

## Ode to E Pluribus Unum for Sunday June 25 2023

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## Planet Earth at Night II



*Video Credit: NASA, Gateway to Astronaut Photography, ISS Expedition 53; Music: The Low Seas (The 126ers)*

Recorded during 2017, timelapse sequences from the International Space Station are compiled in this serene video of planet Earth at Night.

Fans of low Earth orbit can start by enjoying the view as green and red aurora borealis slather up the sky. The night scene tracks from northwest to southeast across North America, toward the Gulf of Mexico and the Florida coast. A second sequence follows European city lights, crosses the Mediterranean Sea, and passes over a bright Nile River in northern Africa.

Seen from the orbital outpost, erratic flashes of lightning appear in thunderstorms below and stars rise above the planet's curved horizon through a faint atmospheric

airglow. Of course, from home you can always check out the vital signs of Planet Earth Now.

<https://youtu.be/zIqG42AD4Gw>

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## **Building Human Towers in Lisbon, Portugal.**



*Horacio Villalobos#Corbis/Corbis via Getty Images*

<https://www.youtube.com/watch?v=iIw5gc0zIU4&pp=ygUqQnVpbGRpbmVpYy9yZHVnYWwG93ZXJzIGluIExpY2JvbiwgUG9yZHVnYWw>

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**"I Wanna Be a Cowboy" By Boys Don't Cry**



"I Wanna Be a Cowboy" is a single by British pop-rock group Boys Don't Cry. The song was written by four of the band members—Brian Chatton, Nick Richards, Nico Ramsden and Jeff Seopardi—and was released in July 1985 as the first new single from their self-titled debut album (an album consisting of part new material and part compilation of several of the band's earlier singles).

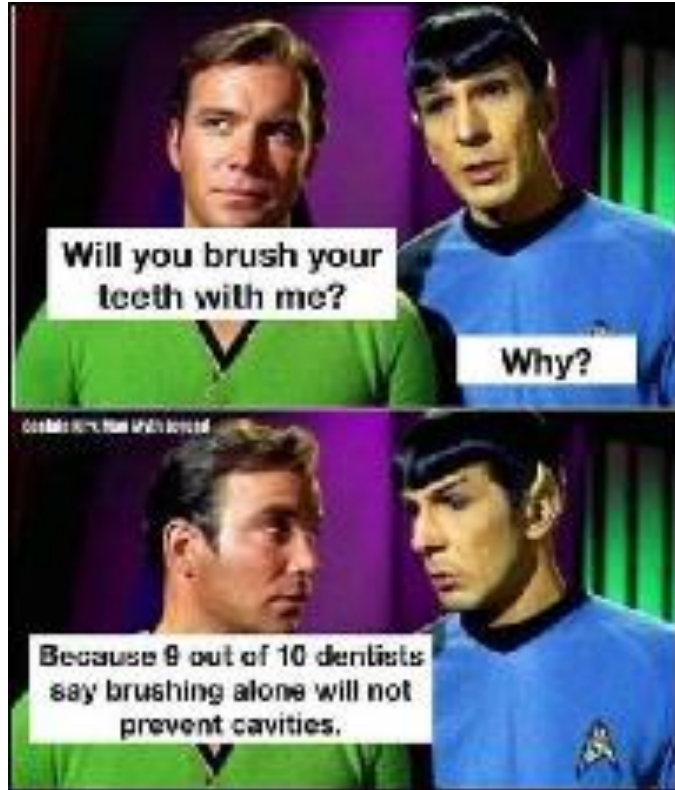
Frontman Nick Richards spent one Saturday night watching Clint Eastwood cowboy films such as *For a Few Dollars More*, and the band had reserved the studio for the next day. Thanks to the films, Richards had the saying, "I wanna be a cowboy, and you can be my cowgirl" stuck in his head, and the band liked it.

They wrote the entire song that Sunday in about an hour, recorded it, and spent three hours mixing it. Richards felt it would be too boring to sing all four verses, so they brought in drummer Jeff Seopardie's girlfriend to sing verse two. The entire single was finished by the end of the day and never mixed again.

I Wanna be a Cowboy <https://www.youtube.com/watch?v=9wWySln4sY0>

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## **New Study Says Only 1.7 Billion T-Rexes Ever Walked the Earth**

The new prediction suggests fewer T. rex individuals roamed our planet than scientists previously thought.



