

The April 18th, 2018 Edition of THE REVENGE HUMP DAY!

Page 1 of 45

Welcome to the April 18th, 2018 Edition of THE REVENGE HUMP DAY!

This has been a very interesting week around here. It has been filled with good and bad news. First for the bad news. One of our good friends was threatened online because he was going to a convention and evidently someone didn't approved of his politics. Back in the 70's when I started going to conventions I got to meet a ton of people who were of a different mindset than I was. We used to have fun cussing and discussion books, politics, life, the universe and everything. Then we would go and get a drink together. We tried to get along with our fellow con-goers and all in all, fandom was a much happier place. Honestly guys, I would recommend that everybody put their agendas aside when they go to conventions and just learn to enjoy the writers and fans who come. Trust me, you will have a hell of a lot more fun that way.

As for the good news, one of my favorite movies of all times was one I first saw in the 70's when I got out of the Air Force. Linda and I went to the Park theater in Memphis to see "Mash". I literally fell out of my chair laughing at all of the politically incorrect jokes in the movie. Anyway, one of the characters, Hot Lips Hollihan (Sally Kellerman) was acting as a cheer leader and start screaming "69 is Divine" when cheering for "Spear-chucker Jones" (Carl Weathers I think). Well, last Sunday I hit my own Divine time and celebrated my 69th birthday with family, adopted family and friends at the LibertyCon meeting. There was pizza, cake and ice cream and I definitely enjoyed myself. It was a time to remember!

So on that "Happy note", why don't y'all sit back and relax because here's the best in gossip, jokes and science for your reading pleasure!

Uncle Timmy

<T>~<H>~<E>~<J>~<O>~<K>~<E>~<S>~<S>~<T>~<A>~<R>~<T>~<H>~<E>~<R>~<E>

From: "Mike Waldrip" waldripk@gmail.com

How to speak Irish...

- Whale
- Oil
- Beef
- Hooked

... just say it a few times... quickly

<J>~<O>~<K>~<E>~<S>

FOUR WEEKS TO LIVE

A Bible study group was talking about what they would do in the event that their death was imminent. The leader of the discussion said, "If we all knew when we would die, we would better prepare ourselves and use our time better ahead of the event."

"Everybody nodded their heads in agreement with this comment.

Then the leader said to the group, "What would you do if you knew you only had four weeks of life remaining before your death, and then the Great Judgment Day?"

A gentleman said, "I would go out into my community and spread the Gospel to those that have not yet accepted the Lord into their lives."

"Very good," said the group leader, and all the group members agreed that would be a very good thing to do.

One lady spoke up and said enthusiastically, "I would dedicate all of my remaining time to serving God, my family, my church, and my fellow man with a greater conviction."

"That's wonderful!" the group leader commented, and all the group members agreed, that would be a very good thing to do.

But one gentleman in the back finally spoke up loudly and said, "I would go to my mother-in-law's house for the 4 weeks."

"Everyone was puzzled by this answer, and the group leader ask, "Why your mother-in-law's home?"

"Then the gentleman smiled sarcastically and said, "Because, that would be the longest 4 weeks of my life!"

<J>~<O>~<K>~<E>~<S>

KIDS SAY THE DARNEDEST THINGS

1. A kindergarten pupil told his teacher he'd found a cat, but it was dead. "How do you know that the cat was dead?" she asked her pupil.

"Because I pissed in its ear and it didn't move," answered the child innocently.

"You did WHAT?!?" the teacher exclaimed in surprise.

"You know, "explained the boy, "I leaned over and went 'Pssst!' and it didn't move."

2. A small boy is sent to bed by his father. Five minutes later....."Da-ad..."

"What?"

"I'm thirsty. Can you bring drink of water?"

"No, You had your chance. Lights out."

Five minutes later: "Da-aaaad....."

"WHAT?"

"I'm THIRSTY. Can I have a drink of water??"

I told you NO! If you ask again, I'll have to spank you!!"

Five minutes later....."Daaaa-aaaad....."

"WHAT!"

"When you come in to spank me, can you bring a drink of water?"

3. An exasperated mother, whose son was always getting into mischief, finally asked him "How do you expect to get into Heaven?"

The April 18th, 2018 Edition of THE REVENGE HUMPH DAY!

Page 3 of 45

The boy thought it over and said, "Well, I'll run in and out and in and out and keep slamming the door until St Peter says, 'For Heaven's sake, Dylan, come in or stay out!'"

4. One summer evening during a violent thunderstorm a mother was tucking her son into bed.

She was about to turn off the light when he asked with a tremor in his voice, "Mommy, will you sleep with me tonight?"

The mother smiled and gave him a reassuring hug.

"I can't dear," she said. "I have to sleep in Daddy's room."

A long silence was broken at last by his shaky little voice: "The big sissy."

5. It was that time, during the Sunday morning service, for the children's sermon. All the children were invited to come forward.

One little girl was wearing a particularly pretty dress and, as she sat down, the pastor leaned over and said, "That is a very pretty dress. Is it your Easter Dress?"

The little girl replied, directly into the pastor's clip-on microphone,

"Yes, and my Mom says it's a bitch to iron."

6 When I was six months pregnant with my third child, my three year old came into the room when I was just getting ready to get into the shower.

She said, "Mommy, you are getting fat!"

I replied, "Yes, honey, remember Mommy has a baby growing in her tummy."

"I know," she replied, but what's growing in your butt?"

7 A little boy was doing his math homework. He said to himself,

"Two plus five, that son of a bitch is seven.

Three plus six, that son of a bitch is nine..."

His mother heard what he was saying and gasped, "What are you doing?"

The little boy answered, "I'm doing my math homework, Mom."

"And this is how your teacher taught you to do it?" the mother asked.

"Yes," he answered.

Infuriated, the mother asked the teacher the next day, "What are you teaching my son in math?"

The teacher replied, "Right now, we are learning addition."

The mother asked, "And are you teaching them to say two plus two, that son of a bitch is four?"

After the teacher stopped laughing, she answered,

"What I taught them was, two plus two, THE SUM OF WHICH, is four."

8. One day the first grade teacher was reading the story of Chicken Little to her class.

She came to the part of the story where Chicken Little tried to warn the farmer.

She read, "... and so Chicken Little went up to the farmer and said,

"The sky is falling, the sky is falling!"

The teacher paused then asked the class,

"And what do you think that farmer said?"

One little girl raised her hand and said,

"I think he said: 'Shit! A talking chicken!'"

The teacher was unable to teach for the next 10 minutes.

9. A certain little girl, when asked her name, would reply, "I'm Mr. Sugarbrown's daughter."

Her mother told her this was wrong, she must say, "I'm Jane Sugarbrown."

The Vicar spoke to her in Sunday School, and said, "Aren't you Mr. Sugarbrown's daughter?"

She replied, "I thought I was, but mother says I'm not."

10. A little girl asked her mother, "Can I go outside and play with the boys?"

Her mother replied, "No, you can't play with the boys, they're too rough."

The little girl thought about it for a few moments and asked, "If I can find a smooth one, can I play with him?"

11. A little girl goes to the barber shop with her father.

She stands next to the barber chair, while her dad gets his hair cut, eating a snack cake.

The barber says to her, "Sweetheart, you're gonna get hair on your Twinkie."

She says, "Yes, I know, and I'm gonna get boobs too."

12. The minister started his Children's Sermon with a question,

"Who knows what a Resurrection is?"

Without missing a beat a young boy says, "If you have one lasting more than 4 hours call your physician."

The pastor is still laughing.

<J>~<O>~<K>~<E>~<S>

BLIND MAN IN A GIRLS BIKER BAR

A blind man wanders into an all girls biker bar by mistake.

He finds his way to a bar stool and orders some coffee. After sitting there for awhile, he yells to the waiter, "Hey, you wanna hear a blonde joke?"

The bar immediately falls absolutely silent. In a very deep, husky voice, the woman next to him says, "Before you tell that joke, sir, I think it is only fair — given that you are blind — that you should know five things:

- 1) The bartender is a blonde girl with a baseball bat.
- 2) The bouncer is a blonde girl.
- 3) I'm a 6 foot tall, 175 lb. blonde woman with a black belt in karate.
- 4) The woman sitting next to me is blonde and a professional weightlifter.
- 5) The lady to your right is blonde and a professional wrestler.

Now, think about it seriously, Mister. Do you still wanna tell that joke?"

The blind man thinks for a second, shakes his head, and mutters, "No... Not if I'm gonna have to explain it five times."

<J>~<O>~<K>~<E>~<S>

The April 18th, 2018 Edition of THE REVENGE HUMPH DAY!

Page 5 of 45

People are going on dates now to coffee bars. This is the worst idea. Four cappuccinos later, your date doesn't look any better.

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Jill: You wouldn't believe how inexperienced with women my ex was when we first married.

Mary: How bad was he?

Jill: On our wedding night, he tried to inflate me.

<J>~<O>~<K>~<E>~<S>~<of>~<the>~<W>~<E>~<E>~<K>

From: "Jerry Tollett" [haleja@epbf.com](mailto:haleja@epbf.com)

1960 Hits - Renamed for the Over 60's

Some of the artists from the 60's are revising their hits with new lyrics to accommodate aging baby boomers who can remember doing the "Limbo" as if it were yesterday!

They include:

=====

Bobby Darin's ---

"Splish, Splash, I Was Having A Flash!"

=====

Herman's Hermits ---

"Mrs. Brown, You've Got a Lovely Walker!"

=====

Ringo Starr ---

"I Get By With A Little Help From Depends!"

=====

The Bee Gees ---

"How Can You Mend A Broken Hip?"

=====

Roberta Flack ---

"The First Time Ever I forgot Your Face!"

=====

Johnny Nash ---

"I Can't See Clearly Now!"

=====

Paul Simon---

"Fifty Ways To Lose Your Liver"

=====

The Commodores ---

"Once, Twice, Three times To The Bathroom!"

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*The April 18th, 2018 Edition of THE REVENGE HUMPH DAY!*

*Page 6 of 45*

Procol Harem---  
"A Whiter Shade Of Hair!"

=====  
Leo Sayer ---

"You Make Me Feel Like Napping!"

=====  
The Temptations ---  
"Papa's Got A Kidney Stone!"

