

March 12, 2015

Canada's MacLeans Magazine says habits are a key to a life of happiness.

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*Habits are important because, as Gretchen Rubin puts it, "what we do every day matters more than what we do once in a while." When Rubin published the massively bestselling *The Happiness Project*, she laid out personal commandments and explored the overarching principles in her year-long journey to enjoy life to the fullest. In her new book, *Better Than Before: Mastering the Habits of Our Everyday Lives*, Rubin narrows her view dramatically, turning to the daily routine actions that make up our days. "Habits are the invisible architecture of our lives," Rubin says in an interview. ...*

Jay Leno wrote a column for Autoweek on the problems with ethanol. Most of ethanol can be blamed on the W Bush administration so this post can be considered non-political. Both sides, GOP and Dems suck on this issue.

There have been a lot of old-car fires lately. I went through the '70s, the '80s and most of the '90s without ever having read much about car fires. Suddenly, they are happening all over the place. Here's one reason: The ethanol in modern gasoline—about 10 percent in many states—is so corrosive, it eats through either the fuel-pump diaphragm, old rubber fuel lines or a pot metal part, then leaks out on a hot engine ... and ka-bloooooie!!!

As someone who collects old cars, and keeps them up religiously, I am now replacing fuel-pressure regulators every 12 to 18 months. New cars are equipped with fuel lines that are resistant to ethanol damage, but with older cars, the worst can happen—you're going down the road, and suddenly your car is on fire.

There's more. I find that gasoline, which used to last about a year and a half or two years, is pretty much done after a month or so these days. If I run a car from the teens or '20s and fill it up with modern fuel, then it sits for more than two months, I often can't get it to start.

Ethanol will absorb water from ambient air. In a modern vehicle, with a sealed fuel system, ethanol fuel has a harder time picking up water from the air. But in a vintage car, the water content of fuel can rise, causing corrosion and inhibiting combustion.

It gets worse. Ethanol is a solvent that can loosen the sludge, varnish and dirt that accumulate in a fuel tank. That mixture can clog fuel lines and block carburetor jets. ...

Scientific American has a report on the solar powered airplane that is in the process of circumnavigating the globe.

A pioneering flight around the world will use nothing but sunshine for fuel. In the dusty peach dawn of a desert day the Solar Impulse 2 airplane took flight at 11:12 PM Eastern time on March 8 from the United Arab Emirate of Abu Dhabi on the first leg of a bid to fly around the world exclusively powered by electricity generated from sunlight.

At a top speed of 45 kilometers-per-hour the single-seat airplane flew to Muscat in neighboring Oman over roughly 10 hours, touching down at roughly 2:13 PM Eastern time, after a few hours spent circling and waiting for the right weather conditions to land. The plane is an upgraded version of the original Solar Impulse, which flew across the U.S. in 2013; both planes were built by the Solar Impulse group, led by Swiss adventurers Bertrand Piccard and Andre Borschberg. ...

Sail in the America's Cup for Larry Ellison and make \$300,000 per year. **Wall Street Journal** reports on filings in a lawsuit that point to those numbers.

A lawsuit against Larry Ellison's sailing squad, which has led to the seizure of one of his million-dollar boats, is also revealing how much the Oracle Corp. founder is willing to spend to win the America's Cup: \$300,000 a year for a rank-and-file sailor.

The litigation is the latest in a series of legal battles that have surrounded the billionaire's sailing successes.

On Monday morning, two federal marshals walked into the San Francisco waterfront base of the sailing squad, Oracle Team USA, and seized three gray, whale-size containers holding the disassembled parts of a 45-foot-long, seven-story-tall yacht called an AC45, according to the plaintiff's lawyer and a U.S. Marshals spokesman.

The marshals tagged the three containers, which can't be moved until a judge issues a ruling on the seizure or allows the team to post a bond on the boat. The vessel, a smaller version of Oracle's victorious 72-foot-long boat in the 2013 America's Cup, is being held as a lien, or collateral, in the case. The plaintiff asked for the seizure.

The plaintiff is Joe Spooner, who spent a decade as an Oracle sailor until the team dismissed him in January. A 41-year-old New Zealand native, Spooner in February sued the team for \$725,000 in wages over a 2½-year span, as well as double-wage penalties, punitive damages and legal fees, alleging the squad wrongfully discharged him without cause.

Australian Geographic reports on the 10 most destructive tsunamis in history.

Tsunamis have occurred often throughout history. So frequently in Japan, in fact, that they invented the word specifically for the phenomenon: 'tsu' meaning harbour and 'nami' meaning wave.

"It's actually quite frightening to think that this [Japanese tsunami] event is smaller than the 2004 Indian Ocean tsunami, smaller even than the 1960 Chilean tsunami, yet the damage to Japan's people and economy is still profound," says Professor James Goff, co-director of the Australian Tsunami Research Centre and Natural Hazards Research Lab at the University of New South Wales. "It's a horrendous tragedy, caused by a completely unpredictable event."

Because little historical data exist on the size of tsunami waves, how many occur in one event, or how far they advance on shore, scientists rank them according to how much damage they wreak. However, assessing just how much damage a single tsunami event causes may take many months to years; and it may be some time before the Japan earthquake and tsunami can be truly rated on a historical scale. ...

BBC News reports coffee may be good for your heart.

Drinking a few cups of coffee a day may help people avoid clogged arteries - a known risk factor for heart disease - Korean researchers believe.

They studied more than 25,000 male and female employees who underwent routine health checks at their workplace.

Employees who drank a moderate amount of coffee - three to five cups a day - were less likely to have early signs of heart disease on their medical scans.

The findings reopen the debate about whether coffee is good for the heart. ...

Machines Like Us says you can have too much of a good thing like vitamin D.

In terms of public health, a lack of vitamin D has long been a focal point. Several studies have shown that too low levels can prove detrimental to our health. However, new research from the University of Copenhagen reveals, for the first time, that also too high levels of vitamin D in our blood is connected to an increased risk of dying from a stroke or a coronary.

The results have just been published in the world-renowned Journal of Endocrinology and Metabolism.

"We have studied the level of vitamin D in 247,574 Danes, and so far, it constitutes the world's largest basis for this type of study. We have also analysed their mortality rate over a seven-year period after taking the initial blood sample, and in that time 16,645 patients had died. Furthermore, we have looked at the connection between their deaths and their levels of vitamin D", Professor at the Department of Clinical Medicine, Peter Schwarz explains. ...

