

Ode to E Pluribus Unum for Sunday April 17 2022



Milky Way over Devils Tower



Image Credit & Copyright: MaryBeth Kiczenski

What created Devils Tower? The origin of this extraordinary rock monolith in Wyoming, USA is still debated, with a leading hypothesis holding that it is a hardened lava plume that never reached the surface to become a volcano. In this theory, the lighter rock that once surrounded the dense volcanic neck has now eroded away, leaving the dramatic tower.

Known by Native Americans by names including Bear's Lodge and Great Gray Horn, the dense rock includes the longest hexagonal columns known, some over 180-meters tall.

High above, the central band of the Milky Way galaxy arches across the sky. Many notable sky objects are visible, including dark strands of the Pipe Nebula and the reddish Lagoon Nebula to the tower's right.

Green grass and trees line the foreground, while clouds appear near the horizon to the tower's left. Unlike many other international landmarks, mountaineers are permitted to climb Devils Tower.

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From a very patient
photographer.



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TOTO



An American rock band formed in 1977 in Los Angeles, Toto is known for a musical style that combines elements of pop, rock, soul, funk, progressive rock, hard rock, R&B, blues and jazz. With 14 studio albums and sold over 40 million records worldwide, the group has received several Grammy Awards and was inducted into the Musicians Hall of Fame and Museum in 2009.

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

Hold the Line <https://youtu.be/htgr3pvBr-I>

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Anton Bruckner Symphony Number 8



Bruckner's compositions helped to define contemporary musical radicalism, owing to their dissonances, unprepared modulations, and roving harmonies. Unlike other musical

radicals, such as Richard Wagner or Hugo Wolf who fitted the enfant terrible mold, Bruckner showed extreme humility before other musicians.

His works, the symphonies in particular, had detractors, who pointed to their large size, use of repetition and his apparent indecision about which versions he preferred. On the other hand, Bruckner was greatly admired by subsequent composers, including his friend Gustav Mahler, who described him as "half simpleton, half God".

Music historians have found it difficult to come to any conclusion about Bruckner, other than to include his 8th Symphony among the twenty greatest. Although he was working on a ninth, he died before it was finished, and though many have tried none has succeeded.

<https://youtu.be/kXDH3w2gCQQ>

Bruckner's Eighth Symphony is not easy to follow—less so to comprehend—and yet the effort to do so can be rewarding, particularly since the composer is often dismissed as an anomaly rather than given the place in music he deserves.

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Tennessee Man Recognizes Woman's Hand Signals in Gas Station to Alert Alleged Kidnapping

By Matt McGregor



For Eric Streeval, a tranquil motorcycle ride in Hickman County, Tennessee, on a clear Sunday afternoon turned into a tense rescue operation after he witnessed a woman in a convenience store hand-signaling for help.

Streeval had stepped into the Twice Daily Gas Station to grab a drink on April 10 "a little after 1 p.m.," he told The Epoch Times, when he saw a woman at the end of the candy aisle mouthing the word, "Help," while using a hand signal devised to alert others that the signaler is being kidnapped.

Streeval said the woman learned the method from Tik Tok.

Streeval got his drink and as he paid for it at the counter, he notified the cashiers.

"I told them, 'Get the cops here. There's a young woman in the back in the red and white striped shirt who's possibly being abused,'" Streeval said.

The woman had a red handprint on the side of her face, Streeval said.

Streeval went outside to take pictures of the license plate and the truck while the cashiers attempted to stall the suspect.

"The cashiers did an outstanding job of holding him up," Streeval said.

When they emerged from the gas station, Streeval said he confronted the suspect after having called 911.

"I said, 'Hey man, do you think hitting women is OK because we don't do that around here. If you want to fight, fight a man. Don't beat up on a woman,'" Streeval said.

The suspect, whom the Hickman County Sheriff's Department confirmed to The Epoch Times was 31-year-old Johnathon Smith, didn't respond to Streeval's attempts to stall him from leaving before the sheriff's department could arrive, Streeval said.

