many as a movement disorder: people with the disease develop difficulties with voluntary control of their bodies. But the real story is much more complicated.

This week, we speak with Kathleen Poston, a Stanford neurologist who is at the forefront of efforts to redefine Parkinson's disease and related disorders based on their underlying biology — not just their symptoms. As Poston says: "The biology is the disease."

<https://bit.ly/3TdscQC>

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Ugo Gattoni's Detailed Posters for the Paris 2024 Olympics



moss&fogg

Celebrating both the Olympics and Paralympics in these posters, the highly detailed work invites viewers to lean forward and investigate the charming details held within.

<https://bit.ly/3TvsqE9>

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Nearly 30-Foot Tapestry Commissioned for Paris Olympics



Bertrand Guay/AFP via Getty Images

Marjane Satrapi could hardly believe it when she was commissioned to design a tapestry for the 2024 Paris Olympics. "When I got the call, I thought it was a hoax, but it wasn't. I was delighted," Satrapi told Reuters.

The French-Iranian artist, who earned an Academy Award nomination in 2008 for the film adaptation of her graphic novel *Persepolis*, noted that alongside her delight, she was "stressed" about the weight of the project. But after three years of weaving, her work has finally come to fruition: The organizers of the upcoming Summer Games unveiled her nearly 30-foot tapestry last week.

In addition to its massive breadth, the wool piece weighs over 130 pounds. It features brightly colored athletes competing against the backdrop of the Paris skyline. The

tapestry will go on display at a museum, the Hotel de la Marine, in late June, and then will be moved to Nice — where the 2030 Winter Games are being held — in September.

It was woven at the Gobelins Manufactory, which first opened in the mid-1600s and at one point manufactured textiles for King Louis XIV. [See the full tapestry.](#)

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“I figured you should have breakfast in bed on your birthday. Can you reach the stove okay?”

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The World’s Largest Plane, Designed to Deliver Just One Thing



[Rendering: Radia]

The Windrunner, from a startup called Radia, will be 356 feet long—enough to transport just one massive wind turbine blade at a time.

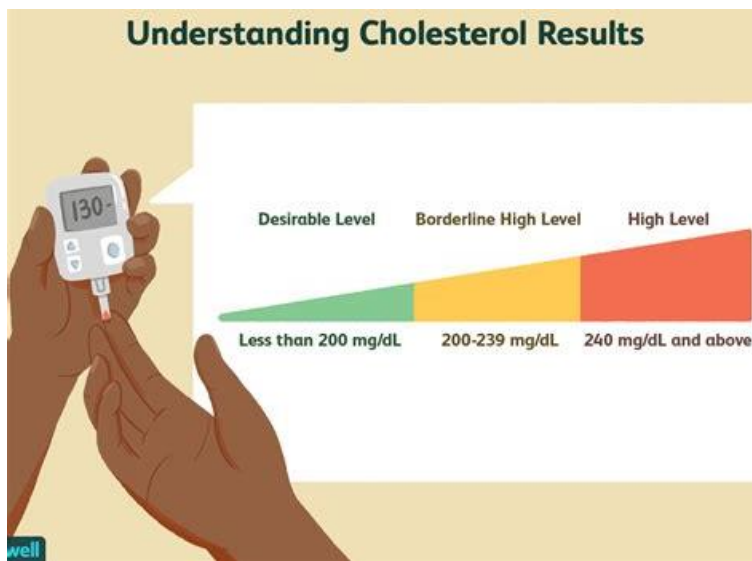
The bigger a wind turbine, the more energy it produces—which is why offshore wind farms have turbines with blades that are as long as a football field. But the largest equipment that exists today can't be used on land because it's too big to be delivered on roads.

<https://bit.ly/43jPsRH>

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All About Cholesterol

The latest science on how blood levels of HDL, LDL and more relate to cardiovascular health.



streamingwords.com

The picture coming into focus today incorporates not just bad, LDL cholesterol and good, high-density lipoprotein (HDL) cholesterol, but also lipoprotein(a) and a poorly understood substance called "remnant cholesterol." Medical researchers aim to minimize all of these except HDL. And HDL cholesterol itself, though it's still understood to be beneficial, has turned out to be more complex than anticipated. Various attempts to raise HDL levels haven't improved people's health beyond what statins already achieve.

<https://bit.ly/48OZ7R6>

This provides a good understanding of what we know today.

