

Science Read

Career Guidance

Interesting Science

Real Life Application

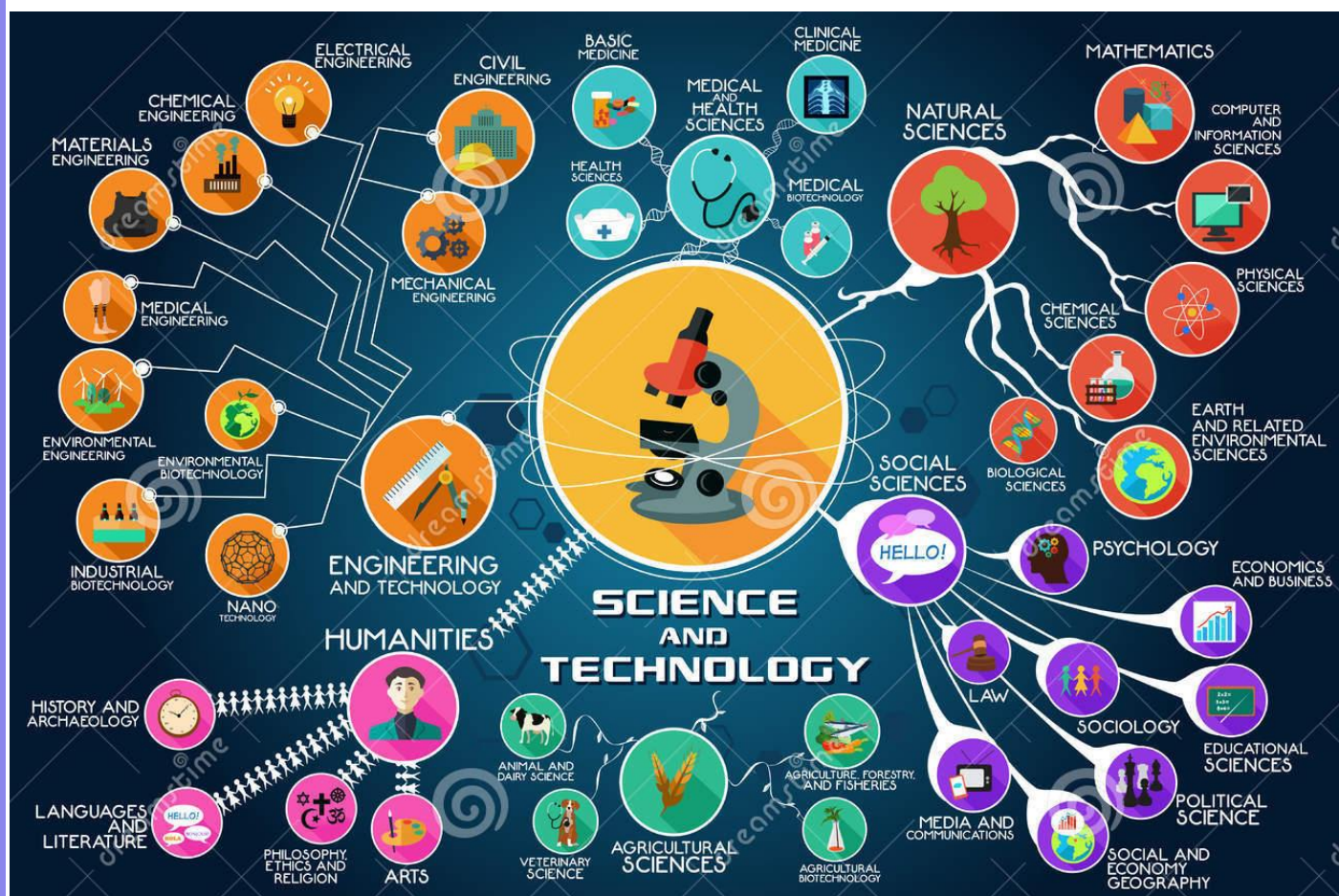
Real Time News

SCIENCE IS EVERYWHERE / BAD SCIENCE IS EVERYWHERE

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I am no expert, but even I can see that from the moment you get up in the morning until the moment you nod off to sleep at night, science plays a huge part in your daily life.



