

Ode to E Pluribus Unum for Sunday May 5 2024

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Voyager 1 Resumes Sending Engineering Updates



NASA's Voyager 1 spacecraft is depicted in this artist's concept traveling through interstellar space, or the space between stars, which it entered in 2012.

Credit: NASA/JPL-Caltech

Voyager 1 stopped sending readable science and engineering data back to Earth on Nov. 14, 2023, even though mission controllers could tell the spacecraft was still receiving their commands and otherwise operating normally. In March, the Voyager engineering team at NASA's Jet Propulsion Laboratory in Southern California confirmed that the issue was tied to one of the spacecraft's three onboard computers, called the flight data subsystem (FDS). The FDS is responsible for packaging the science and engineering data before it's sent to Earth.

For the first time since November, NASA's Voyager 1 spacecraft is returning usable data about the health and status of its onboard engineering systems. The next step is to

enable the spacecraft to begin returning science data again. The probe and its twin, Voyager 2, are the only spacecraft to ever fly in interstellar space (the space between stars).

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The [team discovered](#) that a single chip responsible for storing a portion of the FDS memory — including some of the FDS computer's software code — isn't working. The loss of that code rendered the science and engineering data unusable. Unable to repair the chip, the team decided to place the affected code elsewhere in the FDS memory. But no single location is large enough to hold the section of code in its entirety.

So, they devised a plan to divide the affected code into sections and store those sections in different places in the FDS. To make this plan work, they also needed to adjust those code sections to ensure, for example, that they all still function as a whole. Any references to the location of that code in other parts of the FDS memory needed to be updated as well.

The team started by singling out the code responsible for packaging the spacecraft's engineering data. They sent it to its new location in the FDS memory on April 18. A radio signal takes about 22 ½ hours to reach Voyager 1, which is over 15 billion miles (24 billion kilometers) from Earth, and another 22 ½ hours for a signal to come back to Earth. When the mission flight team heard back from the spacecraft on April 20, they saw that the modification worked: For the first time in five months, they have been able to check the health and status of the spacecraft.

During the coming weeks, the team will relocate and adjust the other affected portions of the FDS software. These include the portions that will start returning science data.

Voyager 2 continues to operate normally. Launched over [46 years ago](#), the twin Voyager spacecraft are the longest-running and most distant spacecraft in history. Before the start of their interstellar exploration, both probes flew by Saturn and Jupiter, and Voyager 2 flew by Uranus and Neptune.

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Tomorrow's Boeing Starliner 1st Astronaut Test Flight



*Boeing's Starliner makes its first uncrewed approach to the International Space Station during Orbital Flight Test-2 on May 21, 2022.
(Image credit: NASA)*

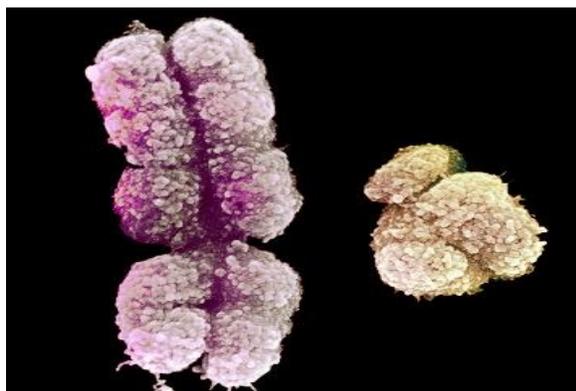
Two NASA astronauts and test pilots will help evaluate Starliner's performance. Here's what we're expecting to see.

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

Fingers crossed.