*An artist's interpretation of what Tyrannosaurus rex may have looked like.  
(Image credit: Shutterstock)*

A new study, published April 18 this year in the journal [Palaeontology](#), has challenged that number, suggesting the actual figure is probably closer to 1.7 billion.

<https://bit.ly/45fNzFY>

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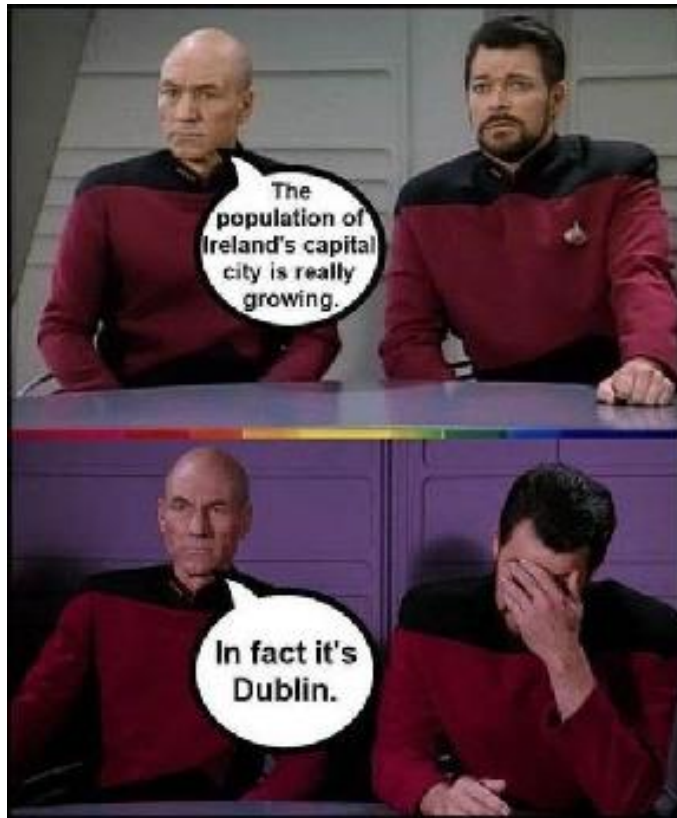
## **Skyscrapers May Be Sinking New York City**

A scientific journal suggests that the city's 1.68 trillion pounds of buildings are causing the city to descend, in some neighborhoods faster than others.



<https://bit.ly/41ZkvQs>

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### What Is the Rarest Color in Nature?



*pinterest*

Plants, animals, or minerals found in nature bear almost every color imaginable. There are two factors that influence what hues you see in the wild: physics and evolution. So, which colors are you least likely to see in the natural world? Victoria Hwang explores one of nature's rarest spectacles.

<https://youtu.be/yRwoReHd7XU>

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## Mapping Volcano Eruptions with Drones



Drones have become an essential tool to map, measure and observe the extremely dangerous environments surrounding volcanic eruptions.

<https://bit.ly/3WYirO9>

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## Cernan and Schmidt Wondering if Humans Will Ever Come Again





NASA

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## Flashmob Kekumka 2020; Toledo



It grows on you...at least it does on me. But more than that it works.

<https://youtu.be/mxoxbFgFnqk?t=5>

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**A Photo Collection You Won't Want to Miss**