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On Board the World's Most Exclusive Private Residential Ship



cruise forever.net

Unlike on an ordinary cruise ship, residents are able to make renovations and decorate according to personal tastes. That means some are decorated with modern furniture and really cool appliances, some haven't been touched in 20 years."

Most residents on board *The World* use their apartment as a vacation home of sorts – these are people who likely have multiple residences across multiple countries and might be found private jetting their way across the globe at any given time.

<https://bit.ly/3Tff9hw>

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Tesla's Manufacturing Footprint



Tesla manufacturing is building the machine that builds the machines.
youtube

<https://twitter.com/i/status/1762252399429796291>

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Trends in Alcohol-Related Deaths by Sex in the US, 1999-2020



sites.pdi.edu

Recently, the World Health Organization declared that even small amounts of alcohol consumption are detrimental to human health. In the US, alcohol ranks as the fourth leading cause of preventable death, trailing tobacco, poor diet and physical inactivity, and illegal drugs, resulting in more than 140 000 deaths annually. Alcohol is implicated in 18.5% of emergency department visits and 20% of prescription opioid deaths.

Temporal trends showed an increase in alcohol-related deaths for both male and female individuals in recent years, with higher rates of increase among female individuals relative to male individuals.

These findings underscore the need for further research to understand the specific factors associated with this trend. The development of targeted interventions and evidence-based treatments for alcohol use among female individuals becomes imperative in effectively addressing the increasing rates of alcohol-related deaths.

<https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2807706>

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How casinos and retailers make you lose time

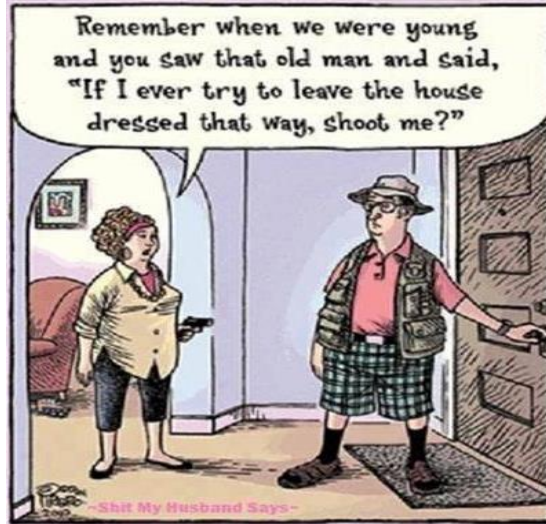


*Roulette at Nevada's New Meadows Club in 1931.
(Bettmann/Getty Images)*

Retailers, casinos, and grocery stores use a trick called temporal distortion to make you forget about the real world.

<https://bit.ly/3wHaZHu>

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The Definitive Guide to Tipping Around the World



Walter B. Mckenzie/Getty Images

Every successful traveler needs two things: a smile and respect for the culture of the country they're visiting, says Lori Whatley, PhD, a human behavior expert and clinical psychologist who has coached thousands of clients on proper behavior, both domestic and international. A smile is easy. Respect, on the other hand, requires you to care enough to study customs involving things like personal space, attire, and tipping around the world.

<https://bit.ly/4ahwRaY>

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'Parkour' Robot Dog Can Leap, Jump, and Crawl Its Way Through Complex Obstacle Courses



anybotics

Researchers from ETH Zurich are trying to close the mobility gap between robots and animals with a new highly-mobile robot capable of running, jumping, and crawling its way through obstacle courses.

<https://bit.ly/4alNyU>

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Military's Largest Cafeteria Feeds 4,500 Soldiers in 90 Minutes



army-mil

Slagel Dining Facility is the largest dining facility in the Department of Defense. It serves 12,000 meals a day. Trainees at the Medical Education and Training Campus at Fort Sam Houston in San Antonio are required to eat lunch at Slagel Dining Facility, where the staff serves 4,500 meals in just 90 minutes. Business Insider spent two days at the facility to see how the staff plans large-scale operations and prepares meals at scale.

<https://youtu.be/gdShT3dT0yU>

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Why Engagements Are Expected to Rise in 2024



madisonwi/ iStock

If you've been seeing more diamond rings on your social media feed lately, you're not the only one. Wedding industry players are expecting 2024 to be a banner year for engagements, CBS News reports.

Signet Jewelers is anticipating that a record 2.5 million couples will get engaged this year, and dress retailer Bella Bridesmaids said it saw a 30% uptick in business in January alone. "We are just really shaping up to have one of our best seasons yet," owner Erin Wolf said.

