

Ode to E Pluribus Unum for Sunday January 29 2023

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Saturn at Night



NASA, JPL-Caltech, Space Science Institute, Mindaugas Macijauskas

Saturn is still bright in planet Earth's night skies. Telescopic views of the distant gas giant and its beautiful rings often make it a star at star parties. But this stunning view of Saturn's rings and night side just isn't possible from telescopes closer to the Sun than the outer planet. They can only bring Saturn's day into view.

In fact, this image of Saturn's slender sunlit crescent with night's shadow cast across its broad and complex ring system was captured by the Cassini spacecraft. A robot spacecraft from planet Earth, Cassini called Saturn orbit home for 13 years before it was directed to dive into the atmosphere of the gas giant on September 15, 2017.

This magnificent mosaic is composed of frames recorded by Cassini's wide-angle camera only two days before its grand final plunge. Saturn's night will not be seen again until another spaceship from Earth calls.

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Belgian Bus Company Safety Ad #1



<https://www.youtube.com/watch?v=iTOM8JoTu7E>

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Making a Trumpet

Yamaha Trumpet Factory Tour with Jens Lindemann'



<https://youtu.be/uIqDhO1iddo>

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Titanosaur Nests Discovered In India Reveals Controversial Findings About Dino Moms



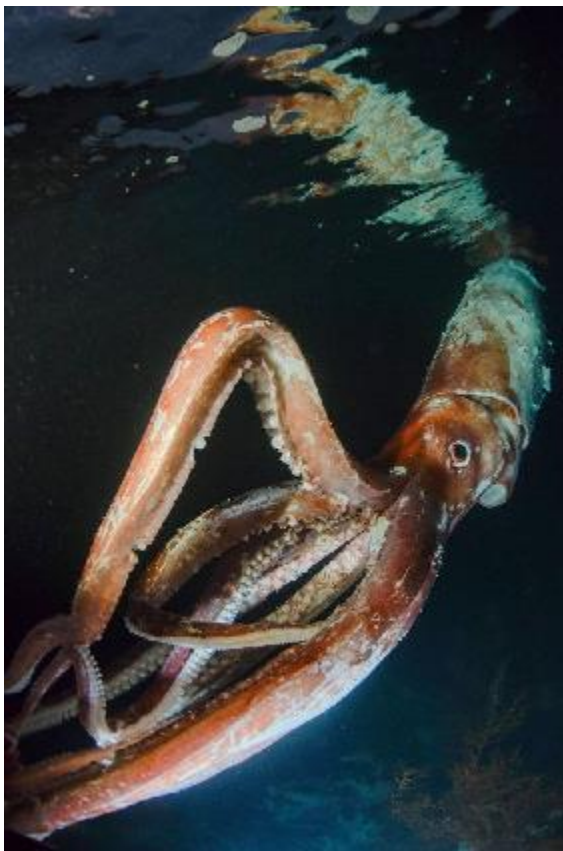
The discovery of a tightly packed nesting ground from the Cretaceous period in India suggests that titanosaurs laid eggs and left their offspring behind.

<http://bit.ly/3HxhbVE>

By Joshua A. Krisch for Live Science

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Stunning Photos of Rare 8-Foot Giant Squid



Giant squid typically live in the deep ocean, so they're often only seen as corpses washed ashore or as accidental bycatch in fishing nets. They can grow to 40 to 45 feet (12 to 14 meters) long, a size even more incredible considering that the animals likely only live about five years in the wild

<https://www.livescience.com/swimming-with-giant-squid-japan>

By Stephanie Pappas for Live Science

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Benjamin Zander...A Lesson for Life, Bach's Cello Suite #1



Benjamin Zander's classes Interpretations of Music: Lessons for Life are among the most extraordinary of all his musical activities. Delivered each month to a public audience in Boston, the classes feature Ben guiding highly accomplished young musicians towards more communicative and engaging interpretations of classical masterworks.

<https://youtu.be/b2S-OjTb4nU>

I've been a fan on Mr. Zander in his many roles, fantasizing I might someday meet him, ignoring the fact that I have no talents—music or otherwise—to bring to the party.

