



The Lighthouse

BIWEEKLY

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The Gift of Knowledge: How Science was built on Sharing

Science has gotten a bad rap, over the years. And not without good reason. The very advent of Science is punctuated with a turbulent relationship with religion, first with Copernicus unseating Earth from the center of our solar system, Darwin unseating humans from the center of the Earth, and finally Hubble unseating our whole galaxy from the center of the universe.

Perhaps even more unsettling, we've since learned that the very particles that make up our universe can be in two places at once, that time itself slows down the faster we move through space, and that the *universe itself has no center.*

But more to the point, we ask: what has science really gotten us? We now have man-made viruses capable of causing global pandemics stored in poorly protected science labs all around the world. The incessant use of petrochemicals has completely upset the chemical balance of the natural world, affecting everything from our hormones to our weather patterns. We've created bombs that can level whole cities and leave an area uninhabitable for generations. And if any of this makes you depressed, we have doctors who will prescribe you anti-depressants that risk making you *more likely* to kill yourself.

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Artificial Scarcity

As we covered in *Flaws of Supply and Demand* (issue 5), the value of something in a system of trade or "exchange" is directly related to how **scarce** that resource is. If gold was as abundant as water, it would not be considered very valuable. That means the thing itself and the value it has to human life is almost irrelevant to the cost of the thing. And it means everyone has the incentive to decrease the supply of whatever it is they have to offer. This collective delusion creates a sort of manufactured environment where everything *feels* scarce. We covered some ways scarcity is

manufactured in previous issues, such as how Everything is Made To Break (issue 3), the Bulk Buy (issue 1), the loss of skills covered in Death of Craftsmanship (issue 3), and now business strategies such as Embrace, Extend, Extinguish - all of which manufacture the felt experience of scarcity despite the reality that there is no real resource limit deciding the price. But now we'll make this much less abstract by showing how ordinary businesses manufacture **artificial scarcity** in straight forward ways *everyday.* (continued on A2)

Dear Readers,

Comments, questions, or suggestions?
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Embrace, Extend, Extinguish!

In the 1990s, a landmark anti-trust case exposed Microsoft's true colors. But to understand the whole story, we have to go back to the very beginnings of the Internet.

The Internet was built on an ideal of sharing and collaboration. Fitting, because before the Internet went public it was essentially made to make it easier for scientists to easily publish and share scientific results globally for critique by the rest of the scientific community. This meant the open web standards we still use to this day were established before the corporations could get their grubby little hands on it.

Inspired by the sharing community of scientists, Tim Berners Lee invented the World Wide Web - the thing that runs in a web browser and allows anyone to easily create a website with the same open web standards as anyone else. It could have been that every webpage required an expensive license, or that one corporation acted as a gatekeeper deciding what could and couldn't be put on the Internet. But instead, in one of the most radical decisions in modern history, he gave it all away for free. Hyperlinks, HTML, and the HTTP protocol we use to access URLs. (continued on B2)

Artificial Scarcity (from cover)

One of the most interesting examples in the era of AI is the practice of disabling CPU cores on motherboards. The number of CPU cores a computer has is reflected in its price. But not everyone can afford a fancy high-end computer. This means the manufacturers have an incentive to create high-end and low-end computers to capture both markets. But in an interesting twist, companies discovered it was more expensive to create more assembly lines for computers with a different number of CPU cores. So what they did was used just one assembly line, creating identical computers with the same number of CPU cores, but then at the end of the line they effectively break one of the CPU cores in some boards. In the era of AI, with lofty claims of AI ending disease and solving climate change, it's especially weird to think of the thousands, if not millions, of CPU cores just sitting unused right under our nose. Who knows, if we just put all these unused CPUs together we might have solved cancer by now!

But this level of wastefulness is not confined to the tech industry. It's all industry. For instance, you've probably heard of dumpster diving. This is not as gross as it sounds. A lot of the time, there's perfectly clean, packaged food that doesn't expire until midnight. Or even food that isn't expired at all, but was just seasonal, or being rebranded. This tendency to throw away perfectly good food is pervasive across nearly every grocery store. Some stores even destroy the food by opening all the packaging and pouring bleach or coffee grounds all over it. But why? Why not give it away?

Perishables are one thing, with their own logic. But what about clothes? I once met a guy who worked at a thrift store, and he said it was his job to throw away clothes that they hadn't sold. Not only would he throw them in the dumpster, but he was instructed to actually take a pair of scissors and cut up the clothes so no one could get them for free. Which means the owner was simultaneously acknowledging that these clothes still had value to someone, and then ordering their employees to destroy that value so that it can't compete with their business.

