Ode to E Pluribus Unum for Sunday April 6 2025



Buried for Nearly 2,000 Years, a Monumental Dionysian Fresco Sees the Light of Day in Pompeii



Overview of a large fresco inside an excavated banquet gall in Pompeii. Image courtesy of Parco Archeologico di Pompei

When Mount Vesuvius erupted in 79 C.E., the enormous explosion buried the city of Pompeii in an astonishing 19 meters of ash and debris. (A recent study concludes that in the neighboring town of Herculaneum, the blast was so intense that it vitrified a young man's brain.) Since excavations of the area began in 1748, discovery after discovery has revealed lavish, poignant, and complex details about what life was like nearly 2,000 years ago in the Roman port town.

When Vesuvius buried everything, the ash provided an extraordinarily protective covering for delicate frescos and structures, like an expansive fresco recently excavated

in a banquet hall that "sheds light on the mysteries of Dionysus in the classical world," says a statement from Italy's Ministry of Culture.

https://bit.ly/41rhl9N

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What Do We Know About Dreams?

An in-depth look at a hidden world



medium.com

Every night we lay down to rest, we spend about two hours traveling through seemingly real experiences as dreams bubble up from our subconscious during various phases of sleep.

The origin, meaning, and mechanisms behind dreams have spurred speculation since the dawn of recorded history. Despite the ubiquity of the experience—and the advent of modern medical technology—where dreams come from, and what their purpose is, remains largely unanswered.

https://bit.ly/41uYgDO

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It turns out that being an adult now is mostly just googling how to do stuff.

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Animal Kingdom's Most Powerful Puncher

The mantis shrimp's club uses a built-in vibration shield that filters out damaging shock waves to enable it to strike with bullet-like force without breaking.



The Peacock mantis shrimp holds the Guinness World Record for the strongest self-powered strike by an animal. (Image credit: Reinhard Dirscherl/Getty Images)

The punch of a peacock mantis shrimp (Odontodactylus scyllarus) is the strongest selfpowered strike by an animal. They use hammer-like fists, or dactyl clubs, to shatter prey's shells. The strike is so strong it can even break aquarium glass, delivering a force comparable to a .22 caliber bullet. But because these high-impact strikes generate a lot of force, scientists have puzzled over how the critters can withstand the intense shock waves generated by their own attack.

In a new study published Feb. 6 in the journal <u>Science</u>, researchers examined the structure of the shrimps' clubs. Their findings revealed that the microstructure of these clubs act as natural shock absorbers to limit damage.

https://bit.ly/4hdQfZN

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Monarch Butterflies Wintering in Mexico Rebound This Year

Mexico's Commission for National Protected Areas (CONANP) said that this year, butterflies covered 4.4 acres (1.79 hectares) compared to only 2.2 acres (0.9 hectares) the year before. Last year's figure represented a 59% drop from 2023, the second lowest level since record keeping began.



A Monarch butterfly rests near a stream at Piedra Herrada sanctuary in the mountains near Valle de Bravo, Mexico, Jan. 4, 2023. (AP Photo/Marco Ugarte, File)

The number of monarch butterflies wintering in the mountains west of Mexico City rebounded this year, doubling the area they covered in 2024 despite the stresses of climate change and habitat loss, experts said Thursday.

The annual butterfly count doesn't calculate the individual number of butterflies, but rather the number of acres they cover as they gather on tree branches in the mountain pine and fir forests. Monarchs from east of the Rocky Mountains in the United States and Canada overwinter there.

https://bit.ly/4hikEpH

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The Monarch's Stupendous Migration, Dissected

The feisty orange-black butterfly uses a toolbox of biological tricks to find its way down to Mexico for winter and flap north again in spring. Here's how scientists figured out those tricks — and what they don't yet understand.



pulpbits.net

A comic strip shows what's behind the migration.

https://bit.ly/4iiO9sd

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I told my wife I wanted to be cremated. She made me an appointment for Tuesday.