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Why Nearly 80 Percent of Autoimmune Sufferers Are Female



*(Pictured above from left to right, an X-chromosome and a Y-chromosome.)
Photograph By Biophoto Associates, Science Photo Library*

The effects of sex hormones, X chromosomes and different gut microbes may be parts of the answer

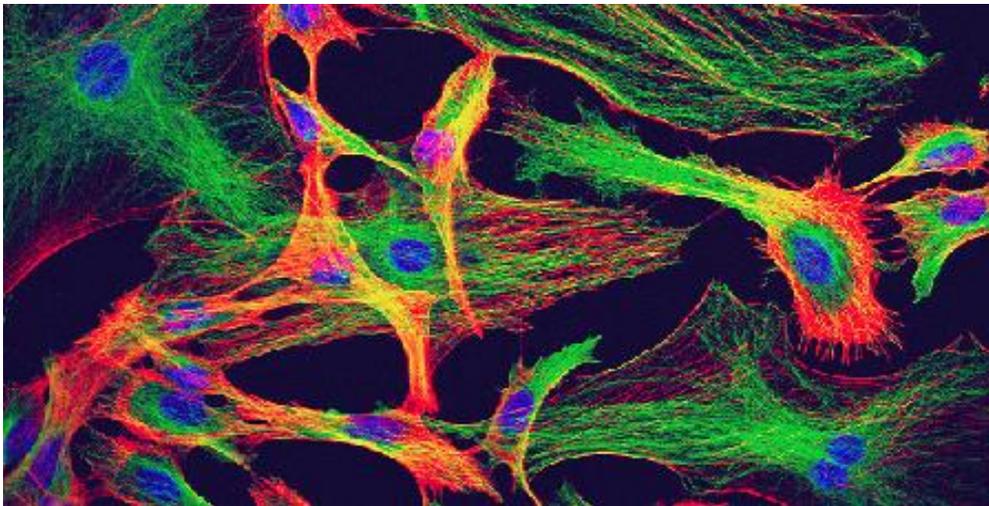
Four in five patients with autoimmune diseases are women. Ten times more women than men get lupus. And 20 times more women develop Sjögren's syndrome, an illness that mainly causes dry eyes and dry mouth.

New studies indicate the reason for the higher incidences of autoimmune diseases in women may be linked to a faulty mechanism within the body that is supposed to shut down one of the two X-chromosomes only women have.

<https://www.scientificamerican.com/article/why-nearly-80-percent-of-autoimmune-sufferers-are-female/>

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Why Non-Neuron Brain Cells Are Sparking Excitement



Quanta Magazine

Impressive and flashy as information processors, neurons are the stars of our brain's cognitive pageant. The electrical signals they send to one another form our thoughts, store our memories and keep our bodies running. But neurons aren't the only cells that make up the nervous system. In fact, there are a roughly equal number of glia, a catchall name for all the nervous system cells that aren't neurons.

When they were first discovered in the 19th century, glia were seen as just the "glue" between neurons. Saddled with that labeling, for much of the 20th century glia were largely thought to be unremarkable. They were viewed as minor players that just helped maintain neurons.

However, as scientific technologies and tools have improved over the past few decades, neuroscientists have increasingly recognized that glia play more active roles in the brain, even in cognitive processes. They process memories and aid the immune system in detecting threats, among other functions. There is even evidence that some glia

stimulate electrical signals like neurons do. As a result, researchers are starting to consider them targets for medicines to treat problems in the nervous system.

As neuroscientists unravel the extraordinary diversity of glial cells, some are weighing whether the field should shed the all-encompassing name “glia,” as [Quanta reported in 2020](#). Better defining these overlooked cells will continue to be a focus of neuroscience research in the coming decade. Far from unremarkable, glia are having a moment.

What’s New and Noteworthy

In the brain, disease, injury or aging can lead astrocytes — the most abundant glial cell type — to damage neurons. Harmful astrocytes, for example, have been discovered in the tissues of patients with neurodegenerative diseases such as Alzheimer’s and Parkinson’s. This finding has led some researchers to look into targeting the astrocytes as a form of disease treatment that’s been dubbed “[gliotherapeutics](#).”