"I'm a believer in 2nd Amendment rights, so I was prepared if he tried anything just for everyone's safety, but he just stuck his head down and got in the truck," Streeval said.

By the time the Smith was pulling out, the sheriff's department arrived, leading to a car chase, Streeval said.

The Tennessean reported that Lt. Mike Doddo said that Smith was the woman's ex-boyfriend and as they were in the truck, they "got into a physical altercation."

When the girlfriend asked to be let out, Doddo said that Smith then allegedly threatened her with a screwdriver, telling her that if he couldn't have her, "nobody could have her," the Tennessean reported.

The sheriff's department pursuit lasted up to 15 minutes and reached a speed of almost 90 mph, ending with a foot chase after the suspect crashed the truck into a creek. The woman was not injured.

Smith was apprehended and charged with aggravated kidnapping and aggravated domestic assault in the incident.

Empowering Victims

The hand signaling technique has been advocated for by many anti-human trafficking organizations such as North Carolina's Awake and Bold, which initiated a video and billboard campaign through its Open Your Eyes education initiative that teaches the hand signals that empower victims and alert bystanders to a trafficking or kidnapping situation.



Awake and Bold have four billboards in North Carolina and two in Georgia that illustrate the hand signal initiative Hara Taicher and co-founder Elena Huggins are promoting.

<https://www.facebook.com/719570934/videos/461107995681814/>

Huggins demonstrates the hand signals in a video in which she explains that the gestures say, "I need help; I need to be rescued."

Multiple organizations have advocated for the hand signal campaign on Tik Tok, where the woman later told Streeval is how she knew about it.

Streeval was able to locate her on Facebook and meet her back at the gas station on Monday, where he gave her contact information of people who could help her if she gets in trouble again, he said.

On his initiative, Streeval said, "I'm a single father with a 12-year-old daughter. I still try to see the good in humanity. If my daughter, mother, and my sisters were ever in that situation, I would hope somebody would do the same for them."

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Remember the Commodore 64



<https://spectrum.ieee.org/commodore-64>

I had one, it worked, and I knew none of this

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**"Root canal? You've charged
me for the Suez Canal."**

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"You won't be losing a daughter.
We're going to live here!"

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Texting Versus Morse Code



<https://youtu.be/pRuRE-Bwk1U>

Back during flight training I could hit about 6 words per hour with Morse. Today I text at about one word a week...and it's the wrong word.

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ALL MY
PASSWORDS ARE
PROTECTED BY
AMNESIA

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Friction Does the Heavy Lifting in Ropes and Yarns

Katherine Skipper



New twist Researchers in France liken the strengthening of rope and yarn to the formation of a glass.

(Courtesy: iStock/Allewinatis)

[This article has been updated to include comments from Raymond Goldstein and Patrick Warren.]

It is a mathematical puzzle that stumped Galileo, but researchers in France think they have discovered how rope and yarn fibres held together by nothing more than friction

are able to carry heavy loads without breaking. Jérôme Crassous of the Institute of Physics of Rennes and Antoine Seguin of the Université Paris-Saclay have shown that small twists in a rope multiply into massive frictional forces that lock the fibres together.

Their approach, which combined experiments and simulations, has sparked a discourse about whether yarn fibres undergo a second order phase transition when they are spun together.

Crassous illustrates the yarn twisting problem with a simple demonstration. He holds two brushes (tassels) of cotton fibres, one in each hand. When the brushes are interleaved, they can be pulled apart easily. But, as soon as he starts to twist the interleaved brushes to create a yarn, they become almost impossible to separate. Since Galileo's time, our interpretation of this experiment has evolved with our understanding of forces and friction, but a complete model remains surprisingly elusive.

The yarn twisting problem

To understand why twisting fibres makes a yarn stronger, imagine trying to push a box along by pushing diagonally downwards rather than parallel to the floor. Because you are pushing into the ground, you create an additional frictional force, and the harder you push, the harder the box is to move.