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Peruvian Bus Driver Navigates the World's Most Dangerous Road



The buses have to navigate narrow, one lane dirt passes on the edges of mountains. *moss&fog*

Over 1,000 people a year die in Peru on the country's <u>dangerous mountain roads</u>. The Andes mountains are beautiful, but treacherous to cross, especially for large vehicles like trucks and buses.

https://youtu.be/uU_VOhP8z2w

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Paternity Detective

Geneticist Maarten Larmuseau tackles a touchy question: How often are children genetically unrelated to their presumed fathers?



Celebrating the Birth, by 17th century Dutch artist Jan Steen, depicts a cuckolded husband surrounded by a snickering crowd. Wallace Collection/Bridgeman Images

In most societies, kinship is at least partly socially constructed, and for example can include adoption and stepfamilies. Yet questions about biological paternity have roiled families and fueled cultural anxieties for eons. Male authors have written about hidden paternity for millennia, including in Greek dramas and The Canterbury Tales; William Shakespeare and Molière wrote plays about it. Knowing a child's biological father is also important for forensically identifying cadavers, recording accurate medical histories, and charting the manifold ways in which people structure families around the world.

In the absence of reliable numbers, scientists speculated. In his 1991 book The Third Chimpanzee: The Evolution and Future of the Human Animal, biologist Jared Diamond claimed the adultery rate among humans was between 5% and 30%. In a widely cited 1997 paper, University of Reading evolutionary biologist Mark Pagel argued EPP was so common in humans that <u>babies evolved to be indistinguishable at birth</u>, concealing their true paternity as a protective mechanism.

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Scientists Spot Water Molecules Flipping Before They Split

Splitting water molecules takes more energy than calculations suggest, and is a key roadblock to cheap hydrogen fuel production. Now, scientists have discovered why.



A photograph of a water droplet. (Image credit: J. Adam Fenster / University of Rochester)

For the first time, scientists have observed water molecules splitting in real time to form hydrogen and oxygen. And right before they split, the molecules did something completely unexpected: They flipped 180 degrees.

This micro acrobatic stunt takes energy, which offers a crucial explanation for why splitting water takes more energy than theoretical calculations suggested. Studying this further could offer key insights into making the process of splitting water molecules more efficient — opening a pathway to cheaper clean hydrogen fuel and breathable oxygen for future Mars missions. They published their findings March 5 in the journal <u>Science Advances</u>.

https://bit.ly/4kEqbd0

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Chords & Riffs

Angela Hewitt (1958 -) Plays Bach



92ny.org

Hewitt has performed around the world in recital and as soloist with orchestra. She is best known for her cycle of Bach recordings that she began in 1994 and finished in 2005—covering all of the major keyboard works of J. S. Bach. Her discography also includes works by Francois Couperin, Jean-Philippe Rameau, Olivier Messiaen, Emmanuel Chabrier, Maurice Ravel, Robert Schumann, Ludwig van Beethoven, Frédéric Chopin, Claude Debussy and Gabriel Fauré. She has recorded two discs of Mozart concertos with the Orchestra da Camera di Mantova, and a third with Ottawa's National Arts Centre Orchestra, conducted by Hannu Lintu. With the DSO Berlin and Lintu, she also recorded the Schumann Piano Concerto.

Her entire 2007–08 season was devoted to complete performances of Bach's The Well-Tempered Clavier in major cities around the world. Her Hyperion DVD on Bach performance on the piano was released to coincide with the tour.

