

Identity of **Internet.**

Sidhya Tikku



Identity of
Internet.



The

Identity of Internet

The hidden aspects of modern lifestyle

by

Sidhya Tikku



Parsons School of Design at The New School

This book was my final project for Core 2: Typography Class at Parsons School of Design during my Spring 2022 semester. The prompt was to create a book from semester readings, use at least three different typefaces, and should have minimum 48 pages. The theme of my book is internet and different sides of it. I am using Circular, Playfair, and Paralucent typefaces. The book has 88 pages and is perfect bound. The book also has stickers which I made using vinyl cutters. The whole book was design and built by hand in the Parsons Design Lab.

The Identity of Internet

Designed and Produced by Sidhya Tikku

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The Cobweb

*Can the Internet
be Archived?*

Jill Lepore

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Two weeks before the crash, Anatol Shmelev, the curator of the Russia and Eurasia collection at the Hoover Institution, at Stanford, had submitted to the Internet Archive, a nonprofit library in California, a list of Ukrainian and Russian Websites and blogs that ought to be recorded as part of the archive's Ukraine Conflict collection. Shmelev is one of about one thousand librarians and archivists around the world who identify possible acquisitions for the Internet Archive's collections, which are stored in its Wayback Machine, in San Francisco. Strelkov's VKontakte page was on Shmelev's list. "Strelkov is the field commander in Slaviansk and one of the most important figures in the conflict," Shmelev had written in an e-mail to the Internet Archive on July 1st, and his page "deserves to be recorded twice a day."

On July 17th, at 3:22 p.m. G.M.T., the Wayback Machine saved a screenshot of Strelkov's VKontakte post about downing a plane. Two hours and twenty-two minutes later, Arthur Bright, the Europe editor of the Christian Science Monitor, tweeted a picture of the screenshot, along with the message "Grab of Donetsk militant Strelkov's claim of downing what appears to have been MH17." By then, Strelkov's VKontakte page had already been edited: the claim about shooting down a plane was deleted. The only real evidence of the original claim lies in the archive.

The average life of a Web page is about a hundred days. Strelkov's "We just downed a plane" post lasted barely two hours. It might seem, and it often feels, as though stuff on the Web lasts forever, for better and frequently for worse: the embarrassing photograph, the regretted blog (more usually regrettable not in the way the slaughter of civilians is regrettable but in the way that bad hair is regrettable). No one believes any longer, if anyone ever did, that "if it's on the Web it must be true," but a lot of people do believe that if it's on the Web it will stay on the Web. Chances are, though, that it actually won't.

In 2006, David Cameron gave a speech in which he said that Google was democratizing the world, because “making more information available to more people” was providing “the power for anyone to hold to account those who in the past might have had a monopoly of power.” Seven years later, Britain’s Conservative Party scrubbed from its Website ten years’ worth of Tory speeches, including that one. Last year, BuzzFeed deleted more than four thousand of its staff writers’ early posts, apparently because, as time passed, they looked stupider and stupider. Social media, public records, junk: in the end, everything goes.

Web pages don’t have to be deliberately deleted to disappear. Sites hosted by corporations tend to die with their hosts. When MySpace, GeoCities, and Friendster were reconfigured or sold, millions of accounts vanished. (Some of those companies may have notified users, but Jason Scott, who started an outfit called Archive Team—its motto is “We are going to rescue your shit”—says that such notification is usually purely notional: “They were sending e-mail to dead e-mail addresses, saying, ‘Hello, Arthur Dent, your house is going to be crushed.’”) Facebook has been around for only a decade; it won’t be around forever. Twitter is a rare case: it has arranged to archive all of its tweets at the Library of Congress.

In 2010, after the announcement, Andy Borowitz tweeted, “Library of Congress to acquire entire Twitter archive— will rename itself Museum of Crap.” Not long after that, Borowitz abandoned that Twitter account. You might, one day, be able to find his old tweets at the Library of Congress, but not anytime soon: the Twitter Archive is not yet open for research. Meanwhile, on the Web, if you click on a link to Borowitz’s tweet about the Museum of Crap, you get this message: “Sorry, that page doesn’t exist!”