Sarah Schreiber, associate editorial director at Brides magazine, said the COVID-19 pandemic is likely the cause of the 2024 engagement boom.

"The singles were not mingling," she said of the 2020 shutdown. "When those pandemic restrictions lifted, everybody came out, the dating seemed [to blossom] again. Relationships boomed. Consider the fact [that] the average American couple takes about three years to get engaged. Everybody is getting ready to take that next step."

[Bride Magazine's Top Rings.](#)

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Want to Spend a Year Living in NASA's Mars Simulator?



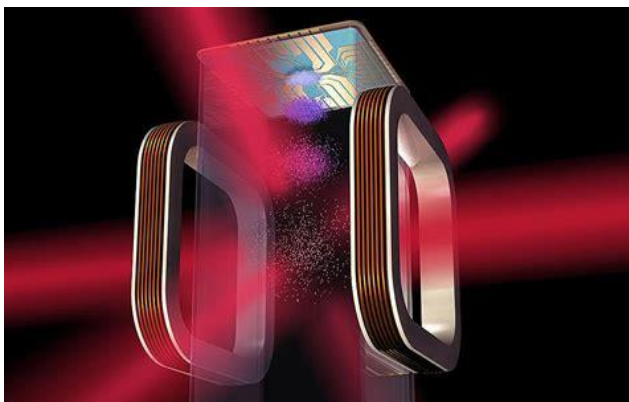
NASA

<https://bit.ly/3wzho7C>

Could be almost as complete a 'get away from it all' experience as actually going there.

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NASA's Cold Atom Lab Sets Stage for Quantum Chemistry in Space



NASA

For the first time in space, scientists have produced a quantum gas containing two types of atoms. Accomplished with NASA's Cold Atom Laboratory aboard the International Space Station, the achievement marks another step toward bringing quantum technologies currently available only on Earth into space.

<https://bit.ly/4a79GAB>

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Stunning Legends of Air Power at the Wings Over Solano Airshow!



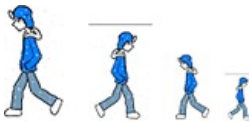
*screenshot from an upcoming IMAX on the Blues
image credit Prim video*

<https://www.youtube.com/watch?v=DsyD2f9e8ro>

Do you ever get tired of watching the Blues? I don't.

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My Walking Thoughts



For Sunday March 24 2024

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Two Odes ago I asked pilots in the group to provide us with stories of what it was like to solo an aircraft. I've received several responses so far, the first of which was this one from our squadron flight surgeon, Chuck Kerber, dating back to the early 1960s.

Chuck is a master of many things, but I think you will agree that his writing skills sit close to the top.

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Solo Flight

Infants learn at an early age they are not the only thing in the universe – that there is something else out there. That other thing is usually mother. This insight is a major developmental milestone.

As the child ages, the differences between self and other become acute, even stark. By the time most children are seven or eight, they have a concrete idea where they and the rest of the world begins. Psychologists call this awareness body image.

Girls seem to do better at this recognition than boys, but that's only my opinion. Boys tend toward gangliness, at least until they enter adolescence and begin competing in sports.

For example, without looking, an eight-year-old knows exactly the position of her small finger – where it ends and where the air begins. Good for us humans and for our survival, right?

With that body image concept in mind, let's go to November 1963, Pensacola Florida.

It is a cold winter day. The cold front has passed, so the sky is clear. We now face a brisk gusty wind from the northwest. Mike Paydo, my flight instructor, has turned and as he walks away he says, over his shoulder, the magic words: "You are safe enough. Take the bird out for an hour. No aerobatics." It is Friday the thirteenth. Not that I am superstitious like the other pilots are. Well, maybe a little.

Then it hits me. I'm going solo. I'm going to go to the line shack (in years well past it was actually a shack), pick up a parachute, sign the yellow sheet, and accept responsibility for a military airplane. I am for the first time to be alone...completely alone...by myself...in the sky.

A cold realization comes: that Mike Paydo my instructor, the United States Marine Corps, the United States Navy, come to think of it, even our entire nation has entrusted me with a national asset – a military airplane. I am overwhelmed.

Paperwork done, I walk to the flightline.