You may notice she plays on a four pedal Fazioli

Bach's seven Toccatas <u>https://youtu.be/b6AJdO6AZVU</u> Bach Two and Three Part Inventions <u>https://youtu.be/jawecrbZLa4</u> Bach Prelude and Fugue No. 16, G minor <u>https://youtu.be/xa1mS4jIgHA</u> Bach Prelude and Fugue No. 20 in A minor <u>https://youtu.be/aPSCHZnjw2k</u>

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Why These Tropical Trees Love a Lightning Strike

One species of tropical tree seems not only to survive lightning strikes but also to thrive because of them



ByronOrtizA/Getty Images

Scientists have long believed that being hit by lightning could have only negative effects on trees. "Your best-case scenario is that you're kind of okay, and your worst-case scenario is: you explode in a million bits," says Evan Gora, a forest ecologist at the Cary Institute of Ecosystem Studies in New York State. But after spending many years studying the <u>effects of lightning</u> on rainforests, Gora began wondering whether trees could not only survive this usually deadly event but also actually get some kind of advantage from it.

The results, published in New Phytologist, showed that the almendro trees were very resistant to lightning and minimally damaged compared with almost all the other tree species, which were severely damaged—64 percent of the latter trees died within two years of being struck. A few other large species also survived the strikes and might have benefitted as well, but lightning had not struck enough of these species for the researchers to be certain.

https://bit.ly/3QZJaRO

Thanks to David Gell for forwarding this/

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How Some Cosmologists Are Trying to Slay the Multiverse



Inflation, Gravitational Waves, and the Multiverse HubPages

The story of the multiverse starts like this: In the beginning, an unimaginably small speck of space flashed outward far faster than the speed of light. An instant later, that expansion stopped. Space then grew at a far slower pace for the next 13.8 billion years, producing the universe we see today. This theory of rapid expansion, known as inflation, fits all the cosmological evidence collected to date.

The price of explaining the universe in this way, however, is that inflation also predicts the likely existence of a vast multiverse extending far, far beyond our cosmological horizon. In most versions of inflation, rapid expansion would be the default state of reality, with bubbles of calm (like the one we would inhabit) forming randomly here and there. These bubbles might be infinite in number, but they would be constantly swept away from each other by the faster-than-light expansion of space between them. There would be no hope of the inhabitants of one bubble ever directly detecting the presence of another bubble. (This "inflationary" multiverse would be distinct from the collection of coincident universes seen in Marvel movies and Everything Everywhere All at Once, for instance, which has more in common with the "many worlds" interpretation of quantum mechanics).

To some physicists, this multiverse idea is unacceptable, even unscientific. While small in number, these maverick theorists seek to develop alternative ways of explaining the large, smooth, relatively featureless universe that we see, to avoid the philosophical baggage that a multiverse brings. In recent years, their competing proposals have grown more sophisticated. The theories can't yet match inflation's predictive power and are generally viewed as underdogs, but underdogs with tremendous potential to rewrite our understanding of our origins. "There are some questions I consider so important that even if you have only a 5% chance 'lof succeeding, you should throw everything you have at it and work on them," said Raman Sundrum, a physicist at the University of Maryland, in 2018 of the effort to develop inflation alternatives.

What's New and Noteworthy

Inflation does a great job of ironing out cosmic irregularities, but it's not the only way this could happen. Perhaps the universe is cyclic, expanding and contracting, expanding and contracting, for all eternity. In that case, the lengthy contractions could have also created the uniform conditions we see today, without making a multiverse. Such "bouncing" universes didn't initially seem so plausible. In the 1960s, Roger Penrose proved that contracting universes tend to crunch all the way down to a dead end in space-time known as a singularity; he later received a Nobel Prize in part for doing so. But in 2017, two teams found loopholes in Penrose's proof just big enough to allow a collapsing universe to bounce back.

One of the theorists involved, Anna Ijjas, built her bounce theory by extending previous work with her adviser Paul Steinhardt of Princeton University. Steinhardt played a key role in the development of inflation decades ago but had a change of heart after it spawned the multiverse — an idea he calls "hogwash." In 2020, Steinhardt and Ijjas joined forces with experts who specialize in computer simulations of space-time and showed that their flavor of bounce could indeed smooth out a wide variety of space-time variations, much as inflation would.