=====  
Abba---  
"Denture Queen!"

=====  
Tony Orlando ---  
"Knock 3 Times On The Ceiling If You Hear Me Fall!"

=====  
Helen Reddy ---  
"I Am Woman; Hear Me Snore!"

=====  
Leslie Gore---  
"It's My Procedure, and I'll Cry If I Want To!"

=====  
And, last, but NOT least,

Willie Nelson ---  
"On the Commode Again!"

=====

Every day may not be good, but there is something good in every day!

<J>~<O>~<K>~<E>~<S>~<of>~<the>~<W>~<E>~<E>~<K>

From: "Ray Beloate" [beerman@rittermail.com](mailto:beerman@rittermail.com)

**NEW JOB IN CHICAGO**

Bob was sitting on the plane at DFW waiting to fly to Chicago, when a guy took the seat beside him. The guy was an emotional wreck...pale, hands shaking in fear.

"What's the matter, afraid of flying?" Bob asked.

*The April 18th, 2018 Edition of THE REVENGE HUMPH DAY!*

*Page 7 of 45*

"No, it's not that. I've been transferred to Chicago. The people are crazy there, right? Lots of shootings, gangs, race riots, drugs, poor schools, and the highest crime rate in the USA."

Bob replied, "I've lived in Chicago all my life. It's not as bad as the media says. Find a nice home, go to work, mind your own business, and enroll your kids in a nice private school. I've worked there for 14 years and never had the slightest trouble."

The guy relaxed and stopped shaking and said, "Oh, thank you. I've been worried to death, but if you've lived and worked there all those years and say it's OK, I'll take your word for it. What do you do for a living?"

"I'm a tail-gunner on a Budweiser truck.

<J>~<O>~<K>~<E>~<S>~<of>~<the>~<W>~<E>~<E>~<K>

From: "Bob Bolgeo" [bbolgeo@aol.com](mailto:bbolgeo@aol.com)

**USEFUL INVENTION**

**Wash your hands and then use the water for your next flush.**





Tire that tells you when it is time to replace it.



<J>~<O>~<K>~<E>~<S>~<of>~<the>~<W>~<E>~<E>~<K>

From: "Jim Woosley" [jimwoosley@aol.com](mailto:jimwoosley@aol.com)





<https://patriotpost.us/humor/55369>

<YOU>~<>~<JUST>~<>~<CAN'T>~<>~<MAKE>~<>~<THIS>~<>~<STUFF>~<>~<UP!>

YOU JUST CAN'T MAKE THIS STUFF UP!

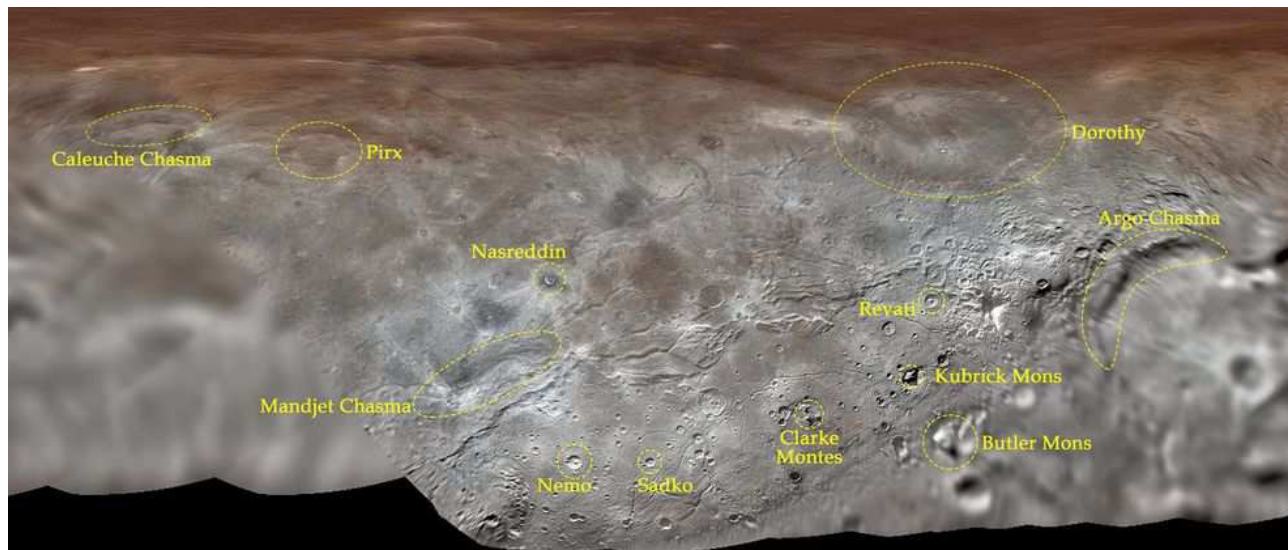
From: "Tim Bolgeo" [tbolgeo@epbfi.com](mailto:tbolgeo@epbfi.com)

SCIENCE FICTION'S BIGGEST NAMES WILL LIVE FOREVER ON PLUTO'S MOON

Take a look at Kubrick Mons.

By David Grossman, Apr 13, 2018

[https://www.popularmechanics.com/space/solar-system/a19796569/pluto-moon-sci-fi-names/?src=nl&mag=pop&list=nl\\_pnl\\_news&date=041418](https://www.popularmechanics.com/space/solar-system/a19796569/pluto-moon-sci-fi-names/?src=nl&mag=pop&list=nl_pnl_news&date=041418)



INTERNATIONAL ASTRONOMICAL UNION

Often overlooked in the vastness of space, Pluto's tiny moon Charon has gotten ahold of some major celebrities: Stanley Kubrick, Arthur C. Clarke, Octavia Butler. That's because the International Astronomical Union (IAU) has approved names for the moon's surface-level features, with a focus on names in science fiction and historical myth.

NASA's New Horizons space probe has been exploring the outer reaches of the solar system since 2013. One of its main objectives was to better understand global geology and morphology of the dwarf planet and its tiny moon Charon. It's definitively learned that Pluto and Charon are separate objects and has sent back clear images of the moon as proof.

Charon, named after the ferryman of Hades who carries the dead to the underworld in Greek mythology, will soon be host to a series of names for the surface features the probe discovered now that the IAU Working Group for Planetary System Nomenclature has given the final nod.

As per the IAU press release, here are the names.

**Argo Chasma** is named for the ship sailed by Jason and the Argonauts, in the epic Latin poem *Argonautica*, during their quest for the Golden Fleece.

**Butler Mons** honours Octavia E. Butler, the first science fiction writer to win a MacArthur fellowship, and whose *Xenogenesis* trilogy describes humankind's departure from Earth and subsequent return.

**Caleuche Chasma** is named for the mythological ghost ship that travels the seas around the small island of Chiloé, off the coast of Chile; according to legend, the *Caleuche* explores the coastline collecting the dead, who then live aboard it forever.

**Clarke Montes** honours Sir Arthur C. Clarke, the prolific science fiction writer and futurist whose novels and short stories (including *2001: A Space Odyssey*) were imaginative depictions of space exploration.

**Dorothy Crater** recognizes the protagonist in the series of children's novels, by L. Frank Baum, that follows Dorothy Gale's travels to and adventures in the magical world of Oz.

**Kubrick Mons** honours film director Stanley Kubrick, whose iconic *2001: A Space Odyssey* tells the story of humanity's evolution from tool-using hominids to space explorers and beyond.

**Mandjet Chasma** is named for one of the boats in Egyptian mythology that carried the sun god Ra (Re) across the sky each day — making it one of the earliest mythological examples of a vessel of space travel.

**Nasreddin Crater** is named for the protagonist in thousands of humorous folktales told throughout the Middle East, southern Europe and parts of Asia.

**Nemo Crater** is named for the captain of the *Nautilus*, the submarine in Jules Verne's novels *Twenty Thousand Leagues Under the Sea* (1870) and *The Mysterious Island* (1874).

**Pirx Crater** is named for the main character in a series of short stories by Stanislaw Lem, who travels between the Earth, Moon and Mars.

**Revati Crater** is named for the main character in the Hindu epic narrative *Mahabharata* — widely regarded as the first in history (circa 400 BC) to include the concept of time travel.

**Sadko Crater** recognizes the adventurer who travelled to the bottom of the sea in the medieval Russian epic *Bylina*.

Rita Schultz, head of the IAU Working Group, said in the press release that "I am pleased that the features on Charon have been named with international spirit."

Currently, *New Horizons* is around 6.16 billion kilometers from Earth, preparing for a New Year's Day 2019 rendezvous with a mysterious object in the Kuiper Belt recently named *Ultima Thule*. When it gets there, with any luck will find a whole new host of features to name.

Source: IAU

<?>~<YOU JUST CAN'T MAKE THIS STUFF UP!>~<?>

## **MACHETE ATTACK EVERY 90 MINUTES IN 'GUN-FREE' BRITAIN**

by LIAM DEACON 15 Apr 2018

<http://www.breitbart.com/london/2018/04/15/machete-attack-every-90-minutes-gun-free-britain/>

**JOHAN  
ORDONEZ/AFP  
/Getty**

Recorded machete attacks in the UK have shot up by nearly five times in just three years, with the majority in the capital, London.

The huge number of crimes committed with the deadly, sword-like



weapons means there is an average of 15 a day in the UK, or one every 90 minutes.

Figures uncovered using freedom of information requests by the Daily Mail show that police dealt with 928 crimes involving machetes in the last two months of 2017.

London saw the bulk, with 425 of the attacks. There were 99 in Greater Manchester, 77 in the West Midlands, and 29 each in Merseyside and West Yorkshire.

Just three years earlier, the deadly blades were used in 100 crimes a month over the same period.

As violent crime surges across the country, and even faster in London, the long blades, designed for chopping undergrowth, appear to be a weapon of choice for criminals in the UK, which is governed by strict gun-control laws.

Breitbart London@BreitbartLondon

Khan's London: Lead Surgeon Says Hospital Like Afghan War Zone, Two More Killed Overnight <http://www.breitbart.com/london/2018/04/05/lead-surgeon-london-hospital-war-zone-two-slaughtered-overnight/> ...