When you twist two fibres and try to pull them apart, you are trying to move the strands by pushing them into each other as well as pulling them. This tiny frictional force, multiplying rapidly as thousands of fibres are spun together, gives yarn a strength that is far greater than the sum of the individual strands.

Measuring maximum tension in a yarn

High tension The experimental set-up showing the yarn at the start (left) and end of an experiment. (Courtesy: Jérôme Crassous and Antoine Seguin)

Developing a working mathematical model of how this happens has proved difficult. In 2018, UK-based scientists at the Universities of Warwick and Cambridge and Unilever proposed that the locking of the fibres at some critical twist angle is a second order phase transition. Their theory says that at this angle, the maximum tension (stretching force) that the yarn can endure diverges, meaning that if the fibres are strong enough, there is no limit to the load that it can hold.

Crassous and Seguin wanted to test this theory experimentally. This involved clamping the interleaved cotton brushes at one end and applying a fixed angular twist to create a yarn. A stretching force was then applied to the finished yarn and the duo measured the maximum tension in the yarn before it broke.

Does yarn have a second order phase transition?

As they approached the maximum twist the yarn could sustain, Crassous and Seguin watched the maximum load suddenly shoot up. But Crassous does not think their experiments support the 2018 theory from Unilever and Warwick and Cambridge Universities. When they analysed their data, they found that yarn strength scaled with the exponential of the square of the twist angle. Although the yarn eventually breaks,

Crassous does not believe that it was heading for a second order phase transition. Instead, he likens the process to the formation of a glass, where viscosity increases rapidly but the material still has a liquid structure.

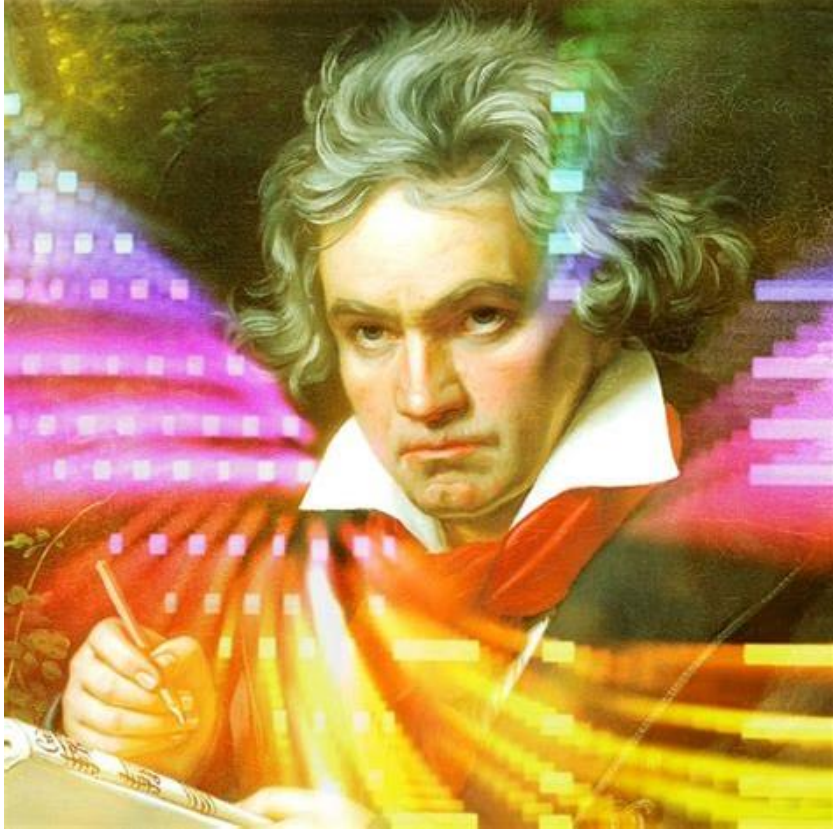
However, Raymond Goldstein and Patrick Warren, two of the authors of the 2018 paper, argue that the two systems are not comparable and maintain the possibility of a second order phase transition. In 2018 Goldstein, Warren and Robin Ball modelled the fibres as hooking around their neighbours as well as twisting into a rope. They hypothesize that this was not present in Crassous and Seguin's experiment, but would be enough to lock the fibres together in systems like yarns and sewing threads. The experimental proof or disproof of a second order yarn transition, they conclude, remains undecided.