Another possibility is that the Big Bang spawned two universes joined at the hip, each the mirror image of the other, and we live in one of them. Neil Turok of the Perimeter Institute in Canada developed this theory along with Latham Boyle and Kieran Finn in 2018. Turok and other collaborators had just mounted a controversial attack on a position championed by Stephen Hawking that time had no beginning, and Turok had been thinking about new ways of accounting for old observations.

While some theorists debate the finer points of mirror universes, bouncing universes and multiverses, others look ahead to the next generation of astronomical observatories for answers. In the 2030s, for instance, a trio of satellites known as LISA will listen for a hum of ripples in space-time that could clarify what happened during the early moments of our universe.

Around the web

Undark chronicles a contentious debate that erupted in 2017 after Ijjas, Steinhardt and Avi Loeb of Harvard University criticized inflation in a Scientific American article, prompting 33 theorists (including four Nobel laureates) to clap back in an open letter defending the theory. Another inflation skeptic is Penrose, master of cosmological singularities. He has speculated that someday the universe will stop changing and time will effectively halt, allowing for a natural return to the conditions that spawned the Big Bang. PBS Space Time describes his theory of "conformal cyclic cosmology" in a video.

By Charlie Wood for Quanta

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Don't irritate old people. The older we get, the less "Life in prison" is a deterrent.

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Sig Sauer Factory Tour: How Their Guns Are Made



all4shooters.com

A visit to SIG SAUER Headquarters, Factory and Academy in New Hampshire, USA

https://youtu.be/RKOMI2zSvtI?t=106



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Lost Manuscript of Merlin and King Arthur Legend Found Hidden Inside Another Book

An intriguing sequel to the tale of Merlin has sat unseen within the bindings of an Elizabethan deeds register for nearly 400 years. Researchers have finally been able to reveal it with cutting-edge techniques.



It is the only surviving fragment of a lost medieval manuscript telling the tale of Merlin and the early heroic years of King Arthur's court.

Now, the 700-year-old fragment of Suite Vulgate du Merlin – an Old French manuscript so rare there are less than 40 surviving copies in the world – has been discovered by an archivist in Cambridge University Library, folded and stitched into the binding of the 16th-Century

register.

Using groundbreaking new technology, researchers at the library were able to digitally capture the most inaccessible parts of the fragile parchment without unfolding or unstitching it. This preserved the manuscript in situ and avoided irreparable damage – while simultaneously allowing the heavily faded fragment to be virtually unfolded, digitally enhanced and read for the first time in centuries.

https://bit.ly/3QPSaJb

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Fiber Computer Allows Apparel to "Understand" the Wearer

MIT researchers developed a fiber computer and networked several of them into a garment that learns to identify physical activities.



US Army Cold Regions Research and Engineering lab

MIT researchers have developed an autonomous programmable computer in the form of an elastic fiber, which could monitor health conditions and physical activity, alerting the wearer to potential health risks in real-time. Clothing containing the fiber computer was comfortable and machine washable, and the fibers were nearly imperceptible to the wearer, the researchers report.

Unlike on-body monitoring systems known as "wearables," which are located at a single point like the chest, wrist, or finger, fabrics and apparel have an advantage of being in contact with large areas of the body close to vital organs. As such, they present a unique opportunity to measure and understand human physiology and health.

The fiber computer contains a series of microdevices, including sensors, a microcontroller, digital memory, bluetooth modules, optical communications, and a battery, making up all the necessary components of a computer in a single elastic fiber.

https://bit.ly/3Db865t

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The History of Cat Domestication

Discover the history of our feline friends, and learn about the debate over whether cats are really "domesticated" at all.



(Image credit: Image by Chris Winsor via Getty Images)

The domestic cat is one of the smallest members of the family Felidae — the group that includes lions, tigers, jaguars and cougars. It is also the only member of that family that has been domesticated.