MacLeans

The simple secrets to happiness

Turns out a better life rests on habits

by Aaron Hutchins

After every trip to the bathroom when he's at home or in a hotel room, BJ Fogg will get down on the ground and do two push-ups. Then he'll wash his hands. It sounds kind of weird, if you stop to think about it, but Fogg doesn't think about it anymore. It's a habit he has worked to develop over the past two years to help get in shape. Now, the push-ups come automatically and he gets a surge of energy each time. Often he doesn't stop at two. On some trips, he might do 10 or 25. "I probably did 50 or 60 push-ups yesterday," he says.

Fogg is perfectly placed to train himself into a healthy habit. He is an expert on the subject, having studied human behaviour for 20 years, mostly at Stanford University, where he's the director of [the Persuasive Technology Lab](#). From his research, he's learned that the best way to automate a new habit is to set the bar incredibly low. Ergo, just two pushups. "You pick something so small, it's easy to do. Motivation isn't required to do it," he says. Even though he's become much stronger, he says, he'll never raise the minimum. The goal remains two push-ups, and anything more is a bonus. "If you want to maintain the habit, you will always be okay with just doing the tiny version of it," he says.

Habits are important because, as Gretchen Rubin puts it, "what we do every day matters more than what we do once in a while." When Rubin published the massively bestselling *The Happiness Project*, she laid out personal commandments and explored the overarching principles in her year-long journey to enjoy life to the fullest. In her new book, *Better Than Before: Mastering the Habits of Our Everyday Lives*, Rubin narrows her view dramatically, turning to the daily routine actions that make up our days. "Habits are the invisible architecture of our lives," Rubin says in an interview. In fact, studies have shown that approximately 40 to 45 per cent of what we do every day is a habit—something we do by default. When we wake up, we brush our teeth. We get in the car to go to work and, without thinking, we put on our seatbelt. There's no decision-making at work. It's automatic. "If you have habits that work for you, you're much more likely to be happier, healthier and more productive."

"We are what we repeatedly do," wrote historian and philosopher Will Durant, paraphrasing Aristotle, in *The Story of Philosophy*. "Excellence, then, is not an act, but a habit." And in his defining treatise on the subject, the 19th-century philosopher William James referred to humans as "mere walking bundles of habits." But which ones? If almost half the things we do are out of habit, it's a smart plan to make those habits the right ones. Good habits, in effect, can be the prelude to happiness.

But developing a good habit, or breaking a bad one, isn't easy, as anyone who has made a New Year's resolution can attest. The reason: There is no one-size-fits-all solution for habit change, and surprisingly little consensus on how we make habits or break them. Fitness magazines promise great abs in 30 days. Self-help books often deploy the magic 21-day number, suggesting that if you repeat an action for three weeks, it becomes a habit—even though the theory of 21 days may be a gross misinterpretation. In the 1950s, a plastic surgeon named Maxwell Maltz noticed that whenever he performed an operation, such as a nose job, it took the patient about three weeks to get used to the new face. Similarly, if someone needed to have a leg or arm amputated, the feeling of the phantom limb persisted for about 21 days. In 1960, Maltz published the bestselling book *Psycho-Cybernetics*, which contained his thoughts on taking at least 21 days to jell with one's new image. From that, a plethora of "Learn to (fill in the blank) in 21 days" programs have taken flight.

There's no magic time interval to make a habit, however. "The speed of the habit formation is directly connected to the strength of the emotions you feel," says Fogg. "It has nothing to do with 21 days."

Rubin's own quest to discover how habits work was sparked by a conversation with a friend who was on the track team back in high school, and therefore very fit. But now that her regular workout habit was long gone, she couldn't get it back. Rubin wanted to figure out why.

In looking at how we develop routines, she identifies four broad human tendencies in her book. There are "upholders," such as Rubin herself; she wakes up to a to-do list, knows any expectations of her—whether from other people or herself—and avoids letting anyone down. There are "obligers," who are motivated by external accountability. "Questioners" respond to expectations, if they make sense based on their own judgement, and "rebels" resist control, even self-control. The iconic line, "Don't mess with Texas," Rubin points out, started out as a slogan for an anti-littering campaign. Over five years, visible roadside litter fell by 72 per cent. Texans identified with the slogan. In their own lives, rebels may respond better to an angle that reflects their individualism, instead of, say, being lectured about the benefits of a spin class.

Rubin believes that knowing how you tend to behave better equips you to shape your habits—and, sometimes, to outwit yourself. We may be lovers of familiarity, who enjoy rereading a favourite novel, or novelty-seekers, for whom the same breakfast day after day is anathema. For an abstainer, cutting back on that bad ice-cream habit may require never bringing ice cream into the house, whereas a moderator may be able to take a spoonful or two and put it back in the freezer.

Part of the trick is actually seeing our habits as such. Routine actions can be so ingrained, we continue to take them, even when they don't make sense. At the University of Southern California, psychology professor Wendy Wood conducted a study in which she gave moviegoers old, stale popcorn that had been kept in plastic bags. Those who didn't have the habit of eating movie popcorn ate a handful or two, but since it didn't taste good, they stopped eating. Habitual popcorn eaters at the movies, meanwhile, dug right in. "They told us they didn't like it, but they still ate it," says Wood. "The habit was clearly cued by the environment."

The study also demonstrates the trade-off in habit performance. On the one hand, habits are reliable and consistent, which frees us up to think about more important things. On the other, "You're not asking yourself, 'Is this something I want to do?'" Wood says. "Instead, you just find yourself doing it."

A habit has three components, says [Charles Duhigg](#), a *New York Times* reporter and author of *The Power of Habit*. There's the cue, which is the trigger for an automatic behaviour to start. There's the routine, which is the behaviour itself. Last, there's the reward, which is how one's brain learns to latch onto that pattern in the future. "When most people think about changing their habits, they just focus on the behaviour," he says. "What studies have shown is it's really diagnosing and understanding the cue and the reward that gives you the ability to shift automatic behaviour."