The researchers also performed numerical simulations and found that they could predict the amount of twisting that would turn the tangle of fibres into a strong yarn. The ratio of the fibre dimensions and the friction coefficient, which they call the "Hercules number" determines whether a yarn forms, and Crassous is confident that this bolsters their results, saying "we have identified all the physics in the system if there is only one number".

More research is needed to prove or disprove the existence of a yarn phase transition, but intriguingly, these latest results echo another, seemingly vastly different problem. It is nearly impossible to pull two interleaved phone books apart, the force pulling them together is strong enough to lift a car. Interleaving the pages creates normal forces, which amplifies the friction, much like the yarn experiment. This frictional force scales with the exponential of the square of the number of pages, a similar law to the yarn problem, indicating that the physics driving these two phenomena are related. The research is described in Physical Review Letters.

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How to Hotrod Your Moonlight Sonata



<https://youtu.be/EtIwhvSa7kw>

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Did You Know the Gubmint Could Keep a Census Document Secret for 72 Years”



It can, which is a little scary since it's ours since I'll bet some privileged folks get a sneak peek.

https://1950census.archives.gov/?utm_source=join1440&utm_medium=email&utm_placement=newsletter

<https://pudding.cool/2020/03/census-history/>

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Construction Technique and Engineering of Roman Roads



<https://youtu.be/z1aFWtBXHII>

Do you think the FHA will ever catch up? No? Nor do I.

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More Than 57 Billion Tons of Soil Have Eroded in the U.S. Midwest

The level of erosion, possibly underestimated by the USDA, may have become unsustainable



Tilling farmland is a key contributor to erosion and has played a role in the loss of billions of tons of soil in the U.S. Midwest, a new study finds.

Jaren Kane/Getty Images Plus

With soils rich for cultivation, most land in the Midwestern United States has been converted from tallgrass prairie to agricultural fields. Less than 0.1 percent of the original prairie remains.

This shift over the last 160 years has resulted in staggering — and unsustainable — soil erosion rates for the region, researchers report in the March *Earth's Future*. The erosion is estimated to be double the rate that the U.S. Department of Agriculture says is sustainable. If it continues unabated, it could significantly limit future crop production, the scientists say.

In the new study, the team focused on erosional escarpments — tiny cliffs formed through erosion — lying at boundaries between prairie and agricultural fields (SN: 1/20/96). "These rare prairie remnants that are scattered across the Midwest are sort of a preservation of the pre-European-American settlement land surface," says Isaac Larsen, a geologist at the University of Massachusetts Amherst.

At 20 sites in nine Midwestern states, with most sites located in Iowa, Larsen and colleagues used a specialized GPS system to survey the altitude of the prairie and farm fields. That GPS system "tells you where you are within about a centimeter on Earth's surface," Larsen says. This enables the researchers to detect even small differences between the height of the prairie and the farmland.

At each site, the researchers took these measurements at 10 or more spots. The team then measured erosion by comparing the elevation differences of the farmed and prairie

land. The researchers found that the agricultural fields were 0.37 meters below the prairie areas, on average.



Geologist Isaac Larsen stands at an erosional escarpment, a meeting point of farmland and prairie, in Stinson Prairie, Iowa. Studying these escarpments shows there's been a startling amount of erosion in the U.S. Midwest since farming started there more than 150 years ago.

University Of Massachusetts Amherst

This corresponds to the loss of roughly 1.9 millimeters of soil per year from agricultural fields since the estimated start of traditional farming at these sites more than a century and a half ago, the researchers calculate. That rate is nearly double the maximum of one millimeter per year that the USDA considers sustainable for these locations.