Cats have lived among humans for thousands of years. They probably started hanging around human grain stores, attracted by mice and other vermin, and eventually spread around the world as sailors brought them aboard ships. You might hear that cats "domesticated themselves." This is because ancient wildcats likely chose to hang around human agricultural settlements, resulting in a mutually beneficial relationship between cats and humans. These settlements provided ample food and shelter for cats.

Because the cats helped keep vermin at bay, the people who inhabited these settlements tolerated — and eventually welcomed — cats' presence. Whereas humans domesticated dogs through artificial selection by breeding for desirable traits, domestic cats evolved simply through natural selection, as friendlier and more docile cats thrived in close contact with humans.

https://bit.ly/4cAi265

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Easy-to-Apply Gel to Prevent Abdominal Adhesions in Animals

A simple way to prevent the formation of post-surgical abdominal adhesions could save billions in health care costs and reduce incidents of chronic pain, infertility, and bowel obstructions. Showing success in large animals is a key step toward human clinical trials.



Michael Longaker, professor of surgery, is one of the senior authors of a new Stanford Medicine study about a gel that can prevent adhesions in mice and pigs. | Courtesy Stanford Medicine

Surgical adhesions – common, sometimes life-threatening complications that arise after open or laparoscopic abdominal surgery – can be prevented in mice and pigs by a gel impregnated with a molecule that blocks a key signaling pathway in the formation of scar tissue.

The gel can be applied as a spray or a wash to the inside of the abdominal cavity immediately after surgery. Over a period of two weeks, the gel releases a small molecule, T-5224, that blocks the activation of adhesion-forming cells called fibroblasts without affecting normal wound healing.

Although many adhesions cause no symptoms, between 5% and 20% are severe, causing chronic pain, infertility and life-threatening bowel obstructions. There is no

reliable method to prevent or treat them, and complications from abdominal adhesions are estimated to cost billions of health care dollars each year.

https://bit.ly/4iH9wE3

Having such experience, I truly hope this becomes part of the abdominal surgery toolkit.



Groan

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Your Body Ages Rapidly in Two 'Bursts,' at 44 And 60.

A new study shows that aging isn't a totally gradual or linear process. While the research comes with caveats, the findings could help us age more gracefully.



onlinesciencenotes.com

In a newly published study, Stanford scientists reveal we don't age gradually, as has been traditionally believed. Instead, we age at two significant "bursts" across our postpuberty lifespan: one in our mid-40s, the other in our early 60s.

The molecular changes that occur during each period could explain seeming sudden signs of aging such as the appearance of wrinkles, sagging skin, graying hair, muscle and joint pain, and increased vulnerability to viral infections. "This study reveals why many people start to 'feel' their age rather suddenly," explains John Whyte, a family medicine physician and a former director for the U.S. Food and Drug Administration, who was not involved in the research. At the same time, he says, it "challenges the traditional view that aging is a slow, continuous process."

https://bit.ly/41EKakl

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The "Critical Window" When Your Brain Starts Aging

Targeting the brain during this window could help repair age-related damage before it becomes irreversible.



Brain aging appears to speed up from around this particular age. Image Credit: SpeedKingz/Shutterstock.com

Much about aging feels like a gradual process – you don't go to bed fresh-faced the day before your 60th birthday and then wake up looking saggier than a Shar Pei. But, when it comes to the brain, a recent study suggests that there's a point where it begins to age much more rapidly, before leveling off again. So when is it?

According to the authors of the study, it starts at around the age of 44, with brain aging – characterized by the degradation of the complex neural networks that make up our brains – increasingly ramping up until someone gets to roughly 67 years old. After that point, the brain still ages, but it plateaus by the time someone gets to their 90th birthday.

https://bit.ly/4jjGLh2

Huh. Two more years of shrinking before my brain will be 'fixed'? I'll keep an eye on it.