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A Couple of Travelers from Another World

Neil and Buzz demonstrate the right stuff on the way to the moon.



<https://youtu.be/xc1SzgGhMKc?t=16>

Just in case you thought the journey was a piece of cake, this video with all the communications glitches ought to set your thinking straight.

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Boston Dynamics' Atlas Can Run, Jump and Now Grab and Throw



https://youtu.be/-e1_QhJ1EhQ

<https://youtu.be/XPVC4IyRTG8>

I give him a 3.5 on his dismount

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Cameras Show Squid and Human Brains Develop the Same Way

It seems that the blueprint for complex brain development remains the same, despite 500 million years of divergent evolution



<http://bit.ly/3ZU0yLc>

Ben Turner for Live Science

OK, when do I get to change colors?

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The Chevrolet Corvette E-Ray Hybrid Corvette



<http://bit.ly/3Jbn5Ng>

Ferrari, Porsche, and now Corvette have followed in the hallowed footsteps of the Prius.. That seems to leave Tesla as the only hybrid holdout. Come on, Elon, don't you think it's time to get with the program.

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Murphy's 15 other laws

1. Light travels faster than sound. This is why some people appear bright until you hear them speak.
2. A fine is a tax for doing wrong. A tax is a fine for doing well.
3. He who laughs last, thinks slowest.
4. A day without sunshine is like, well, night.
5. Change is inevitable, except from a vending machine.
6. Those who live by the sword get shot by those who don't.
7. Nothing is foolproof to a sufficiently talented fool.
8. The 50-50-90 rule: Anytime you have a 50-50 chance of getting something right, there's a 90% probability you'll get it wrong.
9. It is said that if you line up all the cars in the world end-to-end, someone from California would be stupid enough to try to pass them.
10. If the shoe fits, get another one just like it.
11. The things that come to those who wait may be the things left by those who got there first.
12. Give a man a fish and he will eat for a day. Teach a man to fish and he will sit in a boat all day drinking beer.
13. Flashlight: A case for holding dead batteries.
- 14 . God gave you toes as a device for finding furniture in the dark.
15. When you go into court, you are putting yourself in the hands of twelve people, who weren't smart enough to get out of jury duty.

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Jaques Loussier Trio Plays JS Bach

Last week you saw what these folks could do with Erik Satie's works.



French pianist Jacques Loussier has seemingly forged an entire career out of arranging classical compositions for his jazz trio. He's done a disc of Satie and Vivaldi works, even recording Ravel's Bolero. So, trying Bach's Goldberg Variations, full of jazzy time signatures and loaded with improv possibilities, makes perfect sense for the pianist.

<https://www.youtube.com/watch?v=JnvEG9cDiwk>

<https://www.youtube.com/watch?v=HCQxP5jUrXc>

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Me especially in the event I live that long.

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A Theory of Rage



Have you ever been cut off while driving and found yourself swearing and laying on the horn? Or come home from a long day at work and lashed out at whoever left the dishes unwashed? From petty anger to the devastating violence we see in the news, acts of aggression can be difficult to comprehend. Research has yielded puzzling paradoxes about how rage works in the brain. But a new study from Caltech, pioneering a machine-learning research technique in the hypothalamus, reveals unexpected answers on the nature of aggression.

The hypothalamus is a brain region linked to many innate survival behaviors like mating, hunting, and the fight-or-flight response. Scientists have long believed that neurons in the hypothalamus are functionally specific—that is, certain groups of neurons correlate to certain specific behaviors. This seems to be the case in mating behavior, where neuron groups in the medial preoptic area (MPOA) of the hypothalamus, when stimulated, cause a male mouse to mount a female mouse. These same neurons are active when mounting behavior occurs naturally. The logical conclusion is that these neurons control mounting in mice.

But when looking at the analogous neurons that control aggression in another part of the hypothalamus, the VMHvl, researchers found a different story. These neurons could be stimulated to cause a male mouse to attack another male mouse, yet they did not show specific activity when the same neurons were observed in naturally fighting mice. This paradox indicated that something distinct was happening when it came to aggression.