There are two main ways that the USDA currently estimates the erosion rate in the region. One way estimates the rate to be about one-third of that reported by the researchers. The other estimates the rate to be just one-eighth of the researchers' rate. Those USDA estimates do not include tillage, a conventional farming process in which machinery is used to turn the soil and prepare it for planting. By disrupting the soil structure, tilling increases surface runoff and erosion due to soil moving downslope.

Larsen and colleagues say that they would like to see tillage incorporated into the USDA's erosion estimates. Then, the USDA numbers might better align with the whopping 57.6 billion metric tons of soil that the researchers estimate has been lost across the entire region in the last 160 years.

This massive "soil loss is already causing food production to decline," Larsen says. As soil thickness decreases, the amount of corn successfully grown in Iowa is reduced, research shows. And disruption to the food supply could continue or worsen if the estimated rate of erosion persists.

Not everyone is convinced that the average amount of soil lost each year has remained steady since farming in the region started. Much of the erosion that the researchers measured could have been caused in the earlier histories of these sites, dating back to

when farmers “began to break prairies and/or forests and clear things,” says agronomist Michael Kucera.

Perhaps current erosion rates have slowed, says Kucera, who is the steward of the National Erosion Database at the USDA’s National Soil Survey Center in Lincoln, Neb.

To help reduce future erosion, farmers can use no-till farming and plant cover crops, the researchers note. By planting cover crops during off-seasons, farmers reduce the amount of time the soil is bare, making it less vulnerable to wind and water erosion.

In the United States, no-till and similar practices to help limit erosion have been implemented at least sometimes by 51 percent of corn, cotton, soybean and wheat farmers, according to the USDA. But cover crops are only used in about 5 percent of cases where they could be, says Bruno Basso, a sustainable agriculture researcher at Michigan State University in East Lansing who wasn’t involved with the study. “It costs \$40 to \$50 per acre to plant a cover crop,” he says. Though some government grant funding is available, “the costs of cover crops are not supported,” and there is a need for additional incentives, he says.

To implement no-till strategies, “the farmer has to be a better manager,” says Keith Berns, a farmer who co-owns and operates Green Cover Seed, which is headquartered in Bladen, Neb. His company provides cover crop seeds and custom seed mixtures. He has also been using no-till practices for decades.

To succeed, farmers must decide what particular cover crops are most suitable for their land, when to grow them and when to kill them. Following these regimens, which can be more complicated than traditional farming, can be “difficult to do on large scales,” Berns says.

Cover crops can confer benefits such as helping farmers repair erosion and control weeds within the first year of planting. But it can take multiple years for the crops’ financial benefits to exceed their cost. Some farmers don’t even own the land they work, making it even less lucrative for them to invest in cover crops, Berns notes.

Building soil health can take half a decade, Basso says. “Agriculture is really always facing this dilemma [of] short-sighted, economically driven decisions versus longer-term sustainability of the whole enterprise.”

We started our Erosion Control magazine in 1993 and it was adopted by the International Erosion Control Association as its official publication a year later. It was in my opinion the most important of all our publications for just this reason. Here inarguably human activity has accelerated the erosion problem—notably the loss of valuable topsoil—and nobody seems to notice.

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Comments made in the year 1955! The March of Time



I'll tell you one thing, if things keep going the way they are, it's going to be impossible to buy a week's groceries for \$10.00.

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Have you seen the new cars coming out next year? It won't be long before \$1,000.00 will only buy a used one.

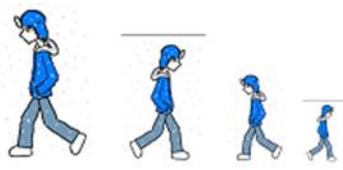
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If cigarettes keep going up in price, I'm going to quit; 20 cents a pack is ridiculous.

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My Walking Thoughts



April 17, 2022

Writing your first book? Here's one idiot's ideas

<https://www.youtube.com/watch?v=n53A-kkc5Zo>

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