Those medical applications wouldn’t apply only to the brain. Just as the status of glia in the central nervous system has risen, glia in the gut are also being reevaluated. The enteric nervous system, the body’s “second brain,” is a bundle of nerves that weaves through the intestinal walls to help the body digest food. And scientists are discovering that there, just as in the brain, glia play critical roles.

Enteric glia sit at the interface of many types of tissues and perform diverse tasks — from the digestion and absorption of nutrients to the regulation of blood flow and immune responses. For example, as I previously [reported for Quanta](#), a subset of glial cells is responsible for sensing food as it moves through the digestive tract and signaling gut tissue to contract and move it along. When things go wrong with gut glia, problems arise. Dysfunctional glia have been linked to gut ailments, including chronic autoimmune disorders and inflammatory bowel diseases. To rising numbers of researchers, that makes the cells a good target for medications that might help to alleviate pain and symptoms related to inflammatory digestive disorders.

[Nature Neuroscience](#) published a paper in January that found the brain glial cells in mice boost neuronal activity in the animals after anesthesia, helping the brain to wake up.

By Yasemin Saplakoglu for Quanta Magazine

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UNESCO Names 18 New Geoparks



*Baleal, Oeste UNESCO Global Geopark, Portugal
@Oeste Geopark*

UNESCO's Executive Board has endorsed the addition of 18 sites to the UNESCO Global Geoparks network. This brings the total number of geoparks to 213 in 48 countries.

Geoparks serve local communities by combining the conservation of their significant geological heritage with public outreach and a sustainable approach to development.

<https://bit.ly/3vNKj82>

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Gene Involved in Cell Shape Offers Clues on Left-Handedness



baseballtrainingworld.com

A new study sheds light on a genetic component of left-handedness in some people. Researchers identified rare variants of a gene involved in controlling the shape of cells and found them to be 2.7 times more common in left-handed people.

While these genetic variants account for only a tiny fraction - perhaps 0.1% - of left-handedness, the researchers said the study shows that this gene, called TUBB4B, may play a role in the development of the brain asymmetry that underlies the determination of a dominant hand.

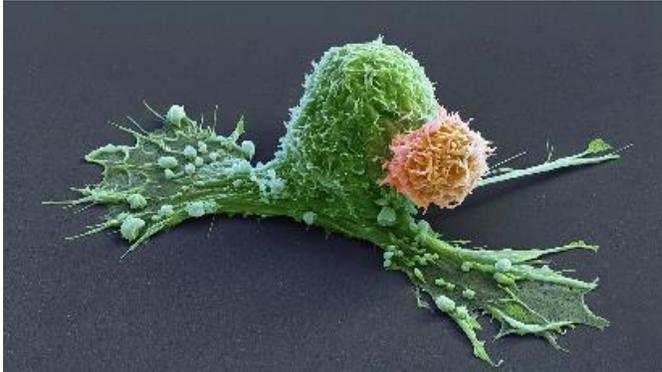
<https://bit.ly/3VRKQjY>

If you're a sinister sort, here might be why.

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To Supercharge Cancer-Fighting Cells: Give Them Stem Cell Skills

The bioengineered immune players called CAR T cells last longer and work better if pumped up with a large dose of a protein that makes them resemble stem cells.



*A CAR T cell (orange; artificially colored) attacks a cancer cell (green).
Credit: Eye Of Science/Science Photo Library*

CAR T cells are made from the immune cells called T cells, which are isolated from the blood of person who is going to receive treatment for cancer or another disease. The cells are genetically modified to recognize and attack specific proteins — called chimeric antigen receptors (CARs) — on the surface of disease-causing cells and reinfused into the person being treated.

<https://bit.ly/3PYd8p3>

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The 25 Largest Yachts in the World



Courtesy Lürssen

The list runs from Lürssen's 592-foot 'Azzam' to Fincantieri 439-foot 'Serene,' with a fascinating group of bespoke vessels in between.