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Internet Archive Headquarters Exterior
San Francisco, California, US

The Web dwells in a never-ending present. It is—elementally—ethereal, ephemeral, unstable, and unreliable. Sometimes when you try to visit a Web page what you see is an error message: “Page Not Found.” This is known as “link rot,” and it’s a drag, but it’s better than the alternative. More often, you see an updated Web page; most likely the original has been overwritten. (To overwrite, in computing, means to destroy old data by storing new data in their place; overwriting is an artifact of an era when computer storage was expensive.) Or maybe the page has been moved and something else is where it used to be. This is known as “content drift,” and it’s more pernicious than an error message, because it is not possible to tell that what you’re seeing isn’t what you went to look for: the overwriting, erasure, or moving of the original is invisible. For the law and for the courts, link rot and content drift, which are collectively known as “reference rot,” have been disastrous. In providing evidence, legal scholars, lawyers, and judges often cite Web pages in their footnotes;

as they expect that evidence to remain where they found it as their proof, the way that evidence on paper—in court records and books and law journals—remains where they found it, in libraries and courthouses. But a 2013 survey of law- and policy-related publications found that, at the end of six years, nearly fifty per cent of the URLs cited in those publications no longer worked. According to a 2014 study conducted at Harvard Law School, “more than 70% of the URLs within the Harvard Law Review and other journals, and fifty percent of the URLs within United States Supreme Court opinions, do not link to the originally cited information.” The overwriting, drifting, and rotting of the Web is no less catastrophic for engineers, scientists, and doctors. Last month, a team of digital library researchers based at Los Alamos National Laboratory reported the results of an exacting study of three and a half million scholarly articles published in science, technology, and medical journals between 1997 and 2012: one in five links provided in the notes suffers from reference rot. It’s like trying to stand on quicksand.



Internet Archive Headquarters Interior
San Francisco, California, US





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The footnote, a landmark in the history of civilization, took centuries to invent and to spread. It has taken mere years nearly to destroy. A footnote used to say, “Here is how I know this and where I found it.” A footnote that’s a link says, “Here is what I used to know and where I once found it, but chances are it’s not there anymore.” It doesn’t matter whether footnotes are your stock-in-trade. Everybody’s in a pinch. Citing a Web page as the source for something you know—using a URL as evidence—is ubiquitous. Many people find themselves doing it three or four times before breakfast and five times more before lunch. What happens when your evidence vanishes by dinnertime?

The day after Strelkov’s “We just downed a plane” post was deposited into the Wayback Machine, Samantha Power, the U.S. Ambassador to the United Nations, told the U.N. Security Council, in New York, that Ukrainian separatist leaders had “boasted on social media about shooting down a plane, but later deleted the messages.” In San Francisco, CA, the people who run the Wayback Machine posted on the Internet Archive’s Facebook page, “Here’s why we exist.”

The address of the Internet Archive is archive.org, but another way to visit is to take a plane to San Francisco and ride in a cab to the Presidio, past cypresses that look as though someone had drawn them there with a smudgy crayon. At 300 Funston Avenue, climb a set of stone steps and knock on the brass door of a Greek Revival temple. You can’t miss it: it is painted in wedding-cake white and it’s got, out front, eight Corinthian columns and six marble urns.

“We bought it because it matched our logo,” Brewster Kahle told me when I met him there, and he wasn’t kidding. Kahle is the founder of the Internet Archive and the inventor of the Wayback Machine. The logo of the Internet Archive is a white,

pedimented Greek temple. When Kahle started the Internet Archive, in 1996, in his attic, he gave everyone working with him a book called “The Vanished Library,” about the burning of the Library of Alexandria. “The idea is to build the Library of Alexandria Two,” he told me. (The Hellenism goes further: there’s a partial backup of the Internet Archive in Alexandria, Egypt.) Kahle’s plan is to one-up the Greeks. The motto of the Internet Archive is “Universal Access to All Knowledge.” The Library of Alexandria was open only to the learned; the Internet Archive is open to everyone. In 2009, when the Fourth Church of Christ, Scientist, decided to sell its building, Kahle went to Funston Avenue to see it, and said, “That’s our logo!” He loves that the church’s cornerstone was laid in 1923: everything published in the United States before that date lies in the public domain. A temple built in copyright’s year zero seemed fated. Kahle hops, just slightly, in his shoes when he gets excited. He says, showing me the church, “It’s Greek!”

Kahle is long-armed and pink-cheeked and public-spirited; his hair is gray and frizzled. He wears round wire-rimmed eyeglasses, linen pants, and patterned button-down shirts. He looks like Mr. Micawber, if Mr. Micawber had left Dickens’s London in a time machine and landed in the Pacific, circa 1955, disguised as an American tourist. Instead, Kahle was born in New Jersey in 1960. When he was a kid, he watched “The Rocky and Bullwinkle Show”; it has a segment called “Peabody’s Improbable History,” which is where the Wayback Machine got its name. Mr. Peabody, a beagle who is also a Harvard graduate and a Nobel laureate, builds a wabac machine—it’s meant to sound like a univac, one of the first commercial computers—and he uses it to take a boy named Sherman on adventures in time. “We just set it, turn it on, open the door, and there we are—or were, really,” Peabody says.