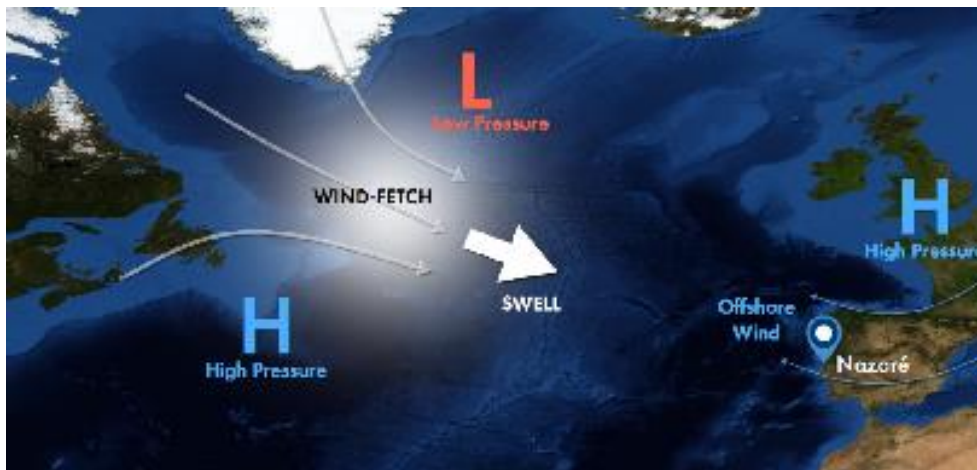
*Dark Hedges of Northern Ireland*

<https://bit.ly/42msBmr>

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## **Mechanics of Nazare**

How one underwater canyon in Portugal creates the world's largest waves



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

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Be careful where you shop online.  
We ordered a german shepherd and  
now this guy lives with us.



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## **The Economics of Vending Machines**



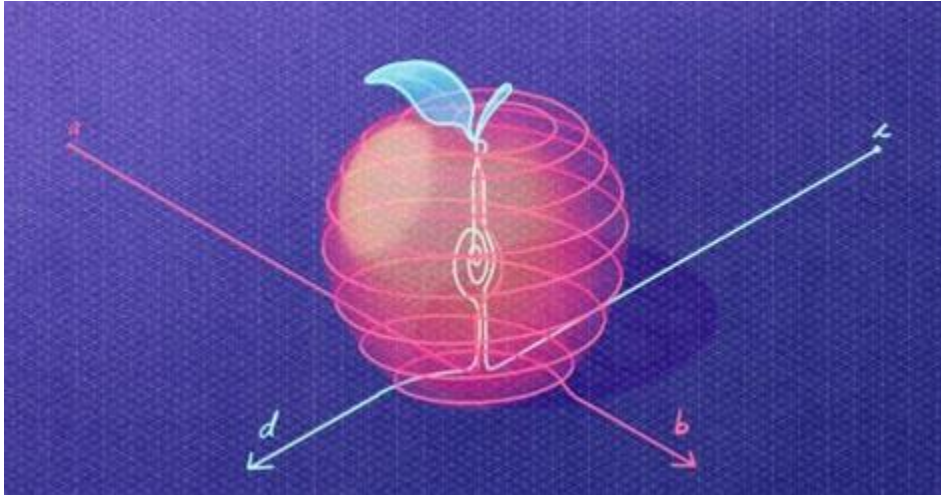
How lucrative is the vending machine business? The average vending machine generates \$300 in monthly revenue, but some operators generate \$300 per machine every week — like Jaime Ibanez. The YouTuber and vending machine entrepreneur has 47 machines in his fleet and counting. In some cases, a vending machine business owner can make an annual income in the six-figure range.

[https://youtu.be/4UZiI\\_ZVoYc](https://youtu.be/4UZiI_ZVoYc)

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# Hyperdimensional Computing Reimagines Artificial Intelligence

By imbuing enormous vectors with semantic meaning, scientists can get machines to reason more abstractly—and efficiently—than before.



Myriam Wares/Quanta Magazine

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

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# Nuclear-Powered Cargo Ships Are Trying to Stage a Comeback





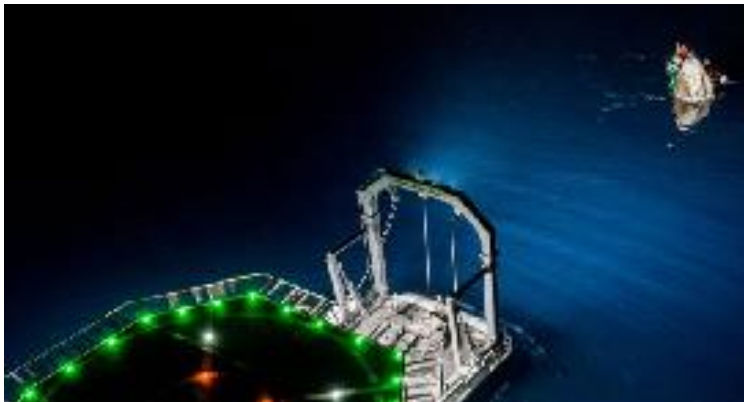
Faced with the difficult task of decarbonizing, some shipping companies are taking another look at a polarizing solution—nuclear fission.