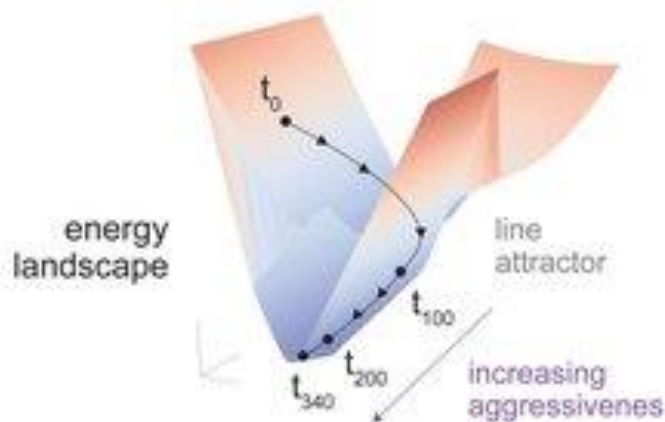
Now, [a new Caltech study](#) provides insight into the unique neural mechanisms of anger and shows that more aggressive dispositions are codified in the mouse brain's circuit

dynamics. The research appears in the journal *Cell* on January 5 and was conducted in the laboratory of David Anderson, the Seymour Benzer Professor of Biology, Tianqiao and Chrissy Chen Institute for Neuroscience Leadership Chair, a Howard Hughes Medical Institute Investigator, and director of the Tianqiao and Chrissy Chen Institute for Neuroscience. The study is part of a continuing collaboration with Ann Kennedy, a theoretical neuroscientist and former postdoctoral fellow in the Anderson lab, now an assistant professor of neuroscience at Northwestern University.

The study's lead author, Caltech graduate student Aditya Nair, applied a machine-learning model to analyze experimental data and uncover hidden patterns in brain activity.

"We used machine learning to fit a dynamical system model to recorded neural data from mice," Nair says. "Essentially, the dynamical system acts like an artificial mouse brain in a computer which reflects our experimental observations. We then studied this model in depth to learn how these hundreds of neurons talk to one another. By applying dimensional reduction and other analysis techniques from physics, we were able to finally see the neural signals and computations causing aggression."

The analysis revealed a "line attractor" in the brain—a mathematical representation of a pattern that emerges from complex neural systems. When graphed in an energy landscape, the line attractor forms the shape of a trough. Though the trough is not a physical structure in the brain, it indicates the flow of energy happening in the dynamical system.



"Discovering the line attractor was exciting because it showed for the first time a neural correlate to aggressive escalation, a key finding with important societal implications," Nair explains.

Mice typically show aggressive behavior when another male mouse is introduced to their cage during experiments. Their behavior escalates from threatening displays to full-blown attack, a sliding-scale trajectory that can now be explained by line-attractor dynamics. As neural activity progresses along the line-attractor trough, the mouse's aggression ramps up. The shape of the trough makes it simple for the brain to modulate aggression—like a volume dial that can be turned up or down. If the "volume" gets too high, animals attack. This modulation may serve as an evolutionary adaptation, compelling animals to measure out displays of aggression and test the waters before going into a potentially deadly fight.

The discovery of a line attractor was also, unexpectedly, correlated with individual differences in aggression. The study's dynamical system model showed that mice that became angry and attacked more quickly had deeper line-attractor troughs, indicating that aggressive temperaments are reflected in the brain's structure. Because these lab mice are genetically identical, these individual differences must be due to epigenetic factors, the nature of which remain to be discovered.

Though attractor dynamics have been discovered in "higher" brain regions such as the cortex or hippocampus, often linked to motor control and memory, this study is one of the first to use a dynamical systems approach to understand social behaviors in the deep brain.

Could attractor dynamics be the driving force behind other internal emotional states? Do we control our emotions, or do they control us? The findings in this study evoke questions and future directions for research, open the door to therapeutic drug development for emotional disorders, and elevate our understanding of how the hypothalamus encodes aggression.