What is the first thing that happens to you every day? You are jolted awake by the alarm on your clock radio? The digital display, the **jarring** and the buzzing, that is science. Even if you have set the controls so that you are woken up by a soothing song on the radio, how do you think that song reaches you? Through radio waves (discovered by scientists) transmitted from broadcast towers (designed by scientists). Even the DJs at the radio station are hitting all kinds of colourful buttons and knobs and levers, just like scientists are known to.

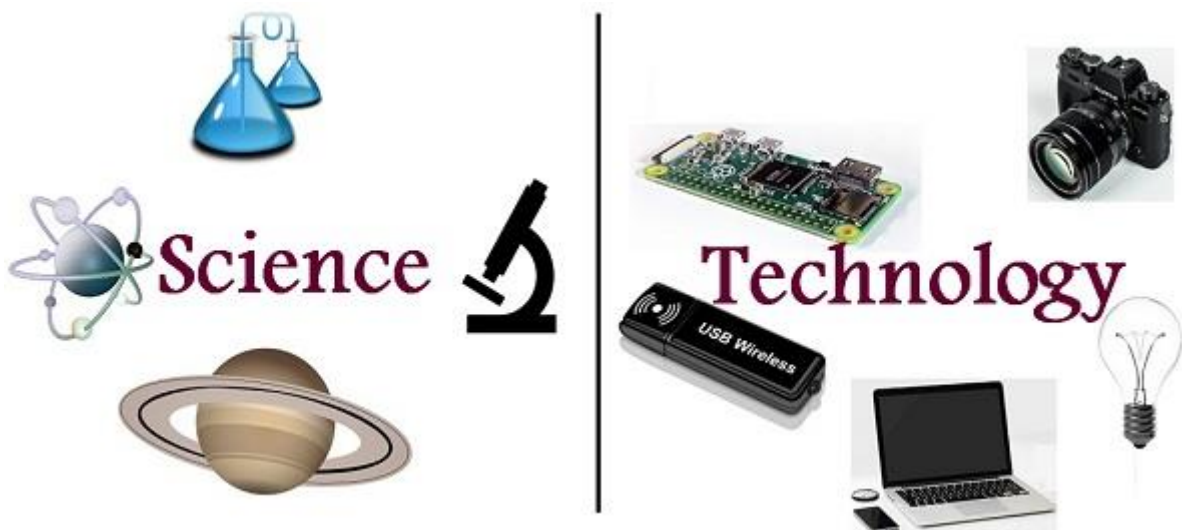
Anyway, now that you are up, what is there for breakfast? Toast, of course. And just what do you think transforms that bland slice of bread into your delicious morning toast? Science again, this time in the guise of your harmless looking toaster transforming electrical energy to thermal energy.

Is it beginning to dawn on you yet? Science is everywhere. It is inescapable.

It is with you as you iron your pants for work, as you run the electric razor over your face, as you slip in your contact lens. I would not be surprised if there is even some complicated scientific term to describe the way water comes out of your shower head — The **Cascade** Effect or osmosis or something.

Now that your morning routine is over, it is time to head off to work, but do not assume you are

leaving science behind. No, it is right there with you during your commute, in the form of the internal combustion engine and **intermittent** wipers and traffic lights that direct your every move because you, me, all of us, we are just normal people compared to this **omnipotent** god called science. And a lot of these traffic lights nowadays come equipped with spy cameras, letting them see the expression on your face as you pass by, so you had better put on a fake smile and pretend nothing is wrong, even though everything you see around you says otherwise.



And then there is the office itself: computers and faxes and copiers, and even the clunky old vending machine in the break room surely works on one form of mechanical principle or another. Also, has it not short-changed you on occasion?

But wait. Maybe everything is not as bad as it seems. Your co-workers have gotten you a birthday card. Maybe for just a few minutes you can put all these disturbing thoughts out of your head. But

what is this? When you open the card, it spits a silly little tune right in your face. Even here, in the kindest and most basic of gesture, science. What can you do except put on that fake smile again and pretend nothing is wrong even as you run out of the office screaming?