Duhigg had a bad habit of going to his work cafeteria every afternoon for a chocolate-chip cookie. The daily snack caused him to put on eight pounds, so he decided to study his craving. It happened consistently around 3 p.m. That was his cue: the time of day. His routine was straightforward. He got up from his desk, went to the cafeteria, grabbed a cookie and chatted with his colleagues while eating it. Figuring out the reward he was seeking took some trial and error. "Is it that I'm hungry, in which case, eating an apple does the job?" he says. "Or a boost of energy, so coffee should work just as well?" Duhigg tried buying a candy bar and eating it at his desk. He tried going to the cafeteria, buying nothing, but socializing as he normally would. It became clear that

the reward was the social time. Now, he'll just get up and chat with a colleague for 10 minutes before going back to his desk. The cookie has become a thing of the past.

One of Rubin's bad habits was night snacking, so she developed the new habit of brushing her teeth right after dinner. "It signals to your brain, 'We're done here. The gates are coming down. The locks are on the doors,'" she says. Now the urge to snack at night is gone. The cue to snack has been disrupted by another habit. "People will say, 'Make healthy choices,'" Rubin says. "I would argue: Don't make healthy choices. Make one choice and then no more choosing."

And be patient. New habits, on average, take 66 days to form, according to research from University College London. Depending on the person and the habit, it can take months longer. Meanwhile, there are temptations. A mother says her child can't have a popsicle after soccer practice, but the child convinces her to make this time the exception. With enough persistence, the exception becomes the rule.

William James equated suffering each lapse in a good habit to dropping a ball of string. Every fall undoes enough string to require many turns to wind it back to where it was before. And loopholes come in many forms. There are moral licensing loopholes: giving ourselves permission to eat a bag of chips as a reward for losing pounds. Or false choices, such as avoiding the gym because there are so many emails to catch up on. "We are just masterful advocates for ourselves and why we should be off the hook," says Rubin, who lists 10 potential loopholes in her book, but adds she discovers more all the time. And yet, she says, by catching ourselves trying to use a loophole, we can choose to reject it. "Just spotting them is enough to disrupt their power."

Little fixes can make a big difference. Disorder in our lives can act as a "broken window," Rubin writes in her book, citing [the 1980s crime-prevention theory](#) that claimed communities that tolerated little things such as graffiti or the breaking of windows were more likely to attract more serious crimes. So what are the "broken windows" in our everyday lives? It could be letting the laundry pile up at home or having a cluttered desk. Making your bed each morning, Duhigg writes, is correlated with better productivity and an ability to stick to a budget. The bed-making itself doesn't lead to smarter shopping choices, but it lays the right foundation for other good habits.

The key is not to think about grand, sweeping changes, but rather, small ones. Fogg would say very, very small. Back at Stanford, Fogg used his research to develop the "Tiny Habits" formation by keeping it deliberately simple. It runs counter to the way we think about changing habits. No one tries to meditate for three breaths; it's often 15 or 30 minutes. Maybe we think aiming big is important because, that way, at least we'll do half of it. It turns out the exact opposite is true.

To build a habit, Fogg says, you use an existing routine, such as brushing your teeth, as the anchor. That anchor becomes the reminder. Next, you do an incredibly simple version of the target behaviour. If you want to develop the habit of flossing, you make your goal to floss one tooth. That's it. The habit isn't learning how to floss, because everyone knows how to do it. The habit, Fogg says, is remembering to do it. Then, the final step is to celebrate instantly. Maybe shout "Victory!" or think of the theme music to *Rocky*. "What you're doing is, you're hacking your emotional state," says Fogg. "You're deliberately firing off an emotion right after you floss." It sounds odd, especially because your fingers are probably messy and your gums could be painful. But, says Fogg, "emotions create habits. The habits that form quickly in our lives have an instant emotional payoff."

For Tony Stubblebine, a self-described "human potential nerd," that emotional payoff comes from productivity. It's the reason he wears the same style of shirt every day. He only buys one type of socks. "I think you have to have a lot of time to dress like [rapper] André 3000," he says. Very

much influenced by Fogg's research, Stubblebine founded coach.me, an app that promotes developing habits. Users can choose a goal and set up free or paid coaching help—such as reminders, Q&As or a personal coach—and track their progress. Need extra encouragement? A daily check-in from a coach, for example, will cost \$15 a week, while phone or video consultations have varying prices depending on the coach. The coach.me app has more than one million users, Stubblebine says, and no habit is too small. That includes flossing, as one journalist from *Wired* magazine, who hired a flossing coach, found out. “I feel like I want a keynote at the American Dental Association, we've helped so many people floss,” Stubblebine says.

Jo Masterson's My Pocket Coach app offers a similar service. When users choose a goal to lose weight, the app will prompt them with smaller habits to try. Take the stairs, drink water after each meal, or use smaller plates. “We're simply a tool to help them track their progress and remind them if they get off-track,” says Masterson, who is COO and co-founder of 2Morrow, the parent company. “We're not trying to be the cue for them.” That's important—otherwise, says Wood, “what you're doing is you're developing a coach habit, not a behaviour habit.”

We all have habits; companies have figured this out. “That's why every soup can looks the same and is red. Everyone is trying to piggyback on the Campbell's soup can,” Wood says. “They figured out that shoppers go into stores and just look for the red can, so all the competitors make their cans red to trigger the same habitual buying.”

Similarly, when psychology students at the University of British Columbia used hidden cameras to compare students' recycling habits in two campus cafeterias—one caf was in a “green building,” the other in the dingy, old student union building—they found those in the former were more likely to recycle.

Convenience has a major influence on our choices. It's the reason hotels have mini-bars or leave the overpriced chocolate bars on the counter in plain sight. The converse strategy, for individuals, is to make bad choices harder. Regret pushing the snooze button on the alarm clock each morning? Put the alarm clock on the other side of the room. And, no matter the routine, it's only a habit if it actually sticks. That's the reason Rubin thinks timed habit changes—the 30-day detoxes or the year without sugar—can be dangerous. “Why a year? And what happens in month 13?” she says. “You need to have a plan for that.”

Rubin identifies four broad tendencies when it comes to adopting behaviours: Upholder, obliger, questioner and rebel.

Upholder: ‘I do what others expect of me—and what I expect from myself’

Obliger: ‘I do what I have to do. I hate to let others down, but I often let myself down.’

Questioner: ‘I do what I think is best, according to my judgment. If it doesn't make sense, I won't do it.’