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The Mysterious Flow of Fluid in the Brain

A popular hypothesis for how the brain clears molecular



Chanelle Nibbelink for Quanta Magazine

As the brain transitions from wakefulness to sleep, processing of external information diminishes while restorative processes, such as glymphatic removal of waste products, are activated. Yet, it is not known what drives brain clearance during sleep.

An array of technologies identified tightly synchronized oscillations in norepinephrine, cerebral blood volume, and cerebrospinal fluid (CSF) as the strongest predictors of glymphatic clearance during NREM sleep. Optogenetic stimulation of the locus coeruleus induced anti-correlated changes in vasomotion and CSF signal. Furthermore, stimulation of arterial oscillations enhanced CSF inflow, demonstrating that vasomotion acts as a pump driving CSF into the brain.

https://bit.ly/429n4Bq



How Chaos Theory Makes the Future Unpredictable

quantum

This phenomenon, popularly known as the butterfly effect, captures imaginations because it clashes with the way we intuitively understand the world to work. Small

causes should have small effects, not big ones. As The Phantom Tollbooth headed to the printer, however, researchers at the Massachusetts Institute of Technology were discovering that the butterfly effect is more than just a romantic notion.

Chaos challenges the central objective of physics: making predictions. How can we ever trust our calculations if imperceptible initial uncertainties lead to completely different outcomes? But since the days of Lorenz, chaos theory has blossomed into a fully fledged discipline. Physicists have studied what makes a system chaotic and how to measure the degree of chaos. Along the way, they've come to appreciate that chaotic behavior is all around us, found in everything from irregular heartbeats to <u>wild</u> <u>populations</u>.

https://bit.ly/4iSBZHk

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Humanlike Robot 'Rises with Creepy Speed and Stability

Humanoid robots typically struggle to stand up after being knocked over, but new AI-powered research from China brings us one step closer to the rise of the machines



en.Presbee.net

https://youtu.be/Yruh-3CFwE4?t=1

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FLASHMOB CENTRAL

Berklee Contemporary Symphonic Orchestra at Prudential Center.



youtube.com

The Planets: Jupiter https://youtu.be/q3cpOrB1GW8?list=RDq3cpOrB1GW8

The Real Reason the Boeing Starliner Failed

Everything you need to know about the saga of the Boeing Starliner spacecraft



engadgetcom

https://youtu.be/5ejHYVamyiw

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Do You Have a Quirky Cat? Scientists Want to Hear About It



Viktoriya Skorikova/Getty Images

If there's one thing we know about cats, it's that they never cease to amuse us with their penchant for funny habits. Perhaps your unique feline gets a little dramatic, shows off some surprising skills, or warms your heart with the quirky way they play, cuddle, or offer "gifts." Whatever the quirks, the scientists behind Darwin's Cats are eager to hear them.

More than just a pet project, the researchers leading the initiative are seeking to build the world's largest feline genetic database, The Guardian reports. The goal is to enroll 100,000 cats from all walks of life and investigate the genetic influences behind cat traits, behaviors, and health issues, so humans can get a better understanding of our beloved companions and help them lead healthier and more enriched lives.

"This is an important project that has the potential to improve our understanding of companion animals, the diseases that cause their morbidities, and the very nature of feline domestication," Jeffrey Schoenebeck, a biologist with the Roslin Institute at the University of Edinburgh, told the outlet.

Interested cat parents can complete free surveys about their pet's physical traits, behaviors, environment, and health. U.S. residents can also submit loose fur samples with a \$150 donation to the nonprofit — sign up here.

Nice News 3/23/25



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The World's 1st Crewed Flight Over Earth's Polar Regions

SpaceX will launch private Fram2, the first crewed mission orbit over the North and South Poles, but no earlier than March 31.



The four astronauts of SpaceX's Fram2 mission, from the left, Eric Philips, Chun Wang, Rabea Rogge and Jannicke Mikkelsen. (Image credit: SpaceX)

Named for the Norwegian seafaring ship Fram, which completed expeditions of the Arctic and Antarctic regions between 1893 and 1912, Fram2 will ferry a crew of four into a 90-degree orbit that will fly them over Earth's North and South Poles. The private crew will be the first to fly in space in such a steep orbital inclination, and will have the opportunity to study the planet's most remote regions from a completely novel perspective.