Through the lens of business, everything is a threat. Not just competing businesses, but also any free resources which fill the same niche as your business. This is incredibly perplexing because we often donate clothes to thrift stores in order to give the clothes to someone in need. But they may just be cut up and thrown away so they can make more money by maintaining the scarcity of clothes. They can't sell any clothes if there's boxes full of free clothes on every corner, after all.

This is the logic of capitalism. To destroy abundance and restrict supply at every opportunity - even when it's a supply of free resources which your business didn't create.

Which brings us to housing. This same system of artificial scarcity is why we have **homelessness**. There's too few *affordable* houses, but there are plenty of empty houses. In fact, in the USA there's over 28 empty homes *per homeless person*. Many houses are just held off market to store value.
<https://unitedwaynca.org/blog/vacant-homes-vs-homelessness-by-city/>

It's this system of artificial scarcity that the Lighthouse aims to put an end to. So stay tuned to find out how!

Opensource Projects

We covered **Mozilla Firefox** already in issue 3. This week we're covering a similar project that uses the same Mozilla opensource license: **LibreOffice**.

As Microsoft's crusade against opensource continued, the well-known **Microsoft Office** took the stage. Not because it was the best, but because it was aggressively marketed to both students and businesses. Microsoft Office became ubiquitous among college students because it was given away to students and teachers for free, and was pre-installed on every Windows computer for a free trial period. Soon teachers and bosses alike considered it required software. But what both students and teachers didn't seem to realize was just how much the price of Office was artificially inflated outside of college.

In the era before subscription-based pricing, this meant Office became ubiquitous under the guise of being essentially free, only to realize later on that it cost up to \$300 or \$400 to buy it after college. Enter: **LibreOffice**

Program: LibreOffice
License: MPL v2 (+GPL v3)
Platforms: Windows, Mac, Linux
Website: libreoffice.org

Just as Firefox was built to bust Microsoft's browser monopoly, LibreOffice was built to bust the monopoly of Microsoft Office. And that it did. LibreOffice offers a full office suite — word processor, spreadsheet, powerpoint, and more — completely free, forever, with no subscription and no strings attached.

The Gift of Knowledge

(continued from cover)

And now with the advent of AI, we've truly opened Pandora's box, creating a technology that can think, act, replicate, and self-improve. A new technology which can itself invent even more new technology.

But in all the destabilizing confusion that science has caused, something has gotten lost. Science is not all of these things. Science is not the people who wield science. Science, like the universe, also has no center. Science does not belong to the ruling class, or even to academia. Science is just a process. The *scientific process*.

The Scientific Process:

1. Observe.
2. Record.
3. Hypothesis.
4. Test.
5. Repeat/Review.

What made science so powerful, from the beginning, was the ability of anyone and everyone to contribute to science. As Isaac Newton famously said, "*if I have seen further, it is by standing on the shoulders of giants*". A quote often used to this day to represent the collaborative nature of science. That every generation builds upon the knowledge and discoveries that came before. And in this process, perhaps the most important step of the scientific process is: 'peer-review'.

The practice of science, at its core, is fundamentally based on the **humility** to admit that we can be wrong. That the human mind plays tricks on us, that our tests could be poorly made, and our hypotheses could be disproven. And the only way we can truly find the truth in

the fog of human ego and cognitive biases is to publish our findings, and how we found them, and allow other scientists the opportunity to replicate our tests to either confirm or invalidate our findings.

This means science, by definition, **must be shared**. Not just the results, but the methodology, the test itself, and how and why the scientists arrived at their conclusions.

In fact, many of the problems attributed to science listed at the beginning of this article aren't science at all! The nuclear bomb was invented by a secret government program where most people didn't even know what they were working on, and whose secrets are closely guarded to this day. Pharmaceutical drugs are often created in similarly secretive environments, publishing their own curated test results for the FDA, often without any third party actually reproducing their tests. These things don't happen because of science itself, but because of those who seek profit and power at our expense. And now AI is being rapidly deployed without transparency, all of us test subjects.

Which brings us to the crux of the issue. The damaging outcomes of science are not due to the scientific process itself. They're caused by the unholy trinity of greed, cruelty, and stupidity. What science really is, is a model of discovering the truth. And we all know how the power structure feels about truth...

So even as scientists discover cheap energy, like the water-powered car, and Low Energy Nuclear Reactions, energy companies buy up the patents and bury the scientists. And even as scientists come to a de facto consensus on climate change, the

corporations, corrupt politicians, and marketing firms work tirelessly to try and convince us otherwise.

Yet, despite it all:

"The arc of the moral universe is long, but it bends toward justice."

- Martin Luther King Jr.

The same science that produced chemical weapons also eradicated smallpox, polio, and measles — diseases that once killed millions annually. And while propagandists try to convince us to destroy our own planet, scientists have pressed ahead inventing solar panels, high efficiency windmills, super conductor batteries, and carbon-capture technologies. Everything we need to live sustainably, if only permits and profits were not guarding the gates.