The paper is titled "An approximate line attractor in the hypothalamus encodes an aggressive state." In addition to Anderson and Nair, co-authors include former Caltech postdoctoral scholar Tomomi Karigo; postdoctoral scholar Bin Yang (PhD '22); Surya Ganguli, Mark J. Schnitzer, and Scott Linderman of Stanford University; and Ann Kennedy of Northwestern University. Funding was provided by the Howard Hughes Medical Institute, the National Institutes of Health, and the Agency for Science, Technology and Research of Singapore.

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King of Carbs

The Cheesecake Factory defies all odds



If you've ever eaten an entire loaf of brown bread while flipping through a menu the size of a small novel, you know the Cheesecake Factory.

First opened in 1978 in Beverly Hills, the restaurant now has 211 North American locations and consistently ranks as a customer favorite. And it's seeing record revenues despite doing arguably everything wrong, per Vox.

Restaurant rebel

The rules for a successful restaurant are simple: minimize everything. Labor, ingredients, and menu offerings are often cut to scale successfully.

Meanwhile, the Cheesecake Factory:

- Has 250+ items on the menu
- Makes its food on-site from scratch
- Strives for a lavish, in-person dining experience

During the pandemic...

... that spelled danger for the chain. The company furloughed 41k hourly workers and was charged by the SEC for failing to disclose it was bleeding out \$6m in cash per week.

But Cheesecake pivoted its efforts to delivery, rehiring the majority of its employees to sling carbs to couch-bound customers.

Still cheesin'

Nevertheless, the Cheesecake Factory bounced back. The company reported record revenue of \$769m in July 2021, and topped that with \$832.6m in Q2 of 2022, despite inflation and reduced consumer spending.

Even more shocking: The restaurant's most popular dish isn't cheesecake at all. It's fettuccine alfredo, which is ordered 200k+ times every month.

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How About this Barn Find?



<https://youtu.be/diY4pmAnb1g?t=1>

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The Secret Lives of Seals



Sightings of wild seals can be many things; dramatic, life changing, and all too often brief. For those of us who dedicate our lives to understanding how seal populations change over time, the flighty nature of these animals can present many challenges.

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

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Amazon Begins Drone Deliveries in California and Texas

Amazon Prime Air wants to deliver packages within 60 minutes.



Amazon's latest delivery drone design, the MK27-2, is now being used to make deliveries.
Amazon

Amazon has begun delivering orders by drone. Amazon Prime Air is now operating in Lockeford, Calif. and College Station, Texas, delivering a small number of packages just in time for Christmas.

<https://youtu.be/pjTzE6qzYb0?t=3>

In August of this year, the retail giant received approval from the Federal Aviation Administration to use drones for package deliveries. The maximum payload for Prime Air is 5 lb, and Amazon says that 85 percent of its shipments fall under that weight.

Residents of both towns can sign up for the service, and Amazon will then confirm that the company can deliver safely to the customer's address. Once an order is placed, the customer gets an estimated delivery time and tracking info.

"The drone will fly to the designated delivery location, descend to the customer's backyard, and hover at a safe height," Amazon said. "It will then safely release the package and rise back up to altitude."

Lockeford is a small, rural town of about 3,500 residents located about 50 miles southeast of Sacramento and just northwest of Stockton, making it an ideal location to pilot drone delivery. College Station is roughly 100 miles northwest of Houston and is the home of Texas A&M University.

"Our aim is to safely introduce our drones to the skies. We are starting in these communities and will gradually expand deliveries to more customers over time," Natalie Banke, Amazon Air spokesperson told KTXL Fox 40 in Sacramento, which first reported the launch of Prime Air.

Amazon is using a hexagonal MK27-2 delivery drone with six propellers that are designed to minimize high-frequency sound waves. At the moment, the company is focused on safe transit above all else. While the drones fly autonomously, using algorithms to avoid obstacles like power lines and chimneys, Amazon is currently keeping tabs on deliveries with human eyes.

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Mia Ruhman Casting Call Submission



Think of Me <https://youtu.be/4KrzZf8R3ho?t=16>

Mia is part of a group of SoCal teens coming to the fore in the arts.

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Tesla Road Trip Accessory



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A Mind-Reading Combat Jet for the Future



<https://www.bbc.com/news/business-62289737>

Really? I'd be more than a little concerned whose mind it was reading and how robust the interface between them was.