But is there any relief when you get home? Do not count on it. You have to microwave your dinner and put clothes in the washer, and even if you successfully avoid the TV and cell phone and Electronic Battleship and retreat to the safety of a simple book, a western, set back in the good old days before science was everywhere, even here the bad guys are shooting at the good guys with bullets fired from a six-shooter through the science of **centrifugal** force or something.

So, now that I have opened your eyes, you can finally understand how hopeless the situation is. What is that, you say? You can always flee to the mountains and build a log cabin? No working technology, not even running water? You have done it? You have escaped from science?

Not a chance.

While you are out chopping wood, a jet flies high overhead. It is science, smugly looking down at you and laughing because it knows it is smarter than you, more powerful, better looking, superior in every conceivable way. And all you can do is put

on that fake smile of yours one last time and pretend that nothing is wrong and calmly throw yourself off the nearest cliff in what scientists would call Einstein's First Law of Thermodynamics, or something.

"Bad Science" Is Everywhere.

The old adage "Don't believe everything you read" has perhaps never been more relevant than it is right now. The internet is flooded with "fake news" disguised as solid scientific research, and it's led to a public that is **skeptical** of science.

It's hard to blame them, either. Pressure within the scientific community to produce headline-worthy results and secure **elusive** funding has led to a **proliferation** of poorly conducted studies plagued by conflicts of interest.

John Oliver pointed out several such examples in a 2016 episode of the HBO series *Last Week Tonight*, noting that a widely cited study on the health benefits of champagne didn't actually include any human participants, just rats. Another study targeted by Oliver claimed that driving while dehydrated was as dangerous as driving drunk — that one had a remarkably small sample size of just 11 men and was funded in part by Coca-Cola.

Meanwhile, the emergence of the 24-hour news cycle has left some journalists eager to publish

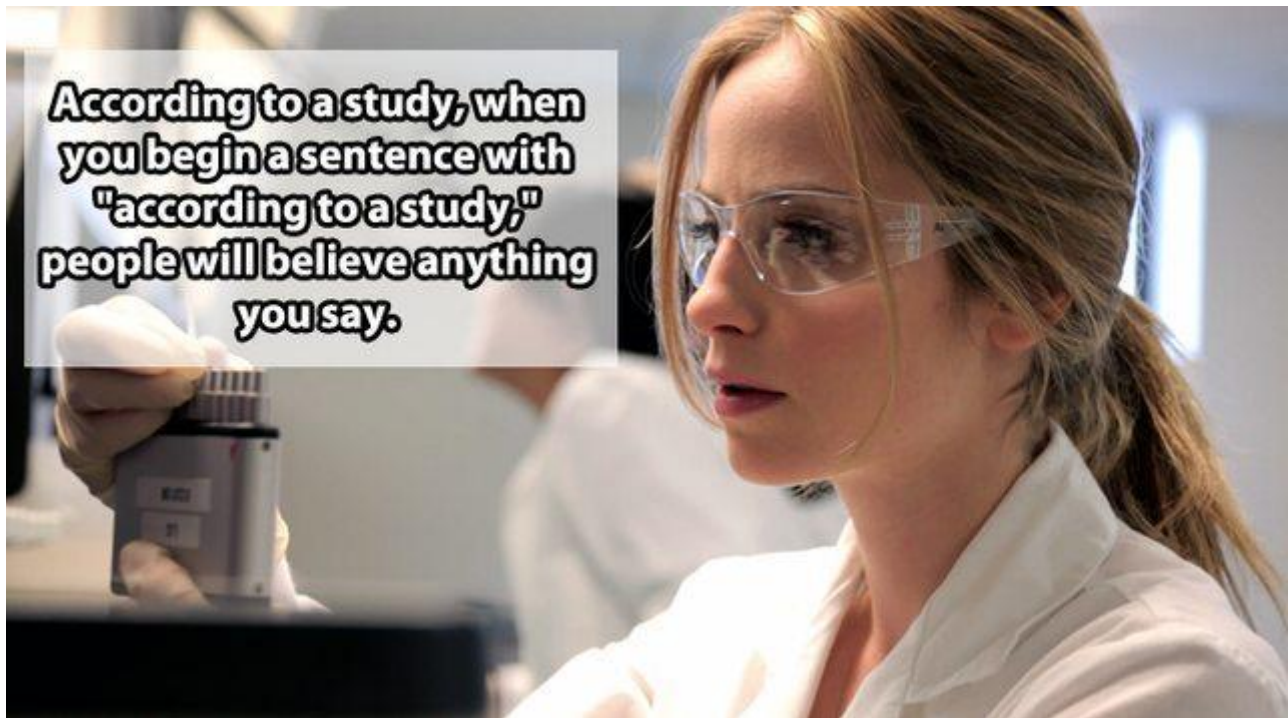
anything expected to generate interest, even if the science isn't sound.