7:15 AM - Apr 5, 2018

Lead Surgeon Says London Hospital Like 'War Zone,' Two More Slaughtered Overnight  
Hospitals in Mayor Sadiq Khan's London resemble those in a war zone, a senior surgeon  
has said.

breitbart.com

In January, Office of National Statistics (ONS) figures showed that in the year to September  
2017 the police recorded 37,443 offences involving a knife or sharp instrument.

This represents a sharp rise of 21 per cent increase on the previous year, and the highest  
number of blade attacks since records began seven years ago.

The rise in knife crime was larger in London, jumping by 38 per cent, and gang-related acid  
attacks are also on the rise.

Across the UK, violent crime overall surged by 20 per cent, robbery was up by 29 per cent,  
and sex offences surged by 23 per cent.

Since 2011, the number of offences involving a knife or a sharp instrument had been falling,  
but began rising in the past three years, the ONS explained.

London under the leadership of Labour Mayor Sadiq Khan has experienced more than 50  
murders so far this year – surpassing the number recorded in New York City over the same  
period for the first time.

Raheem?@RaheemKassam

Sadiq's London: Knife Crime, Gun Crime, Theft, Burglary, Rape, Homicide all MASSIVELY  
Up <http://bit.ly/2DS9WnE>

3:32 PM - Jan 2, 2018

Sadiq's London: Knife Crime, Gun Crime, Theft, Burglary, Rape, Homicide all MASSIVELY  
Up

Earlier this year London overtook New York City as one of the most dangerous cities in the  
world. The House of Commons recently revealed the UK capital has more acid attacks per  
capita than any other...

breitbart.com

<?>~<YOU JUST CAN'T MAKE THIS STUFF UP!>~<?>

'FULL METAL JACKET' DRILL INSTRUCTOR AND TRUE PATRIOT DEAD

by: Kimberly Nordyke, The Hollywood Reporter , 04/15/2018

<http://americanactionnews.com/articles/full-metal-jacket-drill-instructor-and-true-patriot-dead#jvtsJqGJo1wP1UOx.99>

R. Lee Ermey, a Golden Globe-nominated actor best known for his role as Gunnery Sgt.  
Hartman in Stanley Kubrick's Full Metal Jacket, has died.

Ermey, whose nickname was "The Gunny," died Sunday morning from complications of  
pneumonia. He was 74.



By U.S. government (<http://www.navy.mil>) [Public domain], via Wikimedia Commons

The news was announced via his official twitter account by his longtime manager, Bill Rogin, who wrote: "It is with deep sadness that I regret to inform you all that R. Lee Ermey ("The Gunny") passed away this morning from complications of pneumonia. He will be greatly missed by all of us. Semper Fi, Gunny. Godspeed."

On Ermey's Facebook page, Rogin added more thoughts about the actor and his longtime client.

<YOU>~<>~<JUST>~<>~<CAN'T>~<>~<MAKE>~<>~<THIS>~<>~<STUFF>~<>~<UP!>

**YOU JUST CAN'T MAKE THIS STUFF UP!**

From: "Jim Woosley" [Jimwoosley@aol.com](mailto:Jimwoosley@aol.com)

Tweet from Heinlein Society (@HeinleinSociety)

"Political tags — such as royalist, communist, democrat, populist, fascist, liberal, conservative, and so forth — are never basic criteria. The human race divides politically into those who want people to be controlled and those who have no such desire. The former are idealists acting from highest motives for the greatest good of the greatest



number. The latter are surly curmudgeons, suspicious and lacking in altruism. But they are more comfortable neighbors than the other sort.”

<S>~<C>~<I>~<E>~<N>~<C>~<E>~~~<S>~<T>~<A>~<R>~<T>~<S>~~~<H>~<E>~<R>~<E>

From: “Tim Bolgeo” [tbolgeo@epbfi.com](mailto:tbolgeo@epbfi.com)

**BOEING, ROLLS-ROYCE BACK REACTION HYPERSONIC ENGINE DEVELOPER**

Apr 11, 2018 Guy Norris | Aerospace Daily & Defense Report

[http://aviationweek.com/defense/boeing-rolls-royce-back-reaction-hypersonic-engine-developer?NL=AW-05&Issue=AW-05\\_20180412\\_AW-](http://aviationweek.com/defense/boeing-rolls-royce-back-reaction-hypersonic-engine-developer?NL=AW-05&Issue=AW-05_20180412_AW-05_974&sfvc4enews=42&cl=article_2&utm_rid=CPEN1000001477803&utm_campaign=14433&utm_medium=email&elq2=a79d141698454a5e8a9f4bfa561dee0d)

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Artist's concept of a Sabre-powered reusable launch vehicle deploying an upper stage for payload delivery to orbit. Reaction Engines

LOS ANGELES—Boeing and Rolls-Royce have joined BAE Systems as key investors in UK-based hypersonic engine developer Reaction Engines.

The emergence of Boeing and Rolls-Royce as new backers in the latest round of strategic fundraising represents a significant endorsement for Reaction, which is designing and testing an air-breathing, combined-cycle rocket engine concept. Dubbed Sabre, the rocket burns liquid hydrogen with oxygen it extracts from the atmosphere rather than from onboard tanks, enabling long-range hypersonic cruise as well as, potentially, cheaper access to space.

Reaction says the £26.5 million (\$37.5 million) in new funding also includes additional investment from BAE Systems, which injected £20.6 million into the company in 2015. Other investors in this round include Baillie Gifford Asset Management and Woodford Investment Management. Reaction says the funding, which will take the form of a subscription for new shares, is still subject to the approval of existing shareholders.

“We managed to land this late last week and we are planning to raise more funds off the back of it,” Reaction chief executive Mark Thomas tells Aerospace DAILY. “It is a strong endorsement of the technology and a defining moment for us as a business.”

Boeing’s interest in Sabre, which comes through the company’s investment arm, Boeing HorizonX Ventures, follows a significant upswing in U.S. hypersonic research and development and the news in January that it is studying a reusable Mach 5-plus demonstrator vehicle that could pave the way for a future high-speed strike and reconnaissance aircraft.

Although initial vehicle concepts are centered on a turbine-based combined cycle (TBCC), which integrates conventional turbine engines with dual-mode ramjets/scramjets, Boeing appears to have left the door open to Sabre by acknowledging that the TBCC is only “one of a number” of potential propulsion options.

Boeing HorizonX Vice President Steve Nordlund says the investment in Reaction Engines is “our first in a UK-based company. As Reaction Engines unlocks advanced propulsion that could change the future of air and space travel, we expect to leverage their revolutionary technology to support Boeing’s pursuit of hypersonic flight.”

Rolls-Royce, which recently has revived studies of high-speed propulsion systems in support of growing interest in commercial supersonic business jets and passenger aircraft, is believed to be interested in various elements of the Sabre technology for a wide range of potential propulsion applications. One area in particular is the engine’s heat exchanger (HTX), which is designed to chill airflow down from 1,800F (1,000C) to minus 150C in less than 1/20th of a second.

In the Sabre, chilled air is passed from the HTX to a turbo-compressor and into the rocket combustion chamber, where it is burned with sub-cooled liquid hydrogen fuel. However, it is feasible that the technology also could be adapted to improve thermal efficiency in future turbofans by enabling advanced intercooled and recuperative cycles. Paul Stein, chief technology officer of Rolls-Royce, says the engine maker “looks forward to working with Reaction Engines and assisting with the development of their technology, and we plan to incorporate this technology into our own future products.”

The investment also re-establishes a historic link with Rolls-Royce that was severed 30 years ago when BAE Systems forerunner British Aerospace and Rolls withdrew from an ambitious project to use the same baseline engine concept to power a reusable spaceplane called Hotol. The initial project, then called the RB545 Swallow, was developed largely in secret in the 1980s, and later evolved into the Sabre when Reaction Engines was founded in 1989 by former Rolls-Royce engineers Alan Bond, Richard Varvill and John Scott-Scott.

News of the latest funding boost comes as Reaction completes assembly of the first pre-cooler HTX and associated equipment for evaluation in the company’s new U.S. TF2 test site at Front Range Airport near Watkins, Colorado. The facility was set up following the



award in 2017 of a Darpa contract to test the HTX at airflow temperatures in excess of 1,800F (1,000C), representing inlet conditions at Mach 5. “We will be marrying up the HTX and support equipment later in the year,” Thomas says.

Reaction Engines in the UK meanwhile is continuing to develop the TF1 engine test facility at Westcott, where the first ground-based demonstration of the Sabre rocket engine will take place around the end of the decade. The UK site will incorporate a hydrogen/air-breathing pre-burner to condition the air for core evaluation and is adjacent to a test facility where Reaction’s rocket nozzle tests also have been conducted.

<S><C><I><E><N><C><E>

## MEET THE SPACE COWBOYS LAUNCHING TELESCOPES FROM THE MIDDLE OF NOWHERE

If a rocket launches from a remote Pacific island, does it make a sound?

By Joe Pappalardo, Apr 12, 2018

[https://www.popularmechanics.com/space/rockets/a19754417/sounding-rocket-nasa-testing-pacific-ocean/?src=nl&maq=pop&list=nl\\_pnl\\_news&date=041318](https://www.popularmechanics.com/space/rockets/a19754417/sounding-rocket-nasa-testing-pacific-ocean/?src=nl&maq=pop&list=nl_pnl_news&date=041318)



## NASA

Rocketry can take you in a number of directions—and not always “up.” For a cadre of NASA rocketeers, their passion for spaceflight has taken them to one of the most remote launchpads in the world: Kwajalein Island in the deep Pacific.

“In my mind, we’re the cowboys of space,” Nathan Empson says in an email from the remote military base and rocket range. He’s the operations manager of the sounding rocket office at NASA’s Wallops Flight Facility in Virginia, but his team doesn’t always stay there.