Rebel: ‘I do what I want, in my own way. If you tell me to do something, I'm less likely to do it.’

Autoweek

Jay Leno hates ethanol

Can't we just get rid of ethanol?

by Jay Leno



Leno suggests you actually check out what you put in your favorite ride.

There have been a lot of old-car fires lately. I went through the '70s, the '80s and most of the '90s without ever having read much about car fires. Suddenly, they are happening all over the place. Here's one reason: The ethanol in modern gasoline—about 10 percent in many states—is so corrosive, it eats through either the fuel-pump diaphragm, old rubber fuel lines or a pot metal part, then leaks out on a hot engine ... and ka-bloooooie!!!

As someone who collects old cars, and keeps them up religiously, I am now replacing fuel-pressure regulators every 12 to 18 months. New cars are equipped with fuel lines that are resistant to ethanol damage, but with older cars, the worst can happen—you're going down the road, and suddenly your car is on fire.

There's more. I find that gasoline, which used to last about a year and a half or two years, is pretty much done after a month or so these days. If I run a car from the teens or '20s and fill it up with modern fuel, then it sits for more than two months, I often can't get it to start.

Ethanol will absorb water from ambient air. In a modern vehicle, with a sealed fuel system, ethanol fuel has a harder time picking up water from the air. But in a vintage car, the water content of fuel can rise, causing corrosion and inhibiting combustion.



Ethanol is a solvent that can loosen the sludge, varnish and dirt that accumulate in a fuel tank. That mixture can clog fuel lines and block carburetor jets.

It gets worse. Ethanol is a solvent that can loosen the sludge, varnish and dirt that accumulate in a fuel tank. That mixture can clog fuel lines and block carburetor jets.

Blame the Renewable Fuel Standard. This government-mandated rule requires certain amounts of ethanol and other biofuels be blended with gasoline and diesel fuel. But when Congress first passed RFS as part of the Energy Policy Act in 2005, our demand for energy was increasing. Today, it's the opposite. Total demand for fuel has decreased thanks to more-efficient vehicles, more hybrids and increased environmental awareness. The EPA is set to release the 2015 standard in June. Meanwhile, some legislators are pushing to reform or eliminate the Renewable Fuel Standard entirely.

I just don't see the need for ethanol. I understand the theory—these giant agri-business companies can process corn, add the resulting blend to gasoline and we'll be using and importing less gasoline. But they say this diversion of the corn supply is negatively affecting food prices, and the ethanol-spiked gas we're forced to buy is really awful.

The big growers of corn have sold us a bill of goods. Some people are making a lot of money because of ethanol. But as they divert production from food to fuel, food prices inevitably will rise. Now, if you don't mind paying \$10 for a tortilla ...

Comedian and car guy Jay Leno lets us back into his garage this week to look at his fully restored 1972 Mercedes-Benz 300 SEL 6.3. Leno was going to customize the 300 SEL by adding the 563-hp, ...

Last week, I went to start up one of my Duesenbergs. When I pulled out of the spot where it had been parked for about a month, I saw a huge pool of gas. I looked at it while it was running and saw gas just pouring out. "OK, I've got to buy another fuel regulator." I pulled it out and opened it up. The fiber diaphragm was eaten right through. Should manufacturers make diaphragms for old cars out of modern materials

like Viton or Teflon? Yes, they should, but not all of them do. Consequently, your chances of a fire remain.

Here's another problem: When you have vehicles with fuel cells in their gas tanks, ethanol tends to eat the coating out of the fuel cell. If you have an old motorcycle and redo the fuel tank, the first thing you do is seal the tank with some sealant. It's generally a cream or a gray color, and it looks like you painted the inside of the tank. On a lot of my bikes now, I'll open the gas tank and I'll go in with a long set of tweezers. I'm pulling out sheets of this coating. Really, it comes out in 6-inch strips.

The ethanol is just eating it up and clogging the fuel pump because it'll move around as a sheet of material and block the opening. With cars like my McLaren F1, if I buy a 55-gallon drum of VP racing gas, the fuel cell will last twice as long.

It's time for us as automobile enthusiasts to dig in our heels and start writing to our congressmen and senators about the Renewable Fuel Standard, or we'll be forced to use even more ethanol. Most people assume, "Oh, that'll never happen. They'll never do that." Remember prohibition? In 1920, all the saloons were closed. It took until 1933 before legal liquor came back.

Most people don't really look at what goes into their car. Obviously, the days of high-octane gas like Sunoco 260 are long gone. Those of us with older vehicles are the ones who end up paying the price. The car manufacturers don't care. They don't mind if your vintage car burns up or breaks down. They want to sell you a new one. It's hard for enthusiasts. We really have nowhere to go.

So write those letters, but I also suggest you drain and clean your old car's fuel tank, use a quality fuel-tank sealer that's impervious to ethanol, replace fuel filters, keep all the screens clear and use a fuel stabilizer (added to a full fuel tank), if your car is to be stored for the winter season.

Oh, and keep a fire extinguisher handy.

Scientific American

[Solar Plane Takes Flight to Circle Globe in 180 Days \[in Photos\]](#)

Advanced aircraft flies around the world on a wing and a sunbeam

by David Biello



The Solar Impulse 2 will attempt to fly around the world powered solely by electricity generated with sunshine.

A pioneering flight around the world will use [nothing but sunshine for fuel](#). In the dusty peach dawn of a desert day the Solar Impulse 2 airplane took flight at 11:12 PM Eastern time on March 8 from the United Arab Emirate of Abu Dhabi on the first leg of a bid to [fly around the world](#) exclusively powered by electricity generated from sunlight.

At a top speed of 45 kilometers-per-hour the single-seat airplane flew to Muscat in neighboring Oman over roughly 10 hours, touching down at roughly 2:13 PM Eastern time, after a few hours spent circling and waiting for the right weather conditions to land. The plane is an upgraded version of the original Solar Impulse, which [flew across the U.S.](#) in 2013; both planes were built by the Solar Impulse group, led by Swiss adventurers Bertrand Piccard and Andre Borschberg.