<https://bit.ly/3CwQk8W>

*Well, the US Navy operates more than 80 such vessels, so why not?*

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## **SpaceX's Dragon Reentry and Splashdown**

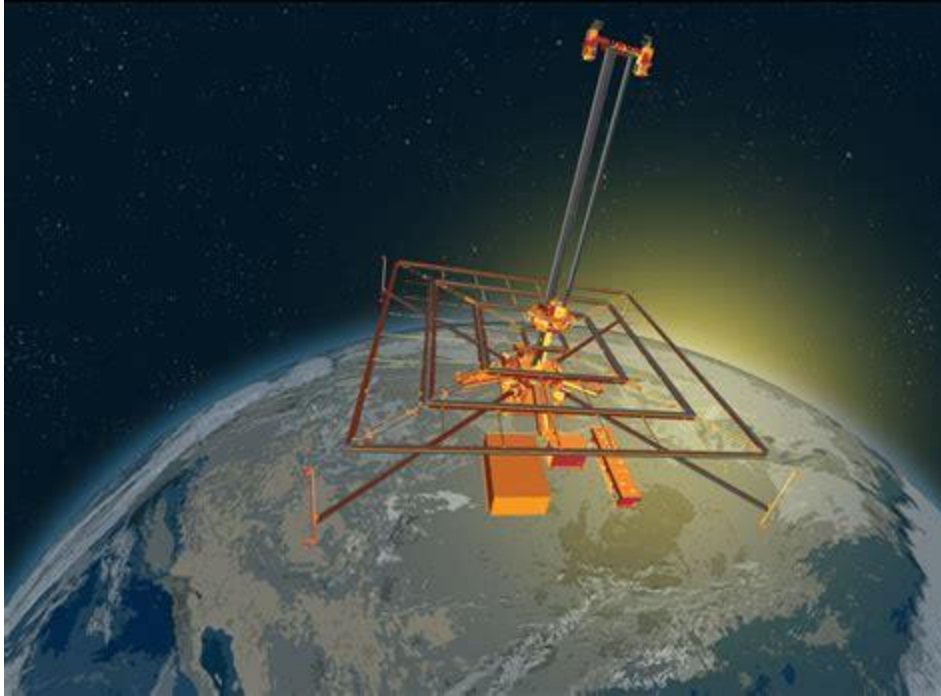


Ax-2's SpaceX Dragon capsule put on a show during its homecoming late May 30.

<https://bit.ly/3MOR6CL>

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## **Solar Power Demonstrator Wirelessly Transmits Power in Space**



A space solar power prototype that was launched into orbit in January is operational and has demonstrated its ability to wirelessly transmit power in space and to beam detectable power to Earth for the first time.

Wireless power transfer was demonstrated by MAPLE, one of three key technologies being tested by the Space Solar Power Demonstrator (SSPD-1), the first space-borne prototype from Caltech's Space Solar Power Project (SSPP). SSPP aims to harvest solar power in space and transmit it to the Earth's surface.

<https://bit.ly/3oMda9q>

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## **Climate Activists Smear Red Paint on Monet Painting**

Two young women wearing t-shirts with the logos of the environmental organization Athersall Vatmarker have smeared paint on the Monet painting 'The Artist's Garden at Giverny' at the National Museum in Stockholm, Sweden, on June 14, 2023.



*Courtesy Of Återställ Våtmarker*

Two climate activists smeared red paint and glued their hands to the protective glass on a Monet painting on display at the National Museum in Stockholm, Sweden.

The two women, wearing name tags identifying themselves as Emma and Maj, smeared the paint on *The Artist's Garden at Giverny* (1900), a vivid landscape by the French Impressionist artist showcasing pink and purple irises. The painting is on display at the National Museum as part of the exhibition "The Garden – Six Centuries of Art and Nature" through a loan from the Musée d'Orsay in Paris, which acquired it in 1983.

The two protestors wore T-shirts with the logo of the environmental organization Återställ Våtmarker (Restore Wetlands), which released a video of the protest on Twitter and Facebook. It also claimed responsibility for it in an interview with the AFP and argued that "gorgeous gardens like those in Monet's painting will soon be a distant memory."

Återställ Våtmarker spokesperson Helen Wahlgren told AFP that a climate catastrophe "is also a health crisis" with "millions of people already dying from the climate disaster." She also said the Swedish government needed to do more to honor its international climate commitments. "We should lower our emissions by 31 percent. But our emissions are still increasing. It's outrageous."