**“We go where the science needs us, and can stand up an operation at remote locations others cannot.”**



**WRX off-loaded from its recovery boat.NASA**

**Right now that means Kwajalein, a speck of land in a tiny archipelago that's thousands of miles from anywhere. Empson and his space cowboys are doing the dirty work of the launch business, firing unglamorous rockets to not-quite-orbit where they can test technology that will be used in future missions. Cape Canaveral this ain't.**

### **BETWEEN BALLOONS AND THE GREAT BEYOND**

**Sounding rockets don't quite reach orbit, but they fly high enough to test instruments used on satellites and spacecraft. They can also loft scientific instruments that study the universe from unique vantage points.**

**“We're higher than balloons,” Empson says. “We can target ‘events’ that satellites cannot, [because] they're stuck on their orbit and that's it.” This events include some the natural occurrences that mystify scientists, like measuring the effects of solar storms. Of course, the trade-off is that sounding rockets have a brief mission life. They're typically up and down in less than ten minutes.**



## NASA

This week, Empson's nearly 50-person team is working on two sounding rocket missions, both of which are scanning parts of the Milky Way where stars are born and have died. The Colorado High-resolution Echelle Stellar Spectrograph (CHESS) measures the wavelength of radiation to reveal the composition and temperature of celestial objects. The Water Recovery X-ray Rocket (WRX-R) is the second project. It will measure an area where a star died explosively, called the Vela Supernova Remnant. By studying the x-rays emanating from the region, researchers hope to measure the chemical composition and temperature of the star's remains.

This data will also indicate the shock force of its cosmic death rattle.

So why do they need to do this work at Kwajalein, which is 2,100 nautical miles from Honolulu and far out in the middle of nowhere? "Typically, we launch our telescopes from the White Sands Missile Range in New Mexico," Empson says. "That doesn't give them full access to the night

sky, of course. So, we've been striving to do launches at more southern ranges. While Kwajalein isn't of southern latitude, it does open up new possibilities for our science community."

The sounding rocket team of space cowboys. NASA

The other tricky part of the mission is that these flying telescopes are meant to be recovered. "Before a few days ago, we'd never launched a water-recovered telescope," Empson says. "This was uncharted territory for us and a program first."





In the case of CHES and WRX-R, the payloads each weigh more 1000 lbs., including the science instruments and supporting subsystems. While in flight, they must be flipped around and acquire their science target in about 30 seconds. Streams of telemetry data beam to the team below. After a mission ends, the payload returns under a parachute. An airplane from Kwajalein tracks the GPS signal of the payload and a boat zips out to recover it.

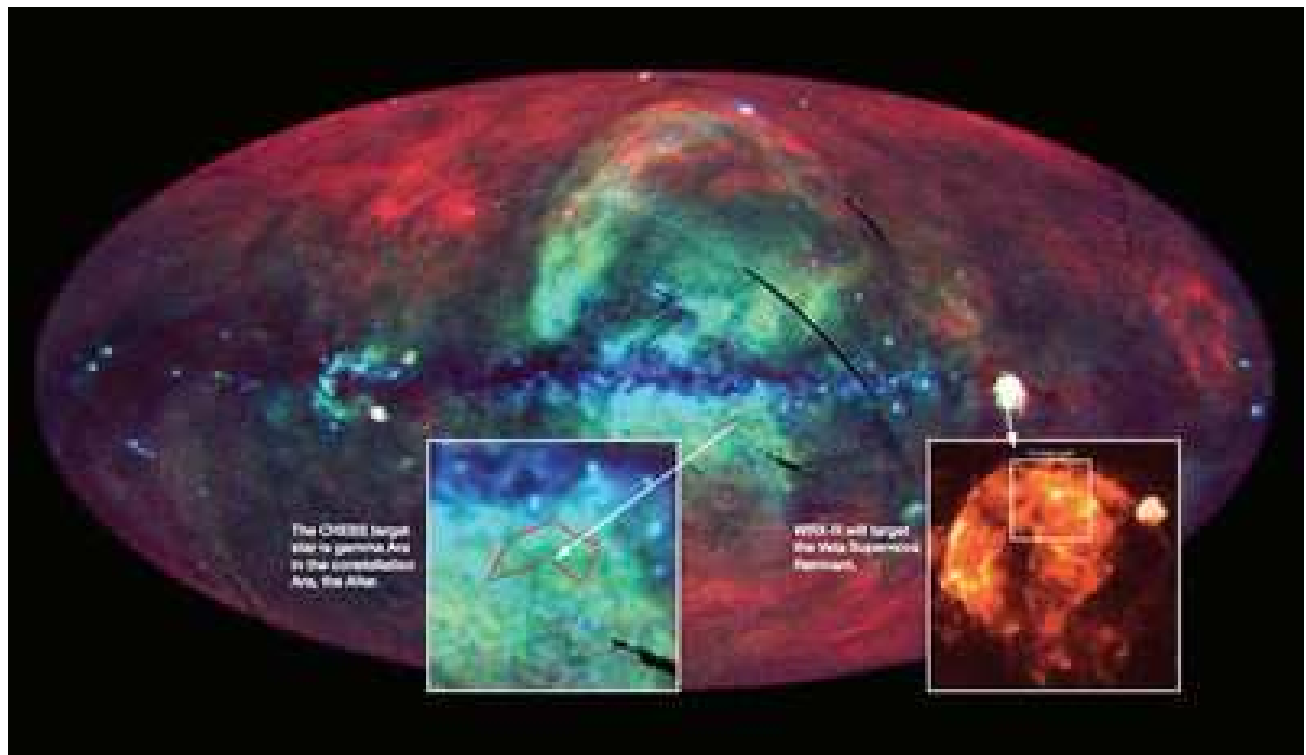
### ROCKET BADGE OF HONOR

Work on the WRX mission.  
NASA

In addition to Kwajalein and White Sands, the Wallops team also ventures out from its Virginia spaceport home base to launch from other exotic locales like Poker Flats in Alaska and a couple spots in Norway. Traveling at a moment's notice is a sounding rocket badge of honor.



“We prepare a launch vehicle and payload and will sit ready to go on the launcher for potentially weeks on end in anticipation of the correct science event, one that may only last a few minutes,” Empson says. “In many case this comes down to the correct magnetic field, solar flux, or aurora borealis condition.”



The CHES target star is gamma Ara in the constellation Ara, the Altar.

WRX-R will target the Hot, Supersonic filament.

Where CHES and WRX-R will study. NASA

Empson says that heading to a remote Pacific Island is not for everyone. “We see the same people all day long. You see them at breakfast, at work, at lunch, at dinner, any evening activities, and in many instances our crew is also sharing a room due to the limited availability of housing,” he says. “The social environment almost becomes like a big family, we’re here together in excess of a month. There’s plenty of joking, camaraderie, and of course the occasional grating of nerves and clashing of personalities.”

No one ever said family members—or cowboys for that matter—have to get along all the time.



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## NEW FOAM ARMOR FOR TANKS CAN PULVERIZE ENEMIES

By Allison Barrie | Fox News

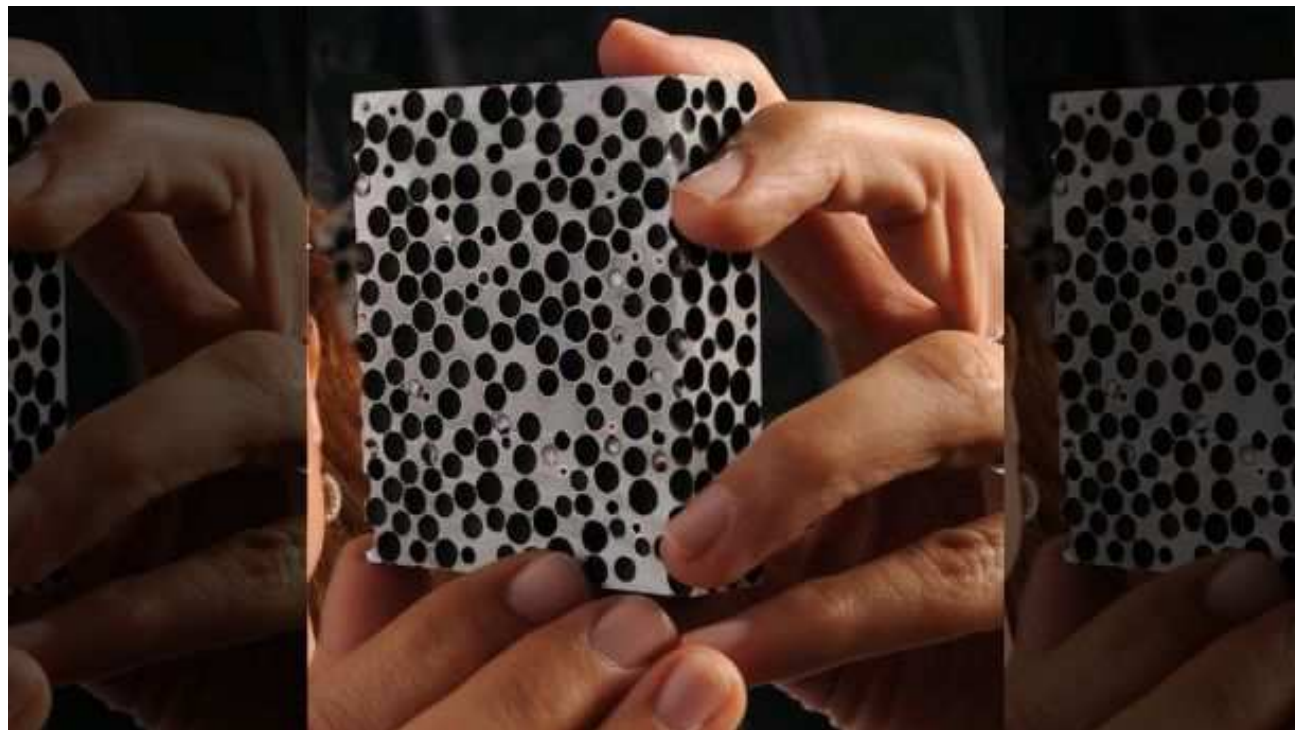
<http://www.foxnews.com/tech/2018/04/09/new-foam-armor-for-tanks-can-pulverize-enemies.html>

A revolutionary new material called Composite Metal Foam, or CMF, can pulverize enemy rounds and could even be used as an armor to protect tanks and other combat vehicles.