Borschberg piloted this first leg of at least 12 that will circle the planet, and either he or Piccard will pilot all of the various legs over the next several months. The 10-hour flight did not require some of the exotic meditation, yoga and self-hypnosis techniques that will be required for later, much longer legs, including at least five days and nights as the plane crosses portions of the massive Pacific Ocean. Twenty-minute naps will have to do for refreshment during those epic treks, and a computer system—plus light-flashing goggles—will be in place to wake the pilot should something untoward occur. In fact, the pilot will wear an armband that vibrates whenever the airplane exceeds more than 5 degrees of bank angle, because anything beyond that could cause the airplane to lose lift. The pilot will also be crammed into an unheated, unpressurized cockpit of 3.8 cubic meters, room enough for little more than a reclining couch seat, which also has a removable bottom for a toilet. For the flights across the U.S., the pilots had to rely on [empty water bottles and will power](#).



The plane itself is a marvel of engineering, with a 72-meter wingspan—longer than that of a Boeing 747.



The primary structural component is carbon-fiber sheets that weigh just 25 grams per square meter, or roughly three times lighter than a similar sized piece of paper. That carbon fiber is used sparingly in structural spots where forces push on the airplane. But the interior of the wings, the fuselage and other areas are empty to save even that tiny bit of weight, co-pilot Piccard explained.



Atop those wings as well as on the body and even the tail of the plane are 17,248 solar cells as thin as a human hair that generate electricity as the plane flies, some of which is stored in four [lithium polymer batteries](#). Those batteries take over powering the plane's four electric motors at night, which spin the two propellers under each wing. All told the plane weighs 2,300 kilograms and the four batteries are the heaviest passengers, weighing in total 633 kilograms. Making the plane required 12 years of calculations, computer simulations, building and testing, according to Piccard, along with some \$140 million.



During a full day's flight the airplane will climb as high as 8,500 meters by mid-afternoon before coasting down slowly at 15 meters per minute to a low altitude of 1,500 meters at night. That plan saves energy before the next dawn by gliding instead of using powered flight. Piccard and Borschberg used a similar strategy on the flights across the U.S. The two adventurers hope to raise awareness that such [pollution-free flight is possible](#) and to inspire incorporation of solar materials into more common aircraft and elsewhere. "All the technologies we are using on this plane could be used everywhere," Piccard said.

After a brief pit stop in Muscat, the plane will cross the Arabian Sea for Ahmedabad, India, on the morning of March 10, weather permitting. For all its engineering marvels, the plane is not built to cope with inclement weather. The itinerary also includes stops in Mandalay, Myanmar; Chongqing and Nanjing in China; as well as Hawaii, Arizona and New York City among other destinations. All told, the airplane will cover some 35,000 kilometers before touching back down in Abu Dhabi in about five months, again depending on weather and other delays. All of those kilometers of flight will be [powered by photons](#) from the sun. "We are not in a hurry, you know," Piccard said. "This plane is more about demonstrating the incredible that is possible rather than speed to destination."



WSJ

[A Sailor's Salary: \\$300,000, If He Works for Larry Ellison](#)

Lawsuit sheds light on America's Cup spending by Oracle founder

by Stu Woo and Aaron Kuriloff



Oracle Team USA during the 2013 America's Cup, which it won in a dramatic comeback.

A lawsuit against [Larry Ellison](#)'s sailing squad, which has led to the seizure of one of his million-dollar boats, is also revealing how much the [Oracle Corp.](#) founder is willing to spend to win the America's Cup: \$300,000 a year for a rank-and-file sailor.

The litigation is the latest in a series of legal battles that have surrounded the billionaire's sailing successes.

On Monday morning, two federal marshals walked into the San Francisco waterfront base of the sailing squad, Oracle Team USA, and seized three gray, whale-size containers holding the disassembled parts of a 45-foot-long, seven-story-tall yacht called an AC45, according to the plaintiff's lawyer and a U.S. Marshals spokesman.

The marshals tagged the three containers, which can't be moved until a judge issues a ruling on the seizure or allows the team to post a bond on the boat. The vessel, a smaller version of Oracle's victorious 72-foot-long boat in the 2013 America's Cup, is being held as a lien, or collateral, in the case. The plaintiff asked for the seizure.

The plaintiff is Joe Spooner, who spent a decade as an Oracle sailor until the team dismissed him in January. A 41-year-old New Zealand native, Spooner in February sued the team for \$725,000 in wages over a 2½-year span, as well as double-wage penalties, punitive damages and legal fees, alleging the squad wrongfully discharged him without cause.

A team Oracle spokesman declined to comment, citing pending litigation. A spokeswoman for Ellison, who is Oracle Corp.'s executive chairman, also declined to comment.

"It is a match race and Spooner has the lead at the first mark!!!!!" Patricia Barlow, Spooner's lawyer, said in a statement shortly after Monday's arrest of the Oracle yacht. A match race is a head-to-head contest between two competitors.

Court filings show that Spooner signed a contract with the Oracle team that would have paid him \$25,000 a month, which equates to \$300,000 a year, from July 2014 to the end of the next America's Cup, the world's most prestigious yacht race, which is scheduled to be held in Bermuda in 2017.

In Spooner's termination letter, team Oracle general manager Grant Simmer said Spooner asked for raise to \$38,000 a month to relocate from San Francisco to Bermuda. Simmer said in the letter that the team wasn't prepared to modify the squad's relocation policy specifically for Spooner, and that the team also declined to increase his pay.

"For these reasons, and in the light of the stated position that you will not otherwise relocate to Bermuda, this letter constitutes prior written notice of termination" of Spooner's contract, Simmer wrote.

Spooner was one of six grinders on the 11-man Oracle team that won the 2013 America's Cup. In sailing, grinders are the equivalent of football offensive linemen, cranking hand-powered winches to power a boat's hydraulics system. They are typically the lowest-paid members of a sailing team; the people who adjust the sails and helm the wheel can get paid double, or even more.

Oracle is the world's top sailing squad, having won the past two America's Cup contests, and Ellison has spent lavishly to retain the world's best yachtsmen. The managing director of Emirates Team New Zealand, the runner-up in the 2013 Cup, has estimated that his sailors got paid half as much as Oracle's, an appraisal that other sailing experts this week said sounded accurate.

Ellison spent at least \$115 million overall on his team's 2013 America's Cup campaign, the Oracle team's chief executive has said.