The new arrivals in 2024 knock the mighty 436.4-foot Al Mirqab and Koru, Jeff Bezos's sailing yacht, off the list. The "smallest" yacht—Serene—measures a whopping 439.3 feet. A raft of behemoths didn't make it, including Feadship's 290-foot Project 821 that is launching this year, the largest build from the Dutch shipyard to date.

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

Sorry Wardy. Once again our Sea Goat failed to make the cut.

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Trojan War Frescoes Discovered in New Pompeii Excavation



Moss&Fogg

After Mt. Vesuvius erupted in A.D. 79, it completely covered the city of Pompeii, a once sophisticated Roman city full of art and culture.

Just this past month, a banquet room with black walls, frescoes, and mosaics was unearthed, much of the art is in stunning condition. Painted in Third Style artworks, the depictions show mythology and deities involved in the Trojan War, which took place around 500 BC.

<https://www.bbc.com/news/science-environment-68777741>

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Chords & Riffs

Sergei Prokofiev (1891-1953)



Wallofcelebrities.com

Sergei Prokofiev was a Russian composer (born in Ukraine) who was at the forefront of the Modernist music movement. His symphonies, orchestral suites, and ballets display endless variety and complexity. His most famous works today, perhaps, are the Classical Symphony, the Romeo and Juliet ballet score, and the symphonic fairy tale Peter and the Wolf.

He composed his First Violin concerto in 1917 and the Classical Symphony. Following the Russian Revolution of October 1917, Prokofiev moved to the United States.

Sergei Prokofiev's most famous works include (with first performance dates indicated in brackets):

- 2 violin concertos
- 5 piano concertos
- 7 symphonies
- Lyubov k tryom apelsinam – The Love for Three Oranges opera (1921)
- Poruchik Kizhe – Lieutenant Kijé orchestral suite (1934)
- Romeo i Dzhulyetta – Romeo and Juliet ballet (1938)
- Petya i volk – Peter and the Wolf symphonic fairy tale (1936)
- Zolushka – Cinderella ballet (1945)
- Voyna i mir – War and Peace opera (1946)

Romeo and Juliet Suite <https://youtu.be/7qqrIusxVAI>

Symphony No. 1, "Classical" <https://youtu.be/CXO-hB6jNTI>

How many of us had Prokofiev's [Peter and the Wolf](#) as our first encounter with classical music? I did and I still whistle its principal themes from time to time.

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Imagining Star Wars at Burning Man



moss&fogg

From C-3PO DJ-ing live sets, to Chewbacca getting his dance on, to Han Solo bicycling on the playa, the scenes feel downright nostalgic. The AI-assisted art strikes the right balance of tone, setting, and mood.

<https://mossandfog.com/imagining-star-wars-at-burning-man/>

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1st-of-Its-Kind Parkinson's Treatment May Slow Aggressive Disease, Trial Hints

A new antibody drug for Parkinson's disease appears to slow the progression of its movement-related symptoms, at least in some patients.

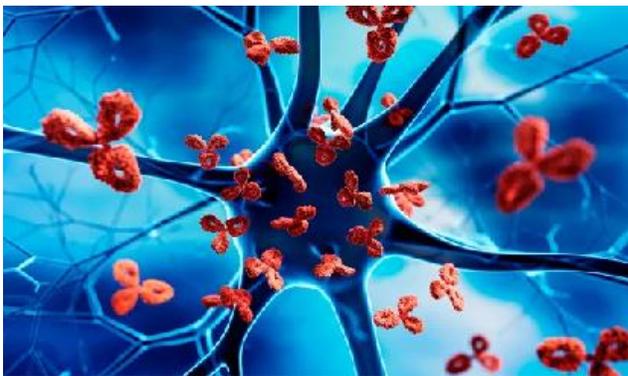


illustration of red, y-shaped antibodies gathering around a large, blue nerve cell. The new treatment uses antibodies that are intended to clear away an abnormal protein in the brain. (Image credit: peterschreiber.media via Getty Images)

A first-of-its kind antibody treatment may slow the progression of movement problems in some people with [Parkinson's disease](#) (PD), early clinical trial data suggest.