I am dressed in standard issue Marine boondockers (rough side out ankle height shoes that the Marines have been wearing since time immemorial), a bright orange Borax treated cotton flying suit (the Borax for fire suppression), my walnut brown goatskin lamb fur collared leather flight jacket, cream-colored skintight gauntlet length gloves, and finally, my white helmet, its communication cord tucked into my T-shirt neck. My parachute hangs over my left shoulder. In my right hand, I hold my knee pad. I am the very image of a military pilot, a Naval Aviator. Despite my professional look, I know I am a fraud. A terrified, incompetent, soon-to-die fraud, at that.

I need at least two more hours of instruction before this solo flight. But if I were to back out at this point, to say those words to the check pilot who yesterday certified me "safe to solo"; to say, I am not ready, well, that would embarrass Mike at the bar during Friday happy hour. Death before dishonor is not an idle statement. Truly. I would rather die than back out now. And I expected – no, I was sure – that within the next hour, I would be in the center of a pile of twisted aluminum and burning avgas, half buried in some farmer's field.

In my head were every instructor's words I had heard over the past weeks, repeated over and over again: stall spin crash burn die. In that order. Kerber, just don't stall the airplane.

Now at the flightline, I look for my airplane's side number – SF 189, find it, then begin my preflight examination. The plane captain walks to help me, looks at me, smiles. He knows this is my solo flight. Together we walk around the bird, making sure that all is well. Then we climb up on the wing together, and he helps me strap in.

There is no turning back now.

Having gone over the preflight checklist on my knee pad meticulously, I start the engine, call the tower for permission to taxi, then follow three other T 34 students, their instructors in the back, to the duty runway. My back seat, however, is empty.

Finally, my turn comes. I taxi on to the threshold, pointing my nose into the wind. Full throttle, engine checks complete, I release the brakes, and all too soon, my wheels leave the ground. I am flying. Alone.

Before I know it 300 feet shows on the altimeter. It was at this altitude that Mike would invariably pull the power back and say, "You just lost the engine. Find a place to land." But my engine keeps running, for Mike is not back there. So I climb out, leaving the pattern, flying westward.

When you think about it, this act has been mankind's dream since our ancestors first watched and envied birds.

In the practice area, I start performing my checklist tasks, making gentle turns, each steeper and steeper than the last. Satisfied, I fly over to an outlying airfield to do some touch and go practice landings. I remember even today that the field is named Magnolia.

Okay. Landings are done -- not elegantly, but safely. My solo flight syllabus is thus complete. I can now return to Saufley Field and land. But I cannot turn back. Flying westward toward Mobile, I climb and climb and climb.

Minutes later, the strangeness begins. My body image loosens, starts to get soft edges, the edges become blurry, then indistinct. This weird feeling is scary at first, but there's

little I can do about it other than observe. What could I do? After all I am at nine thousand feet and can see Mobile in the distance. The Gulf of Mexico lies off my left wingtip, the sun high in the sky. The sun shines through the canopy, like a greenhouse warming flowers. (Not a bad metaphor actually.) The lamb's wool collar feels especially gentle... soft ... caressing my neck. Then a new sensory overload comes into my consciousness: I become aware of the wonderful cockpit smells – hot engine oil, hydraulic fluid, gasoline, leather, and my own sweat – sweat that has now dried. I must be getting more comfortable being up here.

I am able to think – in fact I am a bit high, but my body edges are no longer sharp. There is nothing I can do to stop this. I just kind of just flow out, out of myself, going all the way to the wing tips, back to the tail. No longer am I sitting in an airplane; the airplane and I are one thing.

Science fiction writers like to use a literary device known as the man/machine interface. They call the structure a cyborg. I never believed the device worked. Until now. In this eerie state of heightened awareness, there is no me. There's no airplane. There is just us. I no longer need to move the stick and rudder to make a turn. I just think of it, and we go there.

Eventually I return from my reverie, for in any airplane, the ultimate constraint is the amount of gas in the tanks. I have plenty of fuel – more than another hour's worth, but I was ordered to bring the airplane back within the hour. We have already been up 1.5 hours. Reluctantly we turn back to the east, enter the complicated Saufley field pattern, touch down, and taxi back to the line.

Shut down checklist complete, canopy open, I sit there, head bowed, listening to the tinkling of the cooling engine. Am I praying? This flight has been the closest I have ever come to a real religious experience.

A few minutes later the plane captain gently rocks the wingtip up and down to get my attention. "You okay sir?" "Yes," I nod, "thank you, I'm fine. Just feeling a little strange."

Charles Kerber MD

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For you who have yet to grace us with your flying stories, I'd like to open things up beyond just your solo experience and ask you to write of your most rewarding flight experience...the most defining event.

Please.

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