During Ellison's recent Cup victories, his lawyers have taken the field almost as often as his sailors. He first captured the 2010 Cup after a 2½-year legal battle over the competition's rules. Among other accusations, the Swiss team Alinghi alleged it caught a man who was hired by Ellison's crew to spy on Alinghi operations. An Oracle spokesman said at the time that those were trumped-up allegations that had nothing to do with the legal matter at hand.

Another team Oracle grinder, Matt Mitchell, has sued the team for \$68,000 in legal fees that he said he accumulated while fighting allegations that he helped alter an Oracle racing boat in preliminary competition before the 2013 Cup. An Oracle team spokesman declined to comment.

An international jury had concluded that Oracle was guilty of making illegal modifications to the boat and forced the team to start the first-to-nine-wins 2013 Cup races with negative-two victories. On the brink of defeat, Oracle ended up winning the final eight races of the 2013 contest to stage one of the most dramatic comebacks in sports history.

Australian Geographic

[The 10 most destructive tsunamis in history](#)

Here are the ten biggest tsunamis in recorded history, ranked by the devastation they wrought.

by Campbell Phillips

THE EARTHQUAKE AND SUBSEQUENT tsunami that [devastated Japan](#) have shown just how vulnerable modern society is to the power of Mother Nature. While [tsunamis](#) were largely unknown to the wider public before the hugely destructive 2004 [Boxing Day Tsunami](#), they have occurred many times in the past.

Tsunamis can be generated by any significant displacement of water in oceans or lakes, though are most commonly created by the movement of tectonic plates under the ocean floor, during an [earthquake](#). But they can also be caused by volcanic eruptions, glacial carving, meteorite impacts or landslides.



[Amazing video of the Japan tsunami](#)

Tsunamis: Larger tsunamis don't always cause the most destruction

Tsunamis have occurred often throughout history. So frequently in Japan, in fact, that they invented the word specifically for the phenomenon: '*tsu*' meaning harbour and '*nam*' meaning wave.

"It's actually quite frightening to think that this [Japanese tsunami] event is smaller than the 2004 Indian Ocean tsunami, smaller even than the 1960 Chilean tsunami, yet the damage to Japan's people and economy is still profound," says Professor James Goff, co-director of the Australian Tsunami Research Centre and Natural Hazards Research Lab at the University of New South Wales. "It's a horrendous tragedy, caused by a completely unpredictable event."

Because little historical data exist on the size of tsunami waves, how many occur in one event, or how far they advance on shore, scientists rank them according to how much damage they wreak. However, assessing just how much damage a single tsunami event causes may take many months to years; and it may be some time before the [Japan earthquake and tsunami](#) can be truly rated on a historical scale.

10 WORST TSUNAMIS

1. Sumatra, Indonesia - 26 December 2004

The 9.1 magnitude earthquake off the coast of Sumatra was estimated to occur at a depth of 30 km. The fault zone that caused the tsunami was roughly 1300 km long, vertically displacing the sea floor by several metres along that length. The ensuing tsunami was as tall as 50 m, reaching 5 km inland near Meubolah, Sumatra. This tsunami is also the most widely recorded, with nearly one thousand combined tide gauge and eyewitness measurements from around the world reporting a rise in wave height, including places in the US, the UK and Antarctica. An estimated US\$10b of damages is attributed to the disaster, with around 230,000 people reported dead.

2. North Pacific Coast, Japan - 11 March 2011

A powerful [tsunami](#) travelling 800km per hour with 10m-high waves swept over the east coast of Japan, killing more than 18,000 people. The tsunami was spawned by an 9.0 magnitude earthquake that reached depths of 24.4km- making it the fourth-largest earthquake ever recorded. Approximately 452,000 people were relocated to shelters, and still remain displaced from their destroyed homes. The violent shaking resulted in a nuclear emergency, in which the Fukushima Daiichi nuclear power plant began leaking radioactive steam. The World Bank estimates that it could take Japan up to five years to financially overcome the \$235 billion damages.

3. Lisbon, Portugal - 1 November 1755

A magnitude 8.5 earthquake caused a series of three huge waves to strike various towns along the west coast of Portugal and southern Spain, up to 30 m high, in some places. The tsunami affected waves as far away as Carlisle Bay, Barbados, where waves were said to rise by 1.5 m. The earthquake and ensuing tsunami killed 60,000 in the Portugal, Morocco and Spain.

4. Krakatau, Indonesia - 27 August 1883

This tsunami event is actually linked to the explosion of the Krakatau caldera volcano. Multiple waves as high as 37 m were propagated by the violent eruptions and demolished the towns of

Anjer and Merak. The sea was reported to recede from the shore at Bombay, India and is said to have killed one person in Sri Lanka. This event killed around 40,000 people in total; however, as many as 2,000 deaths can be attributed directly to the volcanic eruptions, rather than the ensuing tsunami.

5. Enshunada Sea, Japan - 20 September 1498

An earthquake, estimated to have been at least magnitude 8.3, caused tsunami waves along the coasts of Kii, Mikawa, Surugu, Izu and Sagami. The waves were powerful enough to breach a spit, which had previously separated Lake Hamana from the sea. There were reports of homes flooding and being swept away throughout the region, with a total of at least 31,000 people killed.

6. Nankaido, Japan - 28 October 1707

A magnitude 8.4 earthquake caused sea waves as high as 25 m to hammer into the Pacific coasts of Kyushyu, Shikoku and Honshin. Osaka was also damaged. A total of nearly 30,000 buildings were damaged in the affected regions and about 30,000 people were killed. It was reported that roughly a dozen large waves were counted between 3 pm and 4 pm, some of them extending several kilometres inland at Kochi.

7. Sanriku, Japan - 15 June 1896

This tsunami propagated after an estimated magnitude 7.6 earthquake occurred off the coast of Sanriku, Japan. The tsunami was reported at Shirahama to have reached a height of 38.2 m, causing damage to more than 11,000 homes and killing some 22,000 people. Reports have also been found that chronicle a corresponding tsunami hitting the east coast of China, killing around 4000 people and doing extensive damage to local crops.

8. Northern Chile - 13 August 1868

This tsunami event was caused by a series of two significant earthquakes, estimated at a magnitude of 8.5, off the coast of Arica, Peru (now Chile). The ensuing waves affected the entire Pacific Rim, with waves reported to be up to 21 m high, which lasted between two and three days. The Arica tsunami was registered by six tide gauges, as far off as Sydney, Australia. A total of 25,000 deaths and an estimated US\$300 million in damages were caused by the tsunami and earthquakes combined along the Peru-Chile coast.