When Kahle was growing up, some of the very same people who were building what would one day become the Internet were thinking about libraries.



Brewster Lurton Kahle
Founder and Inventor, Internet Archive

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In 1961, in Cambridge, J. C. R. Licklider, a scientist at the technology firm Bolt, Beranek and Newman, began a two-year study on the future of the library, funded by the Ford Foundation and aided by a team of researchers that included Marvin Minsky, at M.I.T. As Licklider saw it, books were good at displaying information but bad at storing, organizing, and retrieving it. “We should be prepared to reject the schema of the physical book itself,” he argued, and to reject “the printed page as a long-term storage device.” The goal of the project was to imagine what libraries would be like in the year 2000. Licklider envisioned a library in which computers would replace books and form a “network in which every element of the fund of knowledge is connected to every other element.”

In 1963, Licklider became a director at the Department of Defense’s Advanced Research Projects Agency (now called darpa). During his first year, he wrote a seven-page memo in which he addressed his colleagues as “Members and Affiliates of the Intergalactic Computer Network,” and he proposed the networking of arpa machines. This sparked the imagination of an engineer named Lawrence Roberts, who later went to arpa from M.I.T.’s Lincoln Laboratory. (Licklider had helped found both B.B.N. and Lincoln.) Licklider’s two-hundred-page Ford Foundation report, “Libraries of the Future,” was published in 1965. By then, the network he imagined was already being built, and the word “hyper-text” was being used. By 1969, relying on a data-transmission technology called “packet-switching” which had been developed by a Welsh scientist named Donald Davies, ARPA had built a computer network called arpanet. By the mid-nineteen-seventies, researchers across the country had developed a network of networks: an internetwork, or, later, an “internet.”

Kahle enrolled at M.I.T. in 1978. He studied computer science and engineering with Minsky. After graduating, in 1982, he worked for and started companies that were later sold for a great deal of money.

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In the late eighties, while working at Thinking Machines, he developed Wide Area Information Servers, or wais, a protocol for searching, navigating, and publishing on the Internet. One feature of wais was a time axis; it provided for archiving through version control. (Wikipedia has version control; from any page, you can click on a tab that says “View History” to see all earlier versions of that page.) wais came before the Web, and was then overtaken by it. In 1989, at cern, the European Particle Physics Laboratory, in Geneva, Tim Berners-Lee, an English computer scientist, proposed a hypertext transfer protocol (HTTP) to link pages on what he called the World Wide Web. Berners-Lee toyed with the idea of a time axis for his protocol, too. One reason it was never developed was the preference for the most up-to-date information: a bias against obsolescence. But the chief reason was the premium placed on ease of use. “We were so young then, and the Web was so young,” Berners-Lee told me. “I was trying to get it to go. Preservation was not a priority. But we’re getting older now.” Other scientists involved in building the infrastructure of the Internet are getting older and more concerned, too. Vint Cerf, who worked on arpanet in the seventies, and now holds the title of Chief Internet Evangelist at Google, has started talking about what he sees as a need for “digital vellum”: long-term storage. “I worry that the twenty-first century will become an informational black hole,” Cerf e-mailed me. But Kahle has been worried about this problem all along.