Current treatments for PD only ease its symptoms; they don't address its underlying causes in the brain. Now, the new [antibody](#), called prasinezumab, has shown promise in treating one cause of the disease and thus in slowing down its movement symptoms, such as tremors and stiffness.

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

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Fool's Gold May Actually Be More Valuable Than We Realized

Pyrite as a lithium source "is unheard of," but could be big news for batteries.



The pyrite that yielded a surprising source of lithium (not pictured) was found in sedimentary rock.

Image credit: YarsUspensky / Shutterstock.com

Pyrite's association with lithium "is unheard of" said Shailee Bhattacharya, a sedimentary geochemist and doctoral student working with Professor Shikha Sharma in the IsoBioGeM Lab at West Virginia University, in a [statement](#). They will present their team's findings at the European Geosciences Union (EGU) General Assembly 2024.

<https://bit.ly/3UIm8Y7>

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How Taiwan's Tallest Skyscraper Withstands Earthquakes



A 660-ton spherical device called a tuned mass damper swings like a giant pendulum in the skyscraper's upper floors.

Richard Chung TW/Reuters/File

Tuned mass dampers are used in skyscrapers around the world, including the "super-skinny" Steinway Tower in New York and Dubai's sail-shaped Burj al-Arab, which has 11 of them. The device crucially protects against the violent motion caused by "harmonic vibration," which can cause structural failure during an earthquake

<https://bit.ly/3xDJM96>

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100 Photos of the Wild West



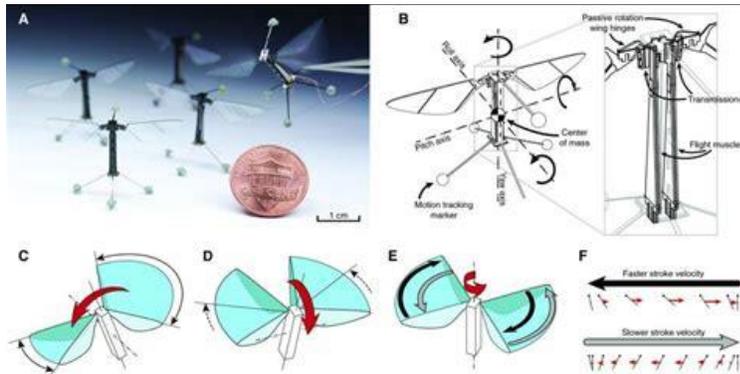
absolutely connected.com

<https://1funny.com/100-photos-of-the-wild-west/>

Thanks to George Smith

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AI And Robotics Demystify the Workings of a Fly's Wing



mappingignorance.com

Machine learning and robotics have shed new light on one of the most sophisticated skeletal structures in the animal kingdom: the insect wing hinge.

Unlike birds or bats, which evolved wings by adapting existing limbs, insect wings are wholly original appendages, and understanding how the complex hinge that links the insect wing to its body works has been a challenge.

But now a team of researchers have combined cutting edge imaging, machine learning and robotics to build a model that is shedding new light on the structure.

[Read the paper.](#)

<https://youtu.be/J-guci0Exz8>

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Place to Be: Luxury Airplanes for Dogs

There's one airline hoping to fetch a pretty penny from customers who really love their dogs.



It's the Great Pumpkin, Charlie Brown/CBS

It's a big world out there. In this section, we'll teleport you to an interesting location—and hopefully give you travel ideas in the process.

Bark Air, a new airline from the company behind BarkBox, is offering private jet flights from Los Angeles to New York and New York to London that cater to dogs, beginning on May 23. It costs \$6,000 for the transcontinental flight and \$8,000 to bring your pup across the Atlantic.

While you're being herded into a middle seat on your commercial flight, these dogs will be cruising in the lap of luxury. The canine-focused amenities include:

- A treat menu with "Doggie Champagne," aka chicken broth.
- More room to roam the main cabin. Only 10 human passengers can ride on a jet that holds as many as 14.
- A play area that resembles a dog park is also in the works.