9. Ryuku Islands, Japan - 24 April 1771

A magnitude 7.4 earthquake is believed to have caused a tsunami that damaged a large number of islands in the region; however, the most serious damage was restricted to Ishigaki and Miyako Islands. It is commonly cited that the waves that struck Ishigaki Island was 85.4 m high, but it appears this is due to a confusion of the original Japanese measurements, and is more accurately estimated to have been around 11 to 15 m high. The tsunami destroyed a total of 3,137 homes, killing nearly 12,000 people in total.

10. Ise Bay, Japan - 18 January 1586

The earthquake that caused the Ise Bay tsunami is best estimated as being of magnitude 8.2. The waves rose to a height of 6 m, causing damage to a number of towns. The town of Nagahama experienced an outbreak of fire as the earthquake first occurred, destroying half the city. It is

reported that the nearby Lake Biwa surged over the town, leaving no trace except for the castle. The Ise Bay tsunamis caused more than 8000 deaths and a large amount damage.

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BBC News

Regular coffee drinkers have 'cleaner' arteries

by Michelle Roberts

Drinking a few cups of coffee a day may help people avoid clogged arteries - a known risk factor for heart disease - Korean researchers believe.

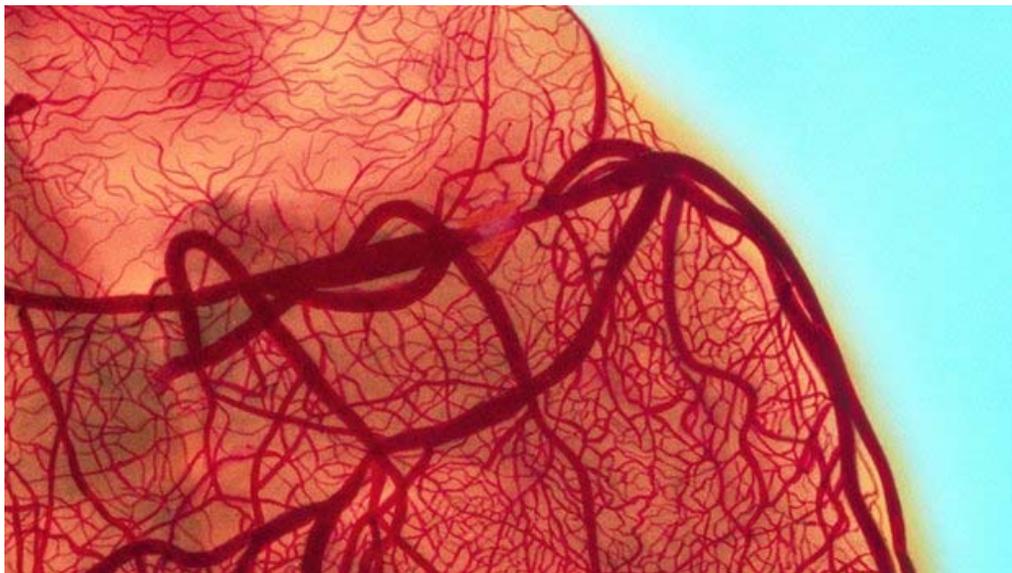
They studied more than 25,000 male and female employees who underwent routine health checks at their workplace.

Employees who drank a moderate amount of coffee - three to five cups a day - were less likely to have early signs of heart disease on their medical scans.

[The findings](#) reopen the debate about whether coffee is good for the heart.

Heart effects

There is a lot of confusion when it comes to the effect of coffee on heart health.



In heart disease, the arteries supplying the heart muscle can become blocked

Some studies have linked consumption to heart risk factors, such as raised cholesterol or blood pressure, while others suggest the beverage may offer some heart protection.

But there is no conclusive evidence either way, and the latest research from South Korea, which is published in the journal *Heart*, only adds to the discussion.

Unexplained link

In the study, the researchers used medical scans to assess heart health.

Specifically, they were looking for any disease of the arteries supplying the heart - the coronary arteries.

In coronary heart disease, the coronary arteries become clogged by the gradual build-up of fatty material within their walls.

The scan the researchers used looks for tiny deposits of calcium in the walls of the coronary arteries to provide an early clue that this disease process may be occurring.

None of the employees included in the Korean study had outward signs of heart disease, but more than one in 10 of them were found to have visible calcium deposits on their scans.

The researchers then compared the scan results with the employees' self-reported daily coffee consumption, while taking into account other potential heart risk factors such as smoking, exercise and family history of heart problems.

People who drank a few cups of coffee a day were less likely to have calcium deposits in their coronary arteries than people who drank more than this or no coffee at all.

The study authors say more research is needed to confirm and explain the link.

Coffee contains the stimulant caffeine, as well as numerous other compounds, but it's not clear if these might cause good or harm to the body.

Victoria Taylor of the British Heart Foundation said: "While this study does highlight a potential link between coffee consumption and lower risk of developing clogged arteries, more research is needed to confirm these findings and understand what the reason is for the association.

"We need to take care when generalising these results because it is based on the South Korean population, who have different diet and lifestyle habits to people in the UK."

How much caffeine?



- In the US, experts say up to 400mg a day appears to be safe for most healthy adults
- There is no recommended daily upper limit for caffeine consumption in the UK, except for pregnant women
- If you're pregnant, you should limit the amount of caffeine you have to 200mg a day - equivalent to two mugs of instant coffee
- one mug of instant coffee: 100mg
- one mug of filter coffee: 140mg
- one mug of tea: 75mg
- one can of cola: 40mg
- an espresso contains about 50mg of caffeine
- [Coffee shop caffeine levels vary widely](#)

Machines Like Us

High levels of vitamin D is suspected of increasing mortality rates

The level of vitamin D in our blood should neither be too high nor too low. Scientists from the University of Copenhagen are the first in the world to show that there is a connection between high levels of vitamin D and cardiovascular deaths.

In terms of public health, a lack of vitamin D has long been a focal point. Several studies have shown that too low levels can prove detrimental to our health. However, new research from the University of Copenhagen reveals, for the first time, that also too high levels of vitamin D in our blood is connected to an increased risk of dying from a stroke or a coronary.