**Believe it or not, this breakthrough foam may provide greater protection than traditional armor steel plates.**

**It is also far lighter than current armor. How much lighter? This foam has the potential to dramatically reduce the armor weight on combat vehicles by about 65 percent.**

**This is a discovery with potential to revolutionize future tanks and armored vehicles.**



**Tests continue to prove that this foam not only stops rounds, but it can smash the would-be armor piercing rounds into smithereens. (U.S. Army)**

**In addition to defending against direct hits by powerful enemy weapons, the wonder foam may also deliver better protection from explosion blast waves, deadly “cookoffs” and even radiation.**

**Scientists at North Carolina State University and the U.S. Army’s Aviation Applied Technology Directorate have been working together on this remarkable foam.**

**What exactly is it?**

**Basically, it is foam made out of metal — hence “metal foam.”**

**Like shaving foam or sea foam, CMF has holes that help make the material spongelike. This Swiss cheeselike structure also helps to make CMF lighter than normal metal.**

**Let’s say a tank covered in this foam armor gets a direct hit by one of the enemy’s tank main guns. When it strikes the CMF, the foam’s hollow spheres ? the “holes” ? absorb some of the strike’s energy and help resist damage from the hit.**





(Credit: U.S. Army)

#### **Armor piercing rounds versus the foam**

**Armor piercing rounds are a serious threat — and a growing threat, as they have become more widely used by enemies of the United States. These rounds are designed to tear through heavy armor like it is aluminum soup can for maximum destruction.**

**It may seem hard to believe, but tests continue to prove that this foam not only stops rounds, but it can smash the would-be armor piercing rounds into smithereens.**

**In one test, one inch of this remarkable foam faced off against an M2 .30 caliber armor piercing bullet. The bullet travels with 2,780 foot-pounds of energy and when it makes contact with the foam, that armor piercing round is Hulk-smashed by the foam.**



(Credit: U.S. Army)

#### **Explosions versus the foam**

**The CMF is also remarkably good at deflecting blast waves.**

**Improvised explosive devices (IEDs) have unfortunately become a cruel, crude, commonplace weapon for enemies of the**



United States. The immediate blast and shrapnel can inflict devastating damage to personnel and vehicles. Less well known, these bombs also pose another threat that is not visible.

The explosions yield shock waves and these invisible waves of energy can impact the brain. These waves can cause harm and play a role in traumatic brain injury.

Tests have shown this foam may also provide better protection for warfighters inside a vehicle from these shockwaves.

If a tank is rolling through a war zone and an IED goes off nearby, the foam armor structure helps absorb the blast, better protecting the warfighters inside.



(Credit: U.S. Army)

## **HEAT VERSUS FOAM**

Tests have shown the foam can provide enhanced protection from heat. When put to the heat challenge, heat took twice as long to pass through the CMF as it did with typical stainless steel.

The foamy holes in the material also play a role in slowing heat transmission.

In practice, this slow heat transmission quality could be vital to save lives. If, for example, heat from a nearby explosion is enough to cause sympathetic detonation of a tank's unfired ammo, then the foam could crucially slow down the travel of this heat.

These "cookoffs" are very serious and deadly. Even seconds can be paramount in giving the warfighters time to leave the tank before it is too late.

**Less weight, more protection**

**Tanks are beasts. The M1 Abrams Main Battle Tank, for example, weighs in at more than 60 metric tons, so every pound matters.**

**Rolled homogeneous armor steel plate is frequently used for tanks and armored vehicles. The new foam has potential to provide enhanced protection — three times lighter than the current armor approach.**

**Here's a practical example: A future vehicle could theoretically be kitted out with just 4 tons of CMF, rather than 12 tons of the traditional armor.**

**This means approximately the same protection, but with armor that is 8 tons lighter.**

**Imagine what an impact lighter weight could have on future combat vehicles. This remarkable foam would then be providing yet another whole set of advantages, from faster speeds through to more maneuverability and agility.**

**The Army is considering next gen replacements for the M1 Abrams main battle tank and M2 Bradley infantry fighting vehicle, both of which will require state of the art, groundbreaking armor.**

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## **WHY ARCHAEOLOGISTS ARE ARGUING ABOUT SWEET POTATOES**

**It's a hot (potato) mess.**

**April 13, 2018-04-13**

**<https://www.popsci.com/sweet-potatoes-archaeology?CMPID=ene041418>**



**A Japanese variety of sweet potato Pixabay**

**At some point, sweet potatoes crossed the Pacific. This much we know. As for the rest—How?**

**When? Why?—we're just not sure.**

**Or, to be more clear, some people are sure they're sure, and others disagree.**

**Sweet potatoes have been at the center of a massive archaeological debate for many decades now, and a new paper in Current Biology has only stoked the flames. It uses genetic data from sweet potatoes and their**

**relatives to establish a phylogenetic tree of their evolution, thereby demonstrating that the tubers existed in Polynesia before humans lived there.**

**But let's back up for a second. Why do we care so much about sweet potatoes?**

The debate about sweet potatoes is, in a way, a debate about human contact (though to be honest, it's also definitely about the taters themselves). Before Europeans colonized much of the world, native people on both sides of the Pacific traveled fairly long distances across the ocean. South Americans made it all the way out to the Galapagos Islands, which are upwards of 620 miles off the coast of Ecuador. Pacific Islanders, including the predecessors of modern-day Samoans, Tongans, and Maoris, also managed to spread across the myriad dots of land scattered around their patch of the ocean. Those islands, especially the much-larger New Zealand and Australia, are hundreds or thousands of miles apart, which means Pacific natives regularly ventured across the ocean to explore new lands.

All these people clearly shared an affinity for the sea and serious ship-building skills. But they also shared a love of sweet potatoes. They've been a core crop for thousands of years, predating Columbian-era exploration. But...how? Sweet potatoes originate in South America, which is thousands of miles away from most of Polynesia.

There are three basic ways this could be possible:

1. South Americans ventured over to Polynesia, bringing sweet potatoes with them. Native Polynesians then either deliberately cultivated this new crop, or the seeds accidentally got fertilized and sweet potatoes began to grow naturally.
2. Polynesians traveled to South America, then brought sweet potatoes back with them on their return trip, presumably with the intent to plant the seeds when they got home.
3. Sweet potatoes, or just their seeds, floated from South America to Polynesia, no human action required.

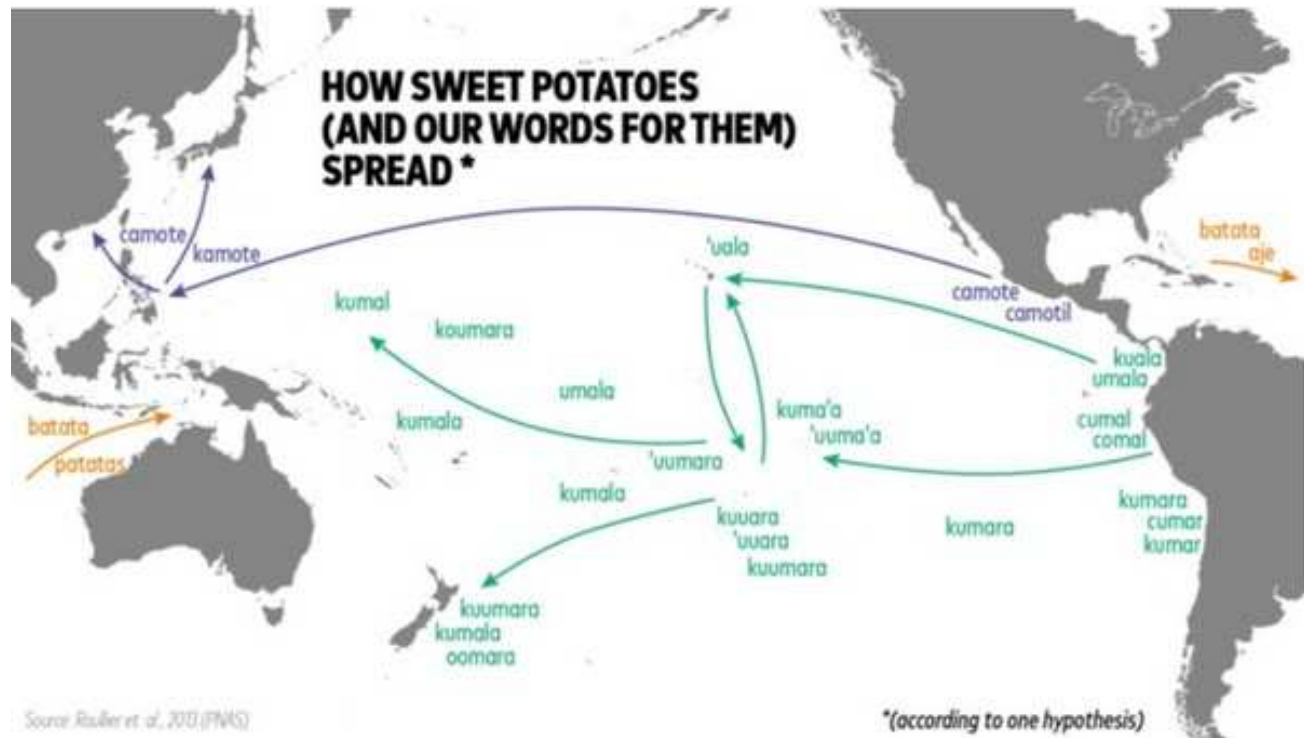
Again: it's still not clear which of these is true, but archaeologists have used sweet potatoes as evidence to show that Polynesians and South Americans either definitely did or definitely did not have contact for years now, with varying views on who traveled in which direction.

Apart from historical accounts from native peoples themselves, there's mostly no evidence either way for South Americans versus Polynesians doing the carrying—there's just evidence for human transportation versus natural spread. (The accounts themselves suggest that Polynesians may have been the ones to venture out, returning much later with tater in tow.)

One key puzzle piece: what words we use to identify the tuber. Since sweet potatoes definitely originated in South America, researchers looked at the terms for the vegetable in use by native peoples, then examined how those terms compared to the words used in Polynesia and East Asia. In South America, for example, sweet potatoes are called *kuala*, *kumara*, *cumal*, and other words that bear a striking similarity to the terms used in much of the Pacific Islands: *umala*, *kumala*, *kumara*, and so on.

Central Americans called them *camote* or *camotil*, which is nearly identical to the terms used in East Asia (*kamote*, *camote*). In the Caribbean, sweet potatoes went by Spanish words: *batata* or *aje*, which is what they're called in New Guinea and nearby islands.