The biggest difference between dog and human flights is removable carpet tiles should a passenger (the dog, not the human) leave a mess on the floor mid-flight.

Is this viable? Pet Airways attempted something similar in 2007 but was sent to a business farm upstate four years later. Bark CEO Matt Meeker foresees lower prices if there's enough demand, and there's reason to be hopeful: 65 million US households own pets, up from 38 million when Bark launched the treat subscription service BarkBox 12 years ago, per Bloomberg.—DL

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Bullet Train Being Built from Sin City to the City of Angels



This Jan. 25, 2012, photo shows the site of a proposed station for the high-speed rail line to Las Vegas at the end of the Dale Evans Parkway exit from Interstate 15, on the far outskirts of the Mojave Desert city of Victorville, Calif. (AP Photo/Reed Saxon)

A \$12 billion passenger bullet train linking Las Vegas and the Los Angeles area was dubbed the first true high-speed rail line in the nation on Monday, with the private company building it predicting millions of ticket-buyers will be boarding trains by 2028.

Brightline West, whose sister company already operates a fast train between Miami and Orlando in Florida, aims to lay 218 miles (351 kilometers) of new track almost all in the median of Interstate 15 between Las Vegas and Rancho Cucamonga, California.

<https://bit.ly/3xS6tqq>

Cucamonga? Did Jack Benny have insider information 70 years ago?

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Norway's School Smartphone Ban Is Working.



bbc.com

In unsurprising news, middle school kids in Norway have been feeling mentally healthier and performing better academically since a public health initiative banned smartphones in schools, according to a [new study](#).

After three years of the policy, girls' GPAs increased, while visits to mental health professionals decreased by 60%—and girls from lower-income families benefited the most. There wasn't much effect on boys' academic standings, but both boys and girls experienced 43%–46% less bullying after putting their phones away.

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Sick of Toxic Screen Time? Dumbphones Are Having a Moment



Illustration: Natalie Peeples/Axios

Breaking up with your smartphone is hard. But a growing "dumbphone" market is giving offline alternatives.

The big picture: The well-known negative effects of screens — loneliness, addiction and anxiety or depression — has left many eager to disconnect.

- A dumbphone is a basic, 90's-inspired cell phone without the vortex of apps that contribute to high screen times. A return to texts and calls, if you will.
- The New Yorker called dumbphones' popularity a "burgeoning cottage industry" earlier this month.
- Influencers and brands are in on it too, with YouTube content creators sharing their experiences and recommendations.
- Heineken recently released in limited stock The Boring Phone along with clothing brand Bodega. With no apps, the phone prompts users to start conversations.
- Consider the dumbphone another entrant in Gen Z's embrace of retro: landline phones, CDs and film photography.

State of play: [DumbWireless](#), founded in 2022, offers [phones](#) ranging from \$50 to upwards of \$300 from companies including [Light](#), [Punkt](#) and Nokia, as well as a T-Mobile [service plan](#) with various data options.

- LA-based couple Will Stults and Daisy Krigbaum founded the platform after struggling to unplug.
- "Everybody gets that creeping feeling that they can't go on with the way they're doing things with their smartphone," Krigbaum said.
- They buy phones and other accessories, like cases and SIM cards, wholesale. And they field questions from prospective customers.
- Another resource, "The Dumbphone Finder" started by Jose Briones, connects people with similar options.

By the numbers: DumbWireless sold about \$68,000 worth of phones last month, up from \$5,000 in March 2023.

- About 4,200 items were ordered from Briones' affiliate links on Amazon from January to March 2024, an increase from about 800 in the same three-month period in 2023.
- The company that manufactures Nokia phones saw its sales of flip phones double in 2023 compared with 2022, per Yahoo News.

Reality check: Smartphone dependency has somewhat dropped among Gen Z and Millennials in recent years, but most are still reliant on screens.