The results have just been published in the world-renowned *Journal of Endocrinology and Metabolism*.

"We have studied the level of vitamin D in 247,574 Danes, and so far, it constitutes the world's largest basis for this type of study. We have also analysed their mortality rate over a seven-year period after taking the initial blood sample, and in that time 16,645 patients had died. Furthermore, we have looked at the connection between their deaths and their levels of vitamin D", Professor at the Department of Clinical Medicine, Peter Schwarz explains.

A clear conclusion

The conclusion is clear: the study confirms that there is indeed a correlation between mortality rates and too low levels of vitamin D, but the new thing is that the level of vitamin D can also be too high.

"If your vitamin D level is below 50 or over 100 nanomol per litre, there is an greater connection to deaths. We have looked at what caused the death of patients, and when numbers are above 100, it appears that there is an increased risk of dying from a stroke or a coronary. In other words, levels of vitamin D should not be too low, but neither should they be too high. Levels should be somewhere in between 50 and 100 nanomol per litre, and our study indicates that 70 is the most preferable level", Peter Schwartz states.

That having too much vitamin D in our blood can be bad for our health has never been proven before, and it may have great influence on our future intake of nutritional supplements.

"These are very important results, because there is such great focus on eating vitamin D. We should use this information to ask ourselves whether or not we should continue to eat vitamins and nutritional supplements as if they were sweets. You shouldn't simply up the dose to feel better. We should only consume such vitamins in close coordination with our GP", Peter Schwartz concludes.

You can read the scientific article in the *Journal of Endocrinology and Metabolism* [here](#).



NEW YORK POST Just a Buck!

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DELETER OF THE FREE WORLD

Hillary reveals she erased 30,000 e-mails

Hillary Rodham Clinton definitely said yesterday that she deleted more than 30,000 "personal" e-mails from her tenure as secretary of state — and won't allow access to the private computer server she used to send them.

FULL STORY & PODHORETZ: PAGES 8-9

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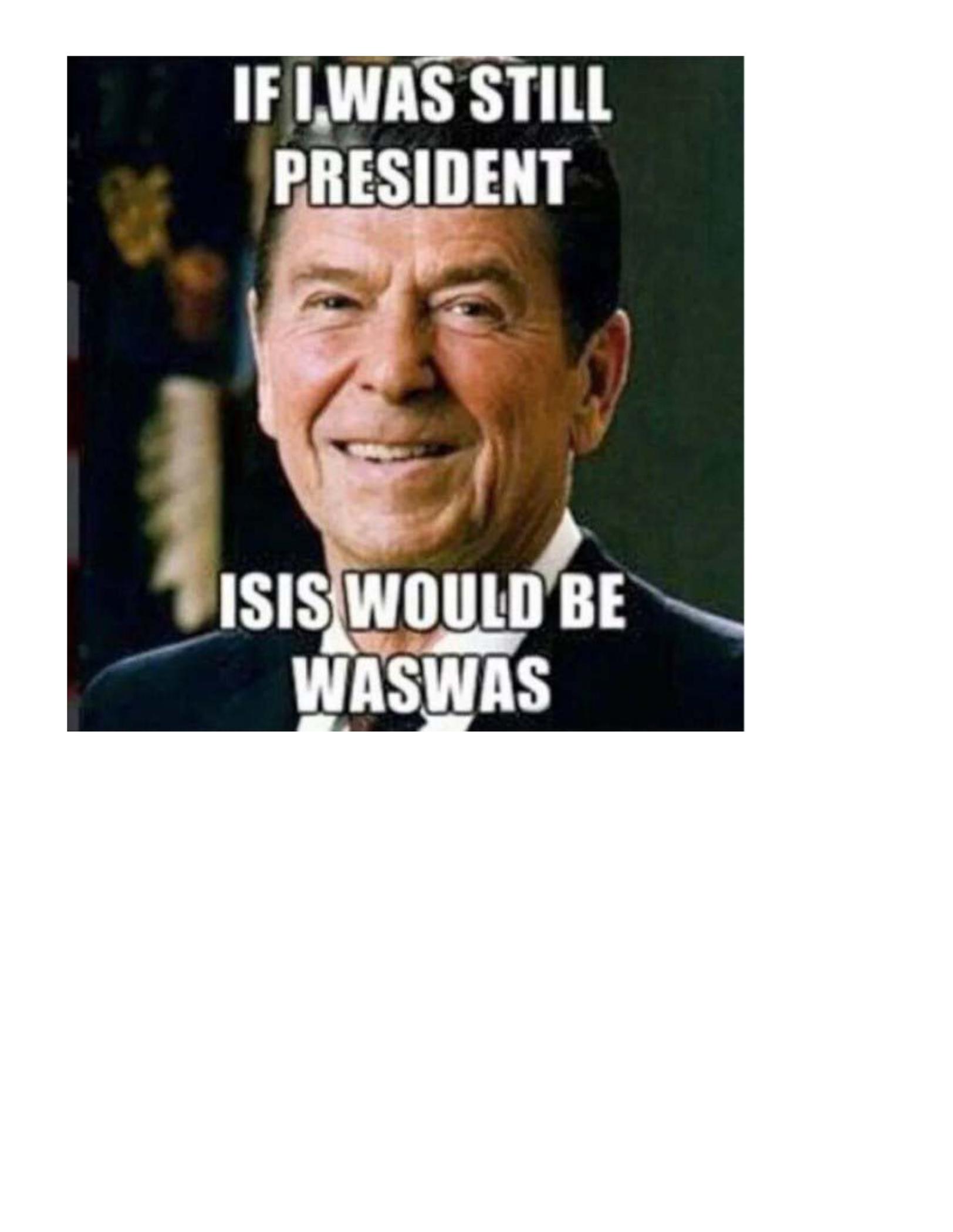
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PANTSUIT
ON FIRE...

A meme featuring a portrait of Donald Trump. The text is overlaid on the image in a white, bold, sans-serif font with a black outline. The top text reads "IF I WAS STILL PRESIDENT" and the bottom text reads "ISIS WOULD BE WASWAS".

**IF I WAS STILL
PRESIDENT**

**ISIS WOULD BE
WASWAS**