These linguistic differences don't precisely mirror sweet potato introduction, since old names can continue to apply to new varieties (in other words, you might name a delicious new treat after something pretty similar you're more familiar with), and we know that the tubers were actually brought west multiple times—European explorers definitely brought some over.



Sweet potato spread according to the tripartite hypothesis Infographic by Sara Chodosh

Regardless of how many introductions there were, these patterns would all necessitate direct contact between native peoples on either side of the Pacific. But not all researchers agree. Just because the words are similar doesn't mean that the initial introduction occurred between those two people—languages evolve, after all.

The recent paper in *Current Biology* argues that DNA evidence suggests the Pacific Island sweet potato family branched off from the American one long before humans were sailing. Thus, the seeds or the veggies themselves must have floated their way across the ocean.

This actually isn't as crazy an idea as it sounds. It's the primary way that biologists think coconuts spread from island to island—the coconuts float from shore to shore. One 2008 study actually modeled the possible paths from South America to various islands, based on observing ocean currents, to see whether it was even feasible. The answer: a resounding “yep!” Over the hundreds upon hundreds of years that sweet potatoes could have traversed the ocean, seeds certainly might have floated along with currents and found new homes on other islands. It's still uncertain whether sweet potato seeds remain viable after the minimum 120 days that the researchers estimated the journey would take, but the theory remains feasible.



Some batátas Pixabay

This new paper shows that DNA from sweet potatoes and related crops suggest that early specimens collected from Polynesia must have diverged from other tubers more than 100,000 years ago, long before humans would have been sailing across the ocean. Even the earliest estimates of people-based transportation put it circa 1000 CE, or possibly a few hundred years before that.

Previous genetic evidence had actually argued the opposite. A PNAS paper from 2013 used DNA from chloroplasts (the little organelles plants use to convert sunlight to energy) to show that sweet potato lineages have actually been recombining across islands and oceans for a long time with human help. The more recent paper argues that chloroplast DNA isn't necessarily an accurate way to estimate phylogeny, since chloroplast genomes can mix between species in ways nuclear DNA can't.

Whatever the reality, the archaeological debate on human contact across the Pacific will likely rage on, with sweet potatoes remaining at its heart—and in all of our hearts, really. Long live the sweet potato and all its varieties. Long live the tuber.

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**WORLD'S ONLY ROTOR SAIL PASSENGER SHIP GOES INTO SERVICE**



Paul Ridden ,April 13th, 2018

<https://newatlas.com/norsepower-rotor-sail-viking-grace-passenger-ship/54208/>



**The M/S Viking Grace has had a single Norsepower Rotor Sail installed, which is expected to help reduce carbon emissions by up to 900 tonnes per year(Credit: Norsepower)**

**Last year we detailed how Finland's Norsepower had rediscovered an engineering innovation from the 1920s called the rotorsail, which sees large cylinders installed atop big ships harness wind for propulsion. Now a passenger ship operated by the Viking Line has been treated to the Rotor Sail Solution and has set sail on wind-assisted trips between Finland and Sweden.**

**The M/S Viking Grace – which has 880 cabins and can accommodate 2,800 passengers and around 500 cars – went into service in 2013, when it was reported to be the first ship of its size to be fueled by Liquefied Natural Gas (LNG). Its hull was hydrodynamically-optimized for low fuel consumption and soundproofing technology was fitted to keep noise down. So it already boasted some noteworthy green credentials.**

**A single Rotor Sail cylinder measuring 24 meters (78 ft) tall and 4 meters (13 ft) in diameter has now been installed on the passenger vessel, which is described as a modern version of the Flettner rotor.**

**The technology makes use of the Magnus effect, where wind passing a spinning cylinder moves the air faster on one side than the other and results in thrust at 90 degrees to the wind direction. The Norsepower system uses sensors to determine when the wind is strong enough to result in fuel savings, then the rotors automatically kick in and the sea wind helps the Viking Line's flagship vessel to move along.**

As well as reducing overall fuel consumption, the addition of the Rotor Sail technology is expected to reduce carbon emissions by up to 900 tonnes per year.



The M/S Viking Grace began ferrying passengers between Turku in Finland and Stockholm, Sweden, on April 12. You can find out more from the subtitled video below. The Viking Line has also revealed that two Rotor Sails are set to be installed on a new build ferry expected to be operational by 2020.

Source: Norsepower

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## RECYCLED WOOD WASTE MAKES CONCRETE STRONGER AND MORE WATERTIGHT

Rich Haridy, April 12th, 2018

<https://newatlas.com/wood-waste-biochar-stronger-concrete/54195/>

A team of researchers from the National University of Singapore (NUS) has developed a novel new method to recycle wood waste by incorporating it into cement and mortar mixtures, making the resulting materials both stronger and more watertight.

In just one year, furniture factories in Singapore can produce over half a million tonnes of wood waste. This waste primarily takes the form of sawdust, and a positive way to recycle this waste is to turn it into biochar, a charcoal-like substance.





**On the left is the enhanced concrete, and on the right is a sample of biochar generated from wood waste that was used to make it (Credit: NUS)**

**Biochar has a variety of environmental benefits. While most biomass breaks down within 10 or 20 years, releasing its carbon into the atmosphere, biochar is an incredibly stable material and able to hold its carbon for thousands of years.**

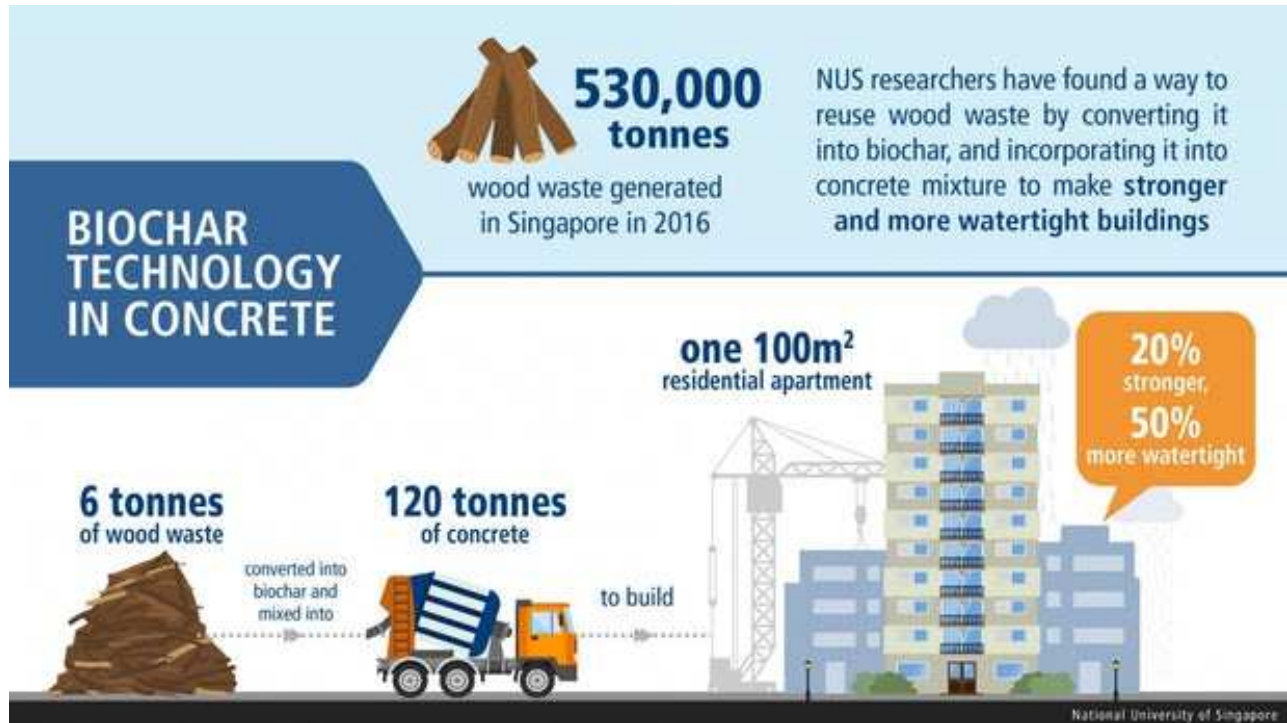
**A 2010 study found that increasing the global production of biochar could offset over 10 percent of the world's human-caused greenhouse gas emissions. Due to its strong water absorption and retention capacity, biochar also is known to be a wonderful soil enricher.**

**In exploring other commercial applications for biochar, the team at NUS discovered that adding a small amount of it to cement or mortar mixtures made the resulting materials up to 20 percent stronger and 50 percent more watertight.**

**"Close to 50 kilograms (110 lb) of wood waste can be utilized for every tonne of concrete fabricated," explains Kua Harn Wei, a researcher on the project. "We typically require 0.5 cubic meter of concrete for every square meter of floor area (17.6 cu ft per 10.7 sq ft) built in Singapore. This translates to around six tonnes of wood waste being recycled to build a typical four-room HDB unit with a floor area of 100 square meters (1,076 sq ft)."**

**As well as improving the strength of concrete structures, and recycling wood waste that would otherwise be incinerated or put in a landfill, the method is a unique way of storing carbon in buildings. Incorporating biochar into concrete construction allows the carbon to be locked into a structure instead of being released into our atmosphere either through incineration or decay.**

**Source: National University of Singapore**



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## FUTURISTIC NAVY SEAL BOAT DUBBED 'BATMOBILE'

By Allison Barrie | Fox News

<http://www.foxnews.com/tech/2018/04/13/futuristic-new-navy-seal-boat-dubbed-batmobile.html>

### Futuristic Navy stealth attack boat headed to Washington DC

**Fox Firepower:** Allison Barrie takes us inside the Navy's futuristic looking M80 Stiletto stealth attack boat currently making its way to the nation's capital.

A Navy SEAL futuristic, ultra-fast, wave piercing, attack craft is breaking ground to help prepare for future wars.

It's stealthy, ultra-fast and it can go places other crafts can't. In the nation's vast fleet, those lucky enough to spot this craft often describe it as the most remarkable looking vessel in the Navy.

This week, the SEAL craft with its utterly unique look was turning heads as it traveled inland along the Potomac River. With talk of potential war in Syria dominating headlines, speculation was rampant. What was this mystery boat? Was it heading to the nation's capital? If so, why?