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Context: The alarming relationship between social media use and [mental health problems](#) among America's youth has been well documented.

- A buzzy new book by an NYU professor even posits: No smart phones for kids before high school.

Between the lines: Concerned parents looking to buy their kids' first phones frequently seek advice and products from DumbWireless, its founders told Axios.

- Those trying out dumbphones often still have a smartphone, swapping a SIM card between the two.

Go deeper: The humble [landline phone beloved by Gen Z](#)

Will fear of identity theft return us to the day before the dawn of the information age?

I intend to give this question serious consideration while walking at my lake next week.

Maybe you should do the same.

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Day-Trippers Will Have to Pay to Swing by Venice



Tourist stand near Santa Lucia train station on April 24, 2024 in Venice on the eve of the start of the official trial of the city's booking system for day-trippers
Marco Bertorello/AFP via Getty Images

It will cost you a small fee to eat, pray, and/or love in Venice this summer. Day-trip visitors must pay a little over \$5 to visit the historic city starting today, making it the first major city to charge this kind of entrance fee.

The surcharge comes after numerous warnings that the city's infrastructure cannot support the overtourism it's experiencing. UNESCO even threatened to put Venice on its list of endangered heritage sites if local authorities didn't make changes.

The new fee targets single-day visitors, who account for about three out of every four tourists to the city but contribute less than 20% to total tourism spending.

Some critics think the fee violates Italy's constitutional right to freedom of movement, while others say it doesn't go far enough because a measly 5-euro fee won't make a dent in the nearly 30 million people who visit Venice every year.

Big picture: The Floating City isn't the only travel hot spot attempting to limit tourists. Other destinations have raised tourist taxes, and Barcelona even removed a popular bus route from map apps so tourists stop clogging up public transit.

Does Venice think a \$5.00 fee is going to cut down on tourists? I guess we'll see.

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Classes from Google and Adobe Certify Educators' AI Literacy



(Google/Adobe)

Want to empower school staff to use generative artificial intelligence (gen AI) but are unsure they'll know how to use it effectively and responsibly? Google and Adobe are stepping up to help by providing free introductory courses on AI literacy designed specifically for educators. [Full Story: Tech & Learning](#)

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USMC CH-53K Transports F-35C & Refuels from KC-130 En Route



U.S. Marines flying a CH-53K King Stallion heavy-lift helicopter transported an F-35C Lightning II airframe from the F-35 Integrated Test Force at Patuxent River (Pax ITF) to a Navy unit

*located at Joint Base McGuire-Dix-Lakehurst, New Jersey, April 24.
(Photo by Kyra Helwick/F-35 Lightning II Pax River ITF)*

CF-1 will be used in future emergency recovery systems testing by the Prototype, Manufacturing and Test Department of the Naval Air Warfare Center Aircraft Division.

<https://bit.ly/49V4Oxq>

You really want to watch the video at the bottom for the article.

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Poetry Corner

Oscar Wilde (1854-1900)



letralia

A spokesman for Aestheticism, in the early 1880s he gave a lecture tour in the U.S. and established himself in London circles by his wit and flamboyance.

Accused of being a sodomite, Wilde sued for libel and lost, then was arrested for sodomy and convicted in a trial that became internationally notorious. Imprisoned at Reading Gaol (1895–97), he wrote a recriminatory letter to his lover that was edited and published as *De Profundis* (1905). After his release, he moved to Paris; his only later work was *The Ballad of Reading Gaol* (1898), on inhumane prison conditions. He died suddenly of acute meningitis.

The Harlot's House



youtube

We caught the tread of dancing feet,
We loitered down the moonlit street,
And stopped beneath the harlot's house.

Inside, above the din and fray,
We heard the loud musicians play
The "Treues Liebes Herz" of Strauss.

Like strange mechanical grotesques,
Making fantastic arabesques,
The shadows raced across the blind.

We watched the ghostly dancers spin
To sound of horn and violin,
Like black leaves wheeling in the wind.