For example, in 2015, the results of a "laughably flimsy" study designed specifically to expose the problem of bad science getting press landed on the front page of Europe's largest daily newspaper. The likely reason? It had a headline people would want to click on: chocolate accelerates weight loss.

The image shows a screenshot of a news article headline. The headline is "Chocolate accelerates weight loss: Research claims it lowers cholesterol and aids sleep". Below the headline is a sub-headline: "CAN you indulge your sweet tooth and lose weight? If it's chocolate that you crave than the answer seems to be yes." The author is listed as "By SARAH BARNES". The publication date is "PUBLISHED: 10:31, Mon, Mar 30, 2015 | UPDATED: 20:28, Sat, Apr 4, 2015". There are social media sharing buttons for "SHARE", "f" (Facebook), "TWEET" (Twitter), "g+" (Google+), an email icon, and a share icon. A "2K" counter is visible next to the share icon. There is also a comment icon with a "9" next to it. The background of the article is a light blue color.

The public's response to this complicated situation is troubling. Some people choose to assume all studies are untrustworthy rather than take over the media's role of determining which are actually worth consideration. Others just decide to believe the studies they want to believe, which is even worse, according to Oliver: "If you start thinking that science is à la carte and if you don't like it, another study will be along soon, that is what leads

people to believe man-made climate change isn't real."



A TEAM EFFORT

Thankfully, now that the problem of bad science has been identified, we can do something to solve it.

Change must often come from within, and to that end, scientists such as Brian Nosek are urging their colleagues to hold one another accountable. More than 270 researchers contributed to his Reproducibility Project, which aimed to verify the results of published psychology experiments to expose those backed by faulty science, and he has urged the community to increase transparency by keeping public logs of their experiments.

To prevent the spread of faulty studies that do make their way to the media, Facebook, a major source of false information disguised as fact, has begun telling users when links they're about to share are to "disputed" content, which could dramatically decrease the number of false science stories that go viral.



Meanwhile, new browser plugin Unpaywall gives anyone with internet access the ability to read pay walled research papers for free. This increases the amount of peer-reviewed (and more likely to be true) information available to the public — they just need to be willing to look for it.

Though these efforts aren't likely to get rid of **clickbait** disguised as science overnight, they will help stem the tide. The most important thing is for the public to remain skeptical, yet never **jaded**. Science can do amazing things, and every once in a while, a study that sounds too good to be true on the surface turns out to be a genuine breakthrough.

Power Words

Jarring – in a striking or shocking way

Cascade – anything that resembles a waterfall, especially in seeming to flow or fall in abundance

Intermittent – alternating stopping and starting again

Omnipotent – having very great power

Centrifugal – moving or directed outward from the centre

Skeptical – doubtful about a particular thing

Elusive – difficult to find

Proliferation – a rapid and massive spread

Clickbait – a sensationalised headline aiming to attract people

Jaded – worn out or overuse

Article adapted from:

<https://www.scq.ubc.ca/science-is-everywhere/>

<https://futurism.com/bad-science-everywhere-what-can-stop-spread/>