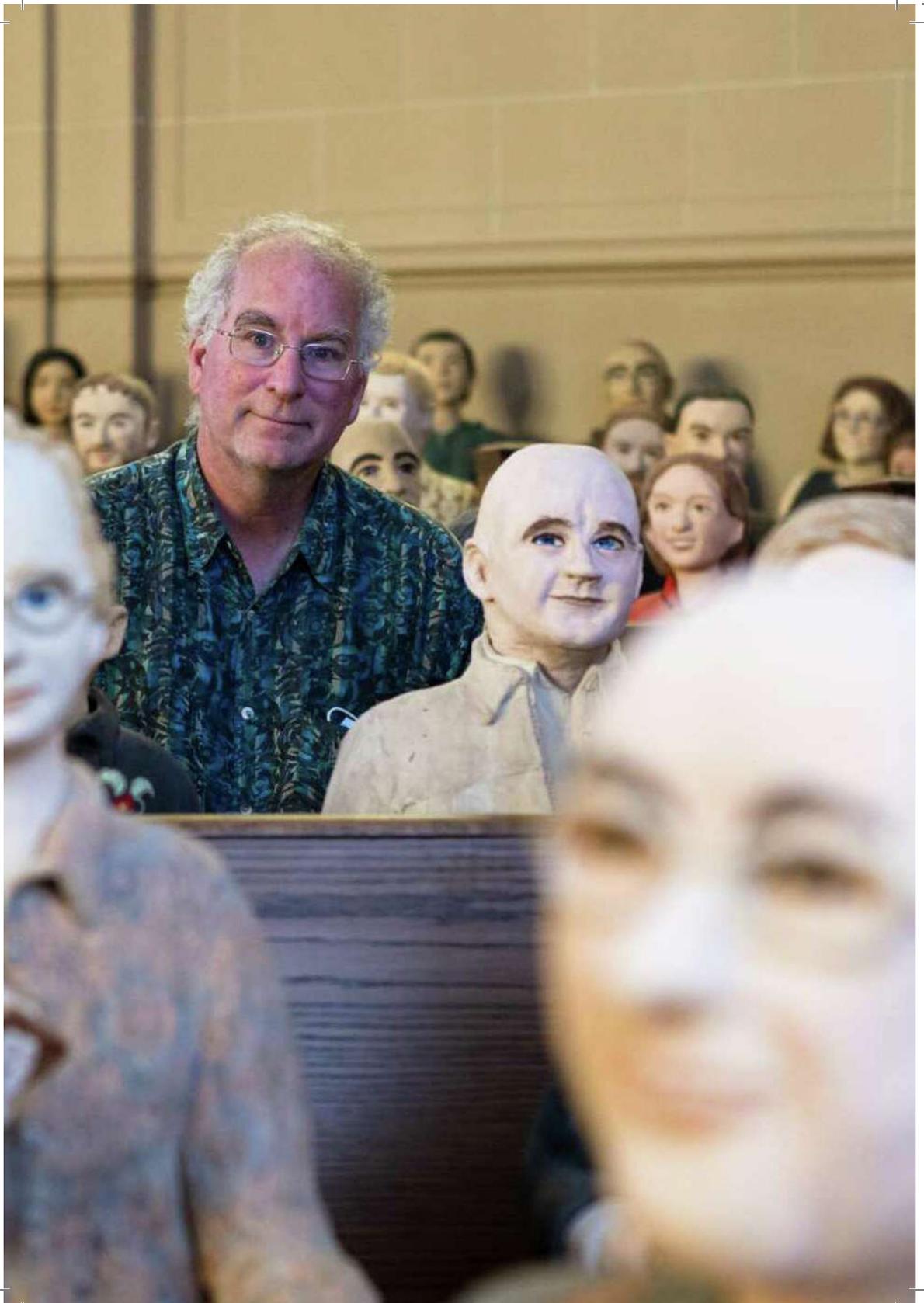
“I’m completely in praise of what Tim Berners-Lee did,” Kahle told me, “but he kept it very, very simple.” The first Web page in the United States was created at slac, Stanford’s linear-accelerator center, at the end of 1991. Berners-Lee’s protocol—which is not only usable but also elegant—spread fast, initially across universities and then into the public. “Emphasized text like this is a hypertext link,” a 1994 version of slac’s Web page explained. In 1991, a ban on commercial traffic on the Internet was lifted.

Then came Web browsers and e-commerce: both Netscape and Amazon were founded in 1994. The Internet as most people now know it—Web-based and commercial—began in the mid-nineties. Just as soon as it began, it started disappearing.

And the Internet Archive began collecting it. The Wayback Machine is a Web archive, a collection of old Web pages; it is, in fact, the Web archive. There are others, but the Wayback Machine is so much bigger than all of them that it's very nearly true that if it's not in the Wayback Machine it doesn't exist. The Wayback Machine is a robot. It crawls across the Internet, in the manner of Eric Carle's very hungry caterpillar, attempting to make a copy of every Web page it can find every two months, though that rate varies. (It first crawled over this magazine's home page, newyorker.com, in November, 1998, and since then has crawled the site nearly seven thousand times, lately at a rate of about six times a day.) The Internet Archive is also stocked with Web pages that are chosen by librarians, specialists like Anatol Shmelev, collecting in subject areas, through a service called Archive It, at archive-it.org, which also allows individuals and institutions to build their own archives. (A copy of everything they save goes into the Wayback Machine, too.) And anyone who wants to can preserve a Web page, at any time, by going to archive.org/web, typing in a URL, and clicking "Save Page Now." (That's how most of the twelve screenshots of Strelkov's VKontakte page entered the Wayback Machine on the day the Malaysia Airlines flight was downed: seven captures that day were made by a robot; the rest were made by humans.)