Like wire-pulled automatons,
Slim silhouetted skeletons
Went sidling through the slow quadrille.

They took each other by the hand,
And danced a stately saraband;
Their laughter echoed thin and shrill.

Sometimes a clockwork puppet pressed
A phantom lover to her breast,
Sometimes they seemed to try to sing.

Sometimes a horrible marionette
Came out, and smoked its cigarette

Upon the steps like a live thing.

Then, turning to my love, I said,
"The dead are dancing with the dead,
The dust is whirling with the dust."

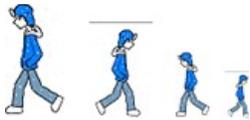
But she—she heard the violin,
And left my side, and entered in:
Love passed into the house of lust.

Then suddenly the tune went false,
The shadows wearied of the waltz,
The shadows ceased to wheel and whirl.

And down the long and silent street,
The dawn, with silver-sandalled feet,
Crept like a frightened girl.

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My Walking Thoughts



For Sunday May 5 2024

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Leadership

In last week's Walking Thoughts, I advanced the proposition that Boeing's current difficulties lay in a lack of leadership, promising to elaborate on the subject this week.

Leadership, a subject in which I have a particular interest as I spent a good part of my first life in the Marine Corps, whose fundamental ethos is rooted in its pursuit.

From the instant a young recruit or officer candidate steps foot on Marine Corps soil, he or she is propelled down a path whose milestones are carved in the continuous pursuit of leadership skills.

While doctrine focuses on 14 characteristics--what they are, how they apply to the accomplishment of the Corps' mission, and how they can be improved through continuous attention--the product is far greater than the sum of its parts. It's a journey

measured not by satisfaction of a list of requirements or the approval of those in high places, but in the willingness of others to follow.

The Corps' structure is hierarchical, yet its ability to perform its mission unrolls from the bottom up, a situation that applies elsewhere in our lives. While leadership principles and skills themselves can be taught and honed, the foundation on which they rest—character—is a thing unto itself. The essence of character is shaped not by deed but the wellspring of one's humanity. Thus, leadership is not a role someone plays, but an offspring of inspiration rather than performance.

So what are the Marine Corps Leadership Traits

The 14 leadership traits are qualities of thought and action which, if demonstrated in daily activities, help Marines earn the respect, confidence, and loyal cooperation of others.

JUSTICE: the practice of being fair and consistent.

JUDGMENT: your ability to think clearly, calmly, and in an orderly fashion to make good decisions.

DEPENDABILITY: consistently putting forth your best efforts to achieve the highest standards of performance.

INITIATIVE: meeting new and unexpected situations with prompt, resourceful action.

DECISIVENESS: the ability to make good decisions and act on them without delay.

TACT: dealing with people in a manner that will maintain good relations encourage cooperation.

INTEGRITY: putting honesty, sense of duty, and sound moral principles above all else.

ENTHUSIASM: a sincere interest and exuberance in the performance of duties.

BEARING: conduct and carriage in a manner that reflect alertness, competence, confidence, and control.

UNSELFISHNESS: being considerate of the needs and desires of others.

COURAGE: having the inner strength to stand up for what is right and continue to function effectively in the presence of danger.

KNOWLEDGE: the understanding of a science or art through acquired information and an understanding of human action.

LOYALTY: devotion to your country, the Corps, and to your seniors, peers, and subordinates.

ENDURANCE the mental and physical stamina in withstanding pain, fatigue, stress, and hardship.

What have character and leadership to do with this discussion?

Everything, and most particularly at this moment in our nation's history where unbridled change threatens to rip apart the bases of our relationships with one another, and indeed the very roots of civilization.

Thus, as we go about shaping our own lives and attending to the business of selecting or promoting the next generation of leaders, this is not a time to reward mediocrity or narcissistic political ambition. Rather it is a time to seek out and advance those for whom achievement is a driving force. Like it or not, it's up to us ourselves to lead by example.