Discoveries like the fact that the Earth rotates around the sun took about 150 years to be accepted in mainstream society. Accepting the science on global warming has only taken us about 40 years. And perhaps most importantly, science has proven consistently that the **power of sharing** is not just an empty ideal, but a practical strategy towards finding the truth.

And it was this spirit of science, that truth can't be uncovered unless information is **shared**, that inspired the likes of the Internet, opensource, the whistle-blower movement, Linux and Wikipedia.

We know the science. We have the technology. All that needs to change, now, is our priorities as a society to apply sharing beyond the confines of information, and to no longer honor profit as our highest ideal.

Embrace, Extend, Extinguish

(from cover)

These open web standards are what makes it so easy for anyone to create their own web page. Now anyone could create a simple text file and type up some HTML. But the real benefit of creating these open web standards was the idea that when a company created their own **web browser**, they could make the browser follow the same standards as every other browser. This is what allows a website to look the same across various devices and web browsers to this very day.

And it was this egalitarian approach to the Internet that Microsoft set out to destroy. It's no secret that Microsoft dominated the operating systems market. In the early 2000s, Internet Explorer peaked at around 95% of the browser market. This meant Microsoft had significant leverage — and they used it.

During the lawsuit, it was revealed that Microsoft implemented a strategy they called "embrace, extend, extinguish". Here's how it works. First, they **embrace** the standards by creating a browser that works exactly as expected. Then, slowly but surely, they **extend** the functionality using proprietary HTML tags that weren't part of the web standards. Then, they **extinguish** the standard by phasing out certain standard functionality altogether.

In practice, what this did was break the Internet. A website built on open web standards no longer appeared to work on Microsoft's Internet Explorer. And since 95% of users were using Internet Explorer, this made it look like the website was broken, not the browser. Which put web developers in the frustrating position of catering to Microsoft even as it destroyed the open web.

This became known as the **Browser Wars**. Web Standards fought back, trying to implement special tags that basically detected which browser was being used to choose which version of the website to show. And web developers began having the taxing job of essentially creating a different web page for every browser at the same time.

Fortunately, the story doesn't end there. In 2004, built by a nonprofit, and founded on strictly opensource principles, **Firefox** was developed by people who genuinely believed the open web was worth fighting for. Millions of users switched, not because of marketing or because it came bundled with their operating system, but because it was simply better — faster, more secure, and built on the principle that the web belonged to everyone. And because of Firefox, Internet Explorer began to lose its leverage to this free alternative. The stage was set to rewrite and renew open standards.

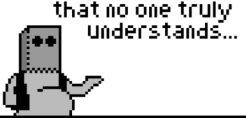
Then came HTML5 — a technical standards body who quietly hammered out a new version of HTML. **HTML5** arrived as a sweeping, community-driven overhaul of the very foundations of the web, baking rich multimedia, animation, and interactivity directly into the open standard. All the things Internet Explorer had tried to lock behind proprietary walls were now part of the web itself, freely available to all.

But what this story shows is not a single historical anecdote, but a historical pattern which goes back remarkably far in human history. *First*, something is **free**. Then, it is captured by powermongers — royalty, banks, politicians and corporations. Oil companies buy up patents just to stop competition, with no intention of using the patent. Water was free, but has now

mostly been privatized — from nations criminalizing rainwater collection, to poorer countries forced into water privatization by IMF loan conditions. Even seeds — once freely saved and replanted by farmers for millennia — are now patented, making it illegal to replant even your own harvest.

This is why the capitalist rhetoric about how business "encourages innovation" falls flat. We're told all of this is "innovation". But are things really improving? And if so, we might ask who it's improving for? Certainly the corporations are happy with it. But despite what they tell us, the corporations aren't people. Yet, they do consume resources. And so it is that \$kynet has slowly but surely bought up real resources that real people need, with the latest chapter being AI companies buying up a disproportionate amount of water and electricity at bulk discounts while actual human beings are stuck paying higher and higher prices for the necessities of life.

What this teaches us is that this fight is far from over. \$kynet's strategy continues to be to seek anything which is *shared*, and restrict access for profit. It's the proverbial troll under the bridge. And until we stop serving this system of business and profits, this pattern just continues.

The upsides of A.I. are obvious. Convenience, speed, efficiency. They are the sell-points repeated everywhere. 	Downsides are much less obvious... They are the unforeseen and the unintended consequence from the widespread adoption of technology that no one truly understands... 
The consequences of A.I. in the long run has yet to be tested, but many issues are already surfacing. And it's time we start to take these issues seriously. 	The thing is, A.I. is so complex that we don't understand how it comes to it's decisions. A.I. isn't programmed line-by-line, like apps. A.I. is trained... A.I. learns... 