The museum's press office confirmed that two people smeared paint on *The Artist's Garden at Giverny* around 2:30 p.m. (8:30 a.m. Eastern) on June 14.

"The painting, which is encased in glass, is now being inspected by museum conservators to determine whether there is any damage," the press office told CNN.

Police were alerted and arrested the two women, according to a press release from the Stockholm Region police, which said in a statement, "The crime is currently classified as aggravated vandalism. It is unclear whether more people than the two arrested are involved in the incident, but a number of people have been checked and the police will,

among other things, review the course of events with the help of the museum's surveillance cameras."

The police press release was also updated to note that the two women were charged with "suspicion of serious damage."

The incident at the National Museum in Stockholm follows a wave of climate protests at museums and art institutions in Canada, the United States, and Europe, all aimed at drawing attention to large government subsidies for the fossil fuel industry as well as the growing impact of climate change around the world.

However, the National Museum in Stockholm told the AFP it was "naturally" opposed to actions that risk damaging works of art.

"Cultural heritage has great symbolic value and it is unacceptable to attack or destroy it, regardless of the purpose," said Per Hedstrom, the museum's acting superintendent.

*Apparently, these genii had some noble purpose in mind. I wonder what?*

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## **Summer Gains: The Teen Job Market is Beefing Back Up**



# The intern-et age

US labor force participation rate, ages 16-19



In April, the Department of Labor reported 5.7m unemployed job seekers and 10.1m job openings. The shortage is helping pump wages, especially for teens, whose median weekly summer pay rose 7% between 2019 and 2022, more than any other age group.

In May, 36.8% of US teens were working or seeking work, up from a pre-pandemic low of 32.5% in 2014, but far from the consistent 50%+ seen up until 2001.

Economists attribute the dip to priority shifts — e.g., schooling, unpaid internships, and extracurriculars, according to WSJ.

One place these trends are noticeable: Pools and beaches, where lifeguard shortages are leading to limited openings.

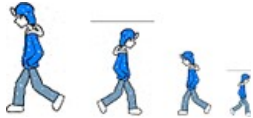
Seattle's lifeguard staffing levels are so dire, the city has raised the starting wage to \$21+/hour.

BTW: Nebraska had America's highest teen employment rate in summer 2022, at 65.9%. Hawaii had the lowest, at 23.7%, and we're honestly not sure who deserves bragging rights.

*Uhh, where's the beef?*

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## **My Walking Thoughts**



### **For Sunday June 25 2023**

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## **Chaos in the Classroom: Sooner and More (Cont.)**

This is the second of Walking Thoughts series on Chaos Theory, looking at what it is, its emerging impact on how you and I see the world, and eventually why it's important to incorporate its lexicon and visions into our educational DNA quickly and at the lowest possible level.

This chapter focusses on the Lorenz Attractor, developed by Edward Lorenz, a meteorologist and mathematician who made a groundbreaking discovery while studying weather patterns.

### **Lorenz Attractor and the Butterfly Effect**

In what is now popularly known as the 'Butterfly Effect, Lorenz saw that even small changes in the initial conditions of a weather model could lead to dramatically different outcomes. His observations demonstrated the sensitive dependence on initial conditions and the emergence of chaotic behavior in complex systems.

The atmosphere is a highly complex and dynamic system, governed by a set of nonlinear equations. Small changes in the initial values of variables, such as temperature, humidity, or wind speed, can result in amplified effects over time, leading to completely different weather outcomes. The butterfly effect implies that even the tiniest perturbations, such as the flapping of a butterfly's wings, could potentially influence the development of a weather system.

For example, the disturbance caused by this seemingly insignificant action could set off a chain of interactions and feedback loops within the atmosphere, these leading to changes in atmospheric pressure, wind patterns, and moisture distribution potentially altering downstream systems such as storms or hurricanes.

Imagine you develop a model that takes into account temperature, airflow, and humidity with initial values for these factors. You ask then ask the model to show how these factors will change over time. What you'll find is if you make a tiny change to the initial values--adjusting the temperature of wind velocity by a mere fraction, the system's predictions can end up looking completely different.