**SO WHAT IS THIS MYSTERIOUS, STEALTHY BOAT?**



**(Credit: US Navy)**

**It's the M80 Stiletto made by Knight & Carver. Stiletto was created to surpass the tough requirements of U.S. special operations forces. The Navy SEALs have been using this remarkable craft for a wide range of applications.**

**The Stiletto was, in fact, quietly and discreetly making its way from its home with the Navy SEALs at Little Creek Base in Virginia to National Harbor by Washington, D.C.**



**(Credit: US Navy)**

It has made a guest appearance at the Sea, Air and Space where the heaviest hitters in this arena converge every year. At this annual event, Navy, Marine Corps and Coast Guard all have an opportunity to see and hear more about the very latest advances for future combat.

### **NAVY SEALS IN STILETTOS**

The super-futuristic looks are not all that will surprise – this boat has another boat hidden inside.

After a stealthy approach to enemy shores, a ramp in the M80 Stiletto's rear can lower to launch a Rigid Hull Inflatable Boat (RHIB) loaded with 12 fierce and fearless Navy SEALs for rapid insertion into enemy territory.

V-hull craft, like Zodiac RHIB's, are often used by special operations teams to rapidly insert teams on missions.

### **STILETTO'S FUTURISTIC LOOKS**

Unlike the very common V-hull, the Stiletto uses an M-hull approach. Its unique looks are in part due to the M-hull design.

The Stiletto's hull design lifts the craft out of the water and reduces four key things: acoustic signature, drag, wake and how the water pounds the hull.

The benefits for military applications are substantial.

V-hulls can often deliver rough rides for the teams onboard because of water conditions. The talent and experience of a Navy SEAL is irreplaceable so innovation that can reduce the toll on their bodies, like powerful waves smacking the craft, is vital.

The hull design also delivers a platform with enhanced stability for drones to take off and land.

### **SPEED AND ACCESS**

The design is important for speed and access. Rather than traditional material used like steel, Stiletto uses carbon fiber. Its advanced materials are lighter weight and yield less drag – two factors that can further enhance speed.

At full speed, the Stiletto at 70 miles per hour, or 60 knots and can travel about 500 miles on one tank of gas.

The draft is very shallow, approximately two and a half feet. This means the Stiletto can access places others can't. The Stiletto can travel fast in shallow waters and even shallow reefs. It is well suited for those tough environments the Navy's larger ships can not reach such as littoral and riverine areas.

How about open ocean? When you combine an M-hull with assault craft design that can hit high speeds and rocket through waves, then you get the Stiletto. The Stiletto can even handle 13-foot waves, no problem.

## **BAT BOAT FEATURES?**

This floating "batmobile" is loaded with futuristic features. In addition to the three crew, the Stiletto can carry 12 SEALs. It is nearly 90 feet long and about 40 feet wide. Inside, it can comfortably fit a RHIB that's about 36-feet long.

The Stiletto can also carry some drones. The top of the craft doubles as a stable flight deck for drones. Both flying, water surface and underwater drones can also be deployed through the rear. The rear door allows for rapid, easy launch and recovery of RHIBs and drones.

In a way, the Stiletto can act sort of like a mother ship to RHIB's and drones. It could help insert SEAL team members and the RHIB.

As you'd expect from larger American war vessels, this M80 Stiletto may be far smaller but still has an "electronic keel."

For running missions like a sort of floating, futuristic command center, it can have large flat screens displaying all necessary information about the battle space. Feeds from satellites, highly detailed maps, camera feeds from SEAL teams as they conduct a mission, video from drones flying above, sensor data from stealthy underwater drones investigating threats below and more can be merged into one complete picture.

## **HOW IS IT BEING USED?**

Beyond delivering SEALs, the M80 Stiletto has been used for a range of purposes from clearing mines hidden out in the water through to acting as a sort of mothership providing floating command and control.

It has also been used for counter-narcotics and even NASA has enlisted the futuristic SEAL craft to help retrieve a space vehicle that splashed down in the Atlantic.

Stiletto, however, from the beginning has primarily been a testing bed for other remarkable advances that could make a difference downrange. From the start, the M80 was created as a demonstrator. The craft regularly helps accelerate and fine tune innovations to get them out to warfighters more rapidly. In this way, it acts both a sort of springboard and lily pad moving breakthroughs out to war zones faster.

In spite of all its awesomeness, thus far the Stiletto has yet to shift into becoming a core, widely used craft for operations. The unique craft has instead been playing a key role in supporting innovation for the SEAL teams and the wider military.

Most experts place the M80 cost at a maximum of \$10 million. The price tag for this futuristic Navy SEAL vessel is a teeny tiny fraction of the cost of other recent new ships.

Let's hope its guest appearance this week inspires leadership to prioritize lean, smart innovation and investment for future combat space, air and sea needs.

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**VIKING TREASURES DISCOVERED: 'THOR'S HAMMER' AMONG SILVER HAUL FOUND ON BALTIC ISLAND**



By James Rogers | Fox News

<http://www.foxnews.com/science/2018/04/16/viking-treasures-discovered-thors-hammer-among-silver-haul-found-on-baltic-island.html>



Jewelry and coins found near Schaprode on the northern German island of Ruegen in the Baltic Sea. (Stefan Sauer/dpa via AP)

An incredible trove of silver treasure linked to the era of a famous Viking king has been discovered on an island in the Baltic Sea.

Hundreds of 1,000-year-old silver coins, rings, pearls and bracelets have been found on the German island of Ruegen. The haul includes a piece of jewelry depicting "Thor's hammer," according to Ostsee-Zeitung.

Archaeologists said about 100 of the silver coins are probably from the reign of Harald Gormsson, better known as "Harald Bluetooth," who lived in the 10th century and introduced Christianity to Denmark. The king, who earned his nickname on account of a dead tooth that appeared blue, is a significant historical figure who unified parts of Scandinavia.

Harald Bluetooth was one of the last Viking kings of what is now Denmark, northern Germany, southern Sweden and parts of Norway.

Bluetooth wireless technology, invented by Swedish telecom company Ericsson to connect computers and wireless devices, is named after the king.

A single silver coin was first found in January by two amateur archaeologists, one of them a 13-year-old boy, in a field near the Ruegen village of Schaprode. The state archaeology

office then became involved and the entire treasure was uncovered by experts over the weekend, the Mecklenburg-West Pomerania state archaeology office said Monday.

"It's the biggest trove of such coins in the southeastern Baltic region," archaeologists said, in a statement.



This April 13, 2018 photo shows medieval Saxonian, Ottoman, Danish and Byzantine coins found near Schaprode on the northern German island of Ruegen in the Baltic Sea. (Stefan Sauer/dpa via AP)

Other artifacts from the time of Harald Bluetooth have been found in the area. In the 19th century the "Hiddensee treasure," a trove of stunning gold jewelry was found on a nearby island.

The Ruegen silver treasure is just the latest fascinating archaeological find from the Viking era. Last year, for example, an incredibly well-preserved Viking sword was found by a reindeer hunter on a remote mountain in Southern Norway. In 2016, archaeologists in Trondheim, Norway, unearthed the church where Viking King Olaf Haraldsson was first enshrined as a saint.

The Associated Press contributed to this article.

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**A CHINESE SHIPBUILDER ACCIDENTALLY REVEALED ITS MAJOR NAVY PLANS**

**Nuclear submarines, giant aircraft carriers, robot warships.**



By Jeffrey Lin and P.W. Singer March 15, 2018

<https://www.popsci.com/china-nuclear-submarine-aircraft-carrier-leak>



**DALIAN SHIPYARD** - Dalian Shipyard, part of CSIC, is where China's first domestic carrier, CV-17, was built. It will also likely be the builder for China's first, nuclear powered supercarrier. - [cjdby.net](http://cjdby.net)

For a brief moment, the China Shipbuilding Industry Corporation (CSIC), put online China's next big naval projects (but quickly pulled them down). The revelation, of which screenshots were taken before censors intervened, provided a picture of China's ambitions for a world class navy.

**TYPE 003** - This new display at the Military Museum of the Chinese People's Revolution, was newly installed for the PLA's 90th anniversary. While it has speculative features like four catapults, J-20 fighters and stealthy UCAVs, the nuclear powered Type 003 supercarrier probably won't enter service until after 2030.- Oedo Soldier

CSIC is a major shipbuilder for the People's Liberation Army Navy, responsible for high ticket items like aircraft carriers and nuclear submarines. The biggest item in CSIC's not-so-secret portfolio is China's first nuclear-powered carrier. Popularly identified as the Type 003, it will be the largest non-American warship in the world when its launched in the late 2020s. CSIC's Dalian Shipyard, which refurbished the aircraft carrier Liaoning, and launched China's first domestically built carrier, CV-17, in 2017, will presumably build China's first "Type 003" CVN.

The Type 003 will displace between 90,000-100,000 tons and have electromagnetically assisted launch system (EMALS) catapults for getting aircrafts off the deck. It'll likely carry a large air wing of J-15 fighters, J-31 stealth fighters, KJ-600 airborne early warning and control aircraft, anti-submarine warfare helicopters, and stealth attack drones. When joined with Type 055 destroyers and next-generation attack submarines, it would provide the PLAN a highly capable task force for representing China on global missions.



**TYPE 095 SSN - The Type 095 SSN, seen in this speculative fanmade CGI, will likely have VLS cells for launching a wide range of cruise missiles, pumpjet propulsion and improved quieting technology. The first Type 095 will likely begin production in late 2017 at the giant new BSHIC factory, with many more to follow in the 2020s. - Medico-MAX**

CSIC's website also boasted that it would build a new nuclear-powered submarine, likely the Type 095 nuclear attack submarine (SSN). The Type 095 SSN would be built at CSIC's Bohai Shipyard, which is China's sole nuclear submarine shipyard. Compared to the Type 093 SSN, the Type 095 SSN will include new noise reduction measures, like an integrated electric propulsion system and possibly a shaftless rim drive, single hull, and electronic noise cancellation. CSIC is also working on a separate 'quiet' submarine project, presumably to be built at its Wuhan conventional submarine shipyard. This submarine is presumably quieter than the air-independent propulsion (AIP) Type 039B Yuan submarine; it'll likely have quieting measures like a single hull, a new AIP system, and lithium-ion batteries. A new generation of Chinese submarines could help the PLAN remedy its historic technologic disadvantage against the submarines forces of the American and Japanese navies.