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The Secrets to Bats' Heavy Metal Growls



*A Daubenton's bat (*Myotis daubentonii*) using echolocation calls to hunt at night.
(Image credit: Paul Colley/iStock/Getty Images Plus)*

Bats vibrate special vocal folds to produce low-pitched growls like those of death metal singers.

By Elizabeth Rayne

Bats are known for making high-pitched calls that they use for echolocation. But bats are also capable of producing extremely low-pitched growling sounds much like the snarling vocals of death metal singers — and now, scientists know how bats do it.

Like death metal vocalists, bats achieve these low frequencies by using what are known as false vocal folds, said Jonas Håkansson, a postdoctoral researcher who studies bat vocalization at the University of Southern Denmark in Odense and the University of Colorado in Colorado Springs.

"What helps them growl are the ventricular folds, also called false vocal folds, that sit above the true vocal folds," he told Live Science. False vocal folds are thick folds of mucous membrane that appear in the larynxes of most mammals; "these vibrate at a comparatively low frequency and thus produce audible sounds (growls)," Håkansson explained. Such sounds are hardly ever uttered by humans — except by trained Mongolian throat singers and, of course, death metal vocalists.

And now, bats can be added to the list of guttural performers.

Researchers recently examined this unusual vocal ability in Daubenton's bats (*Myotis daubentonii*), which live across Europe and Asia and have a wingspan of about 9.8 inches (25 centimeters), according to Animal Diversity Web. The scientists reported their findings Nov. 29 in the journal PLOS Biology.

To understand the vocal range of these tiny bats, the researchers captured the first-ever footage of bat vocal cords in action, using extracted bat larynxes that they animated with flowing air to simulate bronchial pressure. They then filmed the larynxes at rates of up to 250,000 frames per second. The high-speed footage revealed that sounds produced by the false vocal folds were very low-pitched, in the range of 1 to 5 kHz.

The research team also learned that the bats' vocal range was broader than they expected, spanning seven octaves. For comparison, humans — and most other mammals — can manage only three or four octaves. (Singers such as Prince, Mariah Carey and legendary Queen frontman Freddie Mercury, who have ranges of four to five octaves, are rare exceptions.) What gives the bats a high-frequency boost is membranes that extend from the vocal cords and measure no more than 0.0004 inch (10 micrometers) thick — a feature that humans lack.

Some primates do have these larynx membranes, but humans are thought to have never developed them or lost them at some point in our evolutionary past, according to the study.

"The high-frequency calls used for echolocation are produced by the vocal membranes," Håkansson said. "These are thin membranes that sit at the end of the vocal folds. Due to their low mass, they can oscillate at very high frequencies and thus produce the high-frequency calls," which the scientists measured at frequencies ranging from 10 to 20 kHz. The combination of these delicate membranes and thicker folds is what allows bats to display such an impressive range in their vocalizations, he said.

Why bats make death metal growling noises is not yet understood, the scientists reported. However, Håkansson and his colleagues noted that the bats would start to growl when they were crowded together, perhaps expressing aggression or annoyance.

If you handle bats, like when netting, or when you observe them in groups, they will make these sorts of sounds," said Håkansson, though the exact reason remains a mystery.

Nevertheless, it's still pretty metal.

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Break Dancing Will Soon Be an Olympic Sport



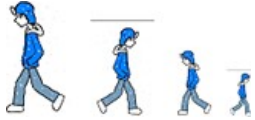
If you haven't thought much about breakdancing since Breakin' 2: Electric Boogaloo hit multiplexes in 1984 —or are too young to know what that even is—it may come as a surprise to learn that a competitive headspin-to-headspin “dancesport” version of the form has been steadily growing in global popularity over the last few decades and is now set to become the newest Olympic event.

https://www.fastcompany.com/90835635/breakdancing-olympics-scoring-trivium-breaking?utm_source=join1440&utm_medium=email&utm_placement=newsletter

Couldn't they have waited until after I was gone?

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My Walking Thoughts



For Sunday January 29 2023

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