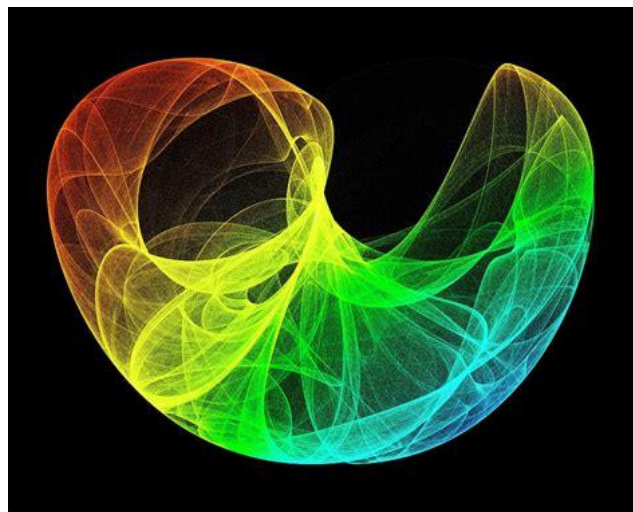
To visualize this concept, imagine plotting the values of temperature, airflow, and humidity on a three-dimensional graph. As time progresses, rather than following a predictable path, the trajectory starts to form intricate, butterfly-like shapes that never repeat. These shapes are called the Lorenz attractor.

As access to computer time became increasingly available, meteorologists began to employ simulations to analyze weather patterns and make forecasts that accounted for the inherent chaos in the atmosphere, but despite giant strides in their levels of sophistication, the small uncertainties or errors in the initial conditions made it difficult to accurately predict weather patterns beyond a certain time frame.

Overall, the butterfly effect highlights the inherent complexity and sensitivity of weather systems, emphasizing the need for ongoing research and advancements in weather analysis techniques to improve our understanding and forecasting capabilities.

### **The Lorenz Attractor in other arenas**

The Lorenz attractor is relevant not just to weather prediction but also has broader implications in complex systems, such as climate modeling, fluid dynamics, and even the behavior of certain physical and biological processes. It reminds us that some systems are highly sensitive to initial conditions and can exhibit unpredictable, chaotic behavior, making accurate long-term predictions challenging.



Please go ahead and play with the following URL to visualize the impact of different initial conditions on the butterfly.

[https://visualize-it.github.io/lorenz\\_system/simulation.html](https://visualize-it.github.io/lorenz_system/simulation.html)

The Lorenz attractor has applications beyond weather modeling. It is a concept that can be observed and studied in various systems, both natural and artificial. Here are a few examples:

Fluid dynamics: The Lorenz attractor is often used to understand the behavior of fluids in various contexts, such as convection, turbulence, and heat transfer. It can help researchers analyze the chaotic and unpredictable patterns that emerge in fluid flows.

Electrical circuits: The principles of the Lorenz attractor can be applied to electrical circuits with chaotic behavior. By designing circuits that exhibit similar dynamics, researchers can explore the behavior of electrical systems under different initial conditions.

Economics and finance: The Lorenz attractor has been used to model and analyze complex economic systems, such as stock markets and exchange rates. It highlights the non-linear relationships and the potential for chaotic behavior in these systems.

Biological systems: Some biological phenomena, such as population dynamics, neural networks, and biochemical reactions, can exhibit chaotic behavior resembling the Lorenz attractor. It can provide insights into the complexity and sensitivity of these systems.

Control theory: The Lorenz attractor has implications for control systems and stability analysis. It helps researchers understand how small changes in control parameters can lead to significant differences in system behavior and stability.

### **And, of Course, Turbulence**

Werner Heisenberg who won the 1932 Nobel Prize for helping to found the field of quantum mechanics and developing foundational ideas like the Copenhagen interpretation and the uncertainty principle, is reputed to have said that, if he were allowed to ask God two questions, they would be, "Why quantum mechanics? And why turbulence?" Supposedly, he sighed and said he was pretty sure God would be able to answer the first question.

The quote may be apocryphal, and there are different versions floating around but for certain Heisenberg banged his head against the turbulence problem throughout his lifetime.

Now nearly a century later, the effort to understand and predict turbulence remains of immense practical importance. Turbulence is a factor in the design of much of our technology--from airplanes to pipelines--but because our understanding of turbulence over time has stayed largely ad-hoc and limited, the development of technology that



interacts significantly with fluid flows has long been forced to be conservative and per force incremental.

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*Next week, Strange Attractors*