**LARGE AUV** - This large AUV, similar to the USN's LDUUV, is used for long term autonomous missions; its size allows for it to carry modular payloads of sensors, mine warfare and ASW. It could be the precursor to larger Chinese armed UUVs carrying torpedoes and missiles. - [www.top81.cn](http://www.top81.cn)



The big CSIC announcement also covers 21st century naval wish lists, like autonomous robot submarines. This is the first official confirmation of China pursuing armed unmanned underwater vehicles (UUVs), in addition to unmanned surface vehicles already offered for exports. Autonomous UUVs, armed with torpedoes and missiles, could act as expendable scouts or wingmen for manned Chinese submarines and surface warships, such as undertaking dangerous missions like probing enemy minefields, launching sneak attacks, and drawing away enemy forces.

**UNDERWATER GREAT WALL OF CHINA** - The Underwater Great Wall may be centered around stationary sensors on the ocean bed, but autonomous UUVs will be a critical enabler in not just tracking enemy submarines, but finding them. - [www.top81.cn](http://www.top81.cn)

To defend Chinese home waters and expand the anti-access/area denial umbrella underwater, CSIC is designing an underwater attack and defense system. It could likely be an armed variant of the "Underwater Great Wall" of UUVs,





other maritime robots and seafloor sensors. With built in modularity, it could be tailored to defend naval bases with surveillance UUVs and counter torpedo defenses on one end, and at the other end of the spectrum; a networked minefield of armed and smart UUVs supported by automated underwater listening posts. These capabilities would require not just the platforms, though; CSIC would need to master emerging technologies like underwater high capacity datalinks, combat AI, and multi-spectrum sensors.

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## **ELON MUSK SAYS SPACEX WILL TRY TO LAND A ROCKET WITH A 'GIANT PARTY BALLOON'**

By Tariq Malik, Space.com Managing Editor | April 16, 2018 10:48am ET

<https://www.space.com/40313-spacex-rocket-landing-giant-party-balloon.html>



Two SpaceX Falcon Heavy boosters make a simultaneous landing after launching the first Falcon Heavy rocket into orbit on Feb. 6, 2018. Elon Musk says SpaceX will soon try to land the upper stage of its workhorse Falcon 9 rocket using a "giant party balloon." - Credit: SpaceX

From anyone else, it would sound ridiculous: Elon Musk says SpaceX is going to try to land a rocket stage with ... wait for it ... a "giant party balloon."

Even Musk, SpaceX's CEO and chief designer, admits it's a pretty wild idea.

"This is gonna sound crazy, but ... SpaceX will try to bring rocket upper stage back from orbital velocity using a giant party balloon ... and then land on a bouncy house," Musk wrote in a series of Twitter posts Sunday (April 15). [6 Fun Facts About SpaceX]

Musk is presumably talking about the upper stage of the two-stage Falcon 9 rocket that serves as the workhorse booster for SpaceX launches. The upper stage is currently the only major component of the rocket that the Hawthorne, California-based aerospace company has not tried to reuse in its pursuit of a fully reusable launch vehicle.

To date, SpaceX has successfully landed Falcon 9 first stages 23 times and re-flown 11 of them. Falcon 9 first stages perform engine maneuvers in space that send them back to Earth, where they can land on an offshore drone ship or landing pads near their launch sites. They use grid-like fins for stability during re-entry, perform engine burns to slow down and carry landing legs that fold out just before touchdown.

The company has also reused two of its uncrewed Dragon cargo ships to deliver NASA cargo to the International Space Station (one of them is in orbit right now) and is actively trying to capture the payload fairings — or nose cones — that shroud and protect satellites and other payloads during launch. In fact, SpaceX will try to recover the payload fairings again today (April 16) when it launches a Falcon 9 carrying NASA's next exoplanet-hunting space telescope, the Transmitting Exoplanet Survey Satellite. You can watch that launch live on Space.com at 6:30 p.m. EDT (2230 GMT) today.

Musk did not reveal a timetable for the "giant party balloon" landing test or details on how it works, but he did say that a sturdy balloon has a good shape to withstand the stresses a rocket stage endures during its supersonic descent back to Earth.

A giant balloon is "great for creating a giant object that retains its shape across all Mach regimes & drops ballistic coefficient by 2 orders of magnitude," Musk wrote.

Musk also said that SpaceX already brings its Falcon 9 upper stages back to Earth. They are intentionally disposed of in the Pacific Ocean so they don't become space junk.

"We already do targeted retro burn to a specific point in Pacific [with] no islands or ships, so [the] upper stage doesn't become a dead satellite," Musk wrote on Twitter. "Need to retarget closer to shore & position catcher ship like Mr. Steven."

Mr. Steven is a ship equipped with a net and giant metal arms to catch falling Falcon 9 payload fairings. Musk has called it a "catcher's mitt" in boat form.

SpaceX's use of a giant balloon for a rocket won't be the first time a company or space agency has attempted to use an inflatable system for re-entry. NASA has conducted several experiments using inflatable "flying saucer"-shaped inflatable heat shields for Mars landings. And in 2012, the private spaceflight company Armadillo Aerospace launched an inflatable balloon parachute, or "ballute," as a part of a re-entry technology test.

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From: "Dr. Tedd"



There's a much longer article up at Baen that tells the history of the study and results.

<http://www.baen.com/brokenmemory>

## PROSTHETIC MEMORIES HELP BRAIN INJURY PATIENTS WITH SHORT-TERM RECALL

Kristen V. Brown, 3/28/18 4:40pm

<https://gizmodo.com/prosthetic-memories-help-brain-injury-patients-with-sho-1824152780>



A study participant completes a visual memory test. Screenshot: Wake Forest Baptist Medical Center

If, at its most essential, the brain is a mass of wires and circuits, then when something goes wrong, logic suggests the brain can be re-wired to fix it. This is the theory behind a host of research that seeks to correct things like mental illness, paralysis and blindness, and impaired cognitive ability, by interfering with the brain's wiring and firing.

In the latest advancement from the front lines of neuroscience, researchers at Wake Forest Baptist Medical Center and USC successfully restored memory to people with poor short-term memory function.

The research was funded by the military's secretive DARPA research branch as part of the Restoring Active Memory, which launched in 2013. The program's eventual goal is to create an implantable brain-computer interface capable of restoring normal memory function to people suffering from brain injury or illness.

"When DARPA launched the Restoring Active Memory program in 2013, our concept was extremely forward-looking relative to understanding of memory function at the time, and we didn't know what would be possible," Justin Sanchez, the director of DARPA's Biological

Technologies Office, told Gizmodo via email. “Less than five years later, we’ve demonstrated not only generalized stimulation to optimize brain state for memory but now also patterned stimulation for specific neural codes.”

The new study, published Wednesday in the Journal of Neural Engineering, is a proof of concept that this could actually work.

“We want to see this research be the foundation for developing a prosthetic to restore memory function in patients who suffer loss of memory function due to injury or disease,” the study’s lead author, Robert Hampson, told Gizmodo.

In the study, researchers worked with 15 patients who were being treated for epilepsy. Epilepsy not only frequently causes memory loss, but epilepsy patients are often the subjects of brain-computer interface research, because as part of their treatment they may already have to be hooked up to electrodes to monitor seizure patterns. In this study, researchers surgically implanted electrodes to record neuronal activity in regions of the hippocampus as the volunteers performed a visual memory test. Participants were shown a simple image, like a a color block, and then shortly after shown a set of multiple images and asked to pick out which one they had been shown.

Researchers focused on the hippocampus because it is known to be central to memory function. They were interested in improving episodic memory, which is information like where you put your sunglasses or parked your car. It’s the most common type of memory loss in people with brain injuries or Alzheimer’s disease. Electrodes were implanted in the CA3 and CA1 regions of the hippocampus specifically, which together support memory encoding and retrieval. When the brain encounters new information it needs to encode as a memory, neurons in CA3 fire away. When it needs to retrieve that same information, regions in the CA1 region snap into action.

With those recordings, they were able to analyze firing patterns associated with correct responses to the visual test and create a mathematical model that predicted how the brain would fire when memories were formed successfully.

Those firing pattern codes for each volunteer were then translated into electrical stimulation, delivered during another visual test. The volunteers showed an average of 37 percent improvement in recall.

Decrypting this information is no easy task.

“The biggest hurdle was being able to record from the patients and to identify the brain activity that formed the brain’s own codes for memory,” said Hampson. “Fortunately we were able to build on success and techniques we had developed in the laboratory.”

The study was small and early stage, but the results are significant—an indication that it is possible to not just “read” but also “write” a person’s brain, and maybe one day restore to the brain the abilities it has lost.

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**ABSOLUTELY & TOTALLY POLITICALLY INCORRECT & AS FAR TO THE CENTER AS YOU CAN GO!**

From: "Tim Bolgeo" [tbolgeo@epbfi.com](mailto:tbolgeo@epbfi.com)

**GOVERNOR DEALS DEVASTATING BLOW TO PLANNED PARENTHOOD**

by: Remington Strelivo, Source: AAN , 04/14/2018

<http://americanactionnews.com/articles/governor-deals-devastating-blow-to-planned-parenthood#xIsAiPmMLUaEtA4o.99>



**In a crushing blow to Planned Parenthood's chapters in Tennessee, Republican Gov. Bill Haslam has defunded the abortion giant.**

**Haslam signed legislation on Wednesday that would prevent Planned Parenthood, along with other abortion providers, from receiving health care subsidies from TennCare, the state's Medicaid affiliate.**

**The ban, which passed by significant majorities in both the state house and senate, will come into effect ten days after Tennessee officially secures its Medicaid waiver.**

**Planned Parenthood has just four clinics in Tennessee, but they received nearly \$1 million from TennCare over the past six years.**

**While Planned Parenthood slammed the decision as being bad for women's health, Haslam's spokesperson Jennifer Donnals offered a bristling rebuke.**

*The April 18th, 2018 Edition of THE REVENGE HUMP DAY!*

*Page 45 of 45*

"The governor ... deferred to the will of the legislature on this bill as amended, and after reviewing the bill in its final form decided to sign the bill into law," Donnals said.

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