SpaceX announced the Fram2mission and its crew last summer, introducing Maltese entrepreneur Chun Wang as the mission commander. Wang is joined by vehicle commander Jannicke Mikkelsen of Norway, Australia's Eric Philips, serving as vehicle pilot and Germany's Rabea Rogge as the crew's mission specialist. All four are spaceflight rookies.

https://bit.ly/4c5TG3I

Happy Fiftieth: The 50 Best Things Microsoft Has Ever Made

From beloved operating systems and hit games to never-realized concepts that captured our imagination



Microsoft basic

On April 4th, Microsoft turns 50 years old. The company has gone through sweeping changes over that time — from two guys in New Mexico to more than a quarter-million employees worldwide, from making text-based operating systems to holographic video games — but through the decades, it's remained a foundation of the tech world.

For Microsoft's 50th anniversary, The Verge spent time sorting through all of those products to decide on the 50 best — the ones we loved, the ones that changed the tech world, or at least the ones we couldn't get out of our heads.

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My Walking Thoughts

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For Sunday April 6 2025

U.S. Navy's Next Trainer Jet Won't Need to Land on Carriers

U.S. Navy's Next Trainer Jet Won't Need to Land on Carriers



The U.S. Navy released a new Request for Information for the T-45's replacement, which will only be required to conduct *pretend* Field Carrier Landing Practice short of touch down.

The Navy says that this decision, which sets a completely different route compared to the T-45 Goshawk and, previously, the T-2 Buckeye, is "due to advancements in operational platform landing modes and in ground-based simulation." This means the new naval aviators will rely more on automation and perform complete FCLPs only in the flight simulator.

"Advancements" in what? This sounds like something dreamed up by the same folks that decided Navy and Marine fighters don't need guns...but what do I know?

Because of the Navy's decision to remove carrier qualification from Basic and I presume Advanced Training as well, I'm jumping out of line and covering the "going to the boat" process before getting on with the fighter pilot portion of the syllabus. Okay?

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The thing that from the earliest days of flight that distinguished Naval Aviators from their Air Corps and Air Force contemporaries lay in flying from aircraft carriers... a very special skill requiring lots of practice and a certain amount of daring in its acquisition that was – and still is to this day – a source of pride and yeah, braggadocio when in mixed company.

It appears that all that could become history.

Why? Well how about money for starters. If you no longer intend to subject your training jets to controlled crashes both on land and at sea, then you can get rid of a lot of extra structural concerns. Then, because the students will no longer have to go to the boat, you're able to cleave flight hours from the training program. Hey folks, we're talking about big bucks here... good for everyone, right?

Well... or is there something else going on we need to look at?

I can think of several futures for Naval Aviation, including its disappearance as the forward deployed strike force it has been for more than a century.

With the arrival of such modern weaponry as hypersonic anti-shipping missiles in conjunction with increases in electronic surveillance systems, the future of surface fleet activities is at least open to question.

And it's here I really need to back away from such discussions because even as a cardcarrying, "give me my orders and I'll fly the mission," relic of another age, I recognize that traditional combat operations may be ill-suited to the modern front line adversary combat arena.

Since both the Navy and Air Force are having difficulties defining 6th-gen missions, along with the vehicles for their pursuit, it seems reasonable to ask, what's next?

Deep in my heart I think that while all the trick technologies we're seeing on *YouTube* will undoubtedly rule the opening actions of the next war, both sides will soon exhaust their inventories and find themselves back in the age of bombs, bullets, and bayonets. For that war, even a few rickety aircraft flown by live pilots could well spell the difference between victory and defeat... but once again, what do I know? So weigh in on this... please.

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Next week will be getting ready for the boat.