I was on a panel with Kahle a few years ago, discussing the relationship between material and digital archives. When I met him, I was struck by a story he told about how he once put the entire World Wide Web into a shipping container. He just wanted to see if it would fit. How big is the Web?





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It turns out, he said, that it's twenty feet by eight feet by eight feet, or, at least, it was on the day he measured it. How much did it weigh? Twenty-six thousand pounds. He thought that meant something. He thought people needed to know that.

Kahle put the Web into a storage container, but most people measure digital data in bytes. This essay is about two hundred thousand bytes. A book is about a megabyte. A megabyte is a million bytes. A gigabyte is a billion bytes. A terabyte is a million million bytes. A petabyte is a million gigabytes. In the lobby of the Internet Archive, you can get a free bumper sticker that says "10,000,000,000,000,000 Bytes Archived." Ten petabytes. It's obsolete. That figure is from 2012. Since then, it's doubled.

The Wayback Machine has archived more than four hundred and thirty billion Web pages. The Web is global, but, aside from the Internet Archive, a handful of fledgling commercial enterprises, and a growing number of university Web archives, most Web archives are run by national libraries. They collect chiefly what's in their own domains (the Web Archive of the National Library of Sweden, for instance, includes every Web page that ends in ".se"). The Library of Congress has archived nine billion pages, the British Library six billion. Those collections, like the collections of most national libraries, are in one way or another dependent on the Wayback Machine; the majority also use Heritrix, the Internet Archive's open-source code. The British Library and the Bibliothèque Nationale de France backfilled the early years of their collections by using the Internet Archive's crawls of the .uk and .fr domains. The Library of Congress doesn't actually do its own Web crawling; it contracts with the Internet Archive to do it instead.

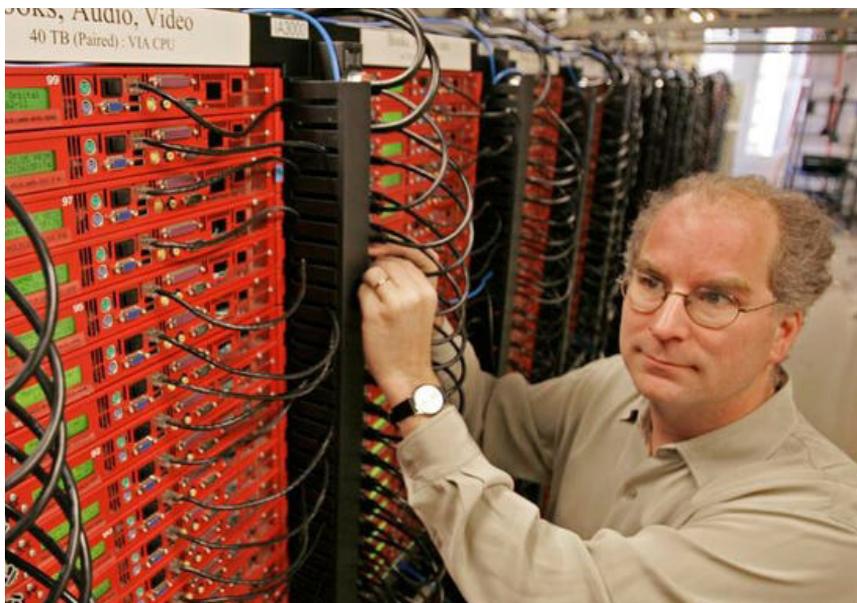
The church at 300 Funston Avenue is twenty thousand square feet. The Internet Archive, the building, is open to the public most afternoons.

It is, after all, a library. In addition to housing the Wayback Machine, the Internet Archive is a digital library, a vast collection of digitized books, films, television and radio programs, music, and other stuff. Because of copyright, not everything the Internet Archive has digitized is online. In the lobby of the church, there's a scanning station and a listening room: two armchairs, a coffee table, a pair of bookshelves, two iPads, and two sets of headphones. "You can listen to anything here," Kahle says. "We can't put all our music on the Internet, but we can put everything here."

Copyright is the elephant in the archive. One reason the Library of Congress has a very small Web-page collection, compared with the Internet Archive, is that the Library of Congress generally does not collect a Web page without asking, or, at least, giving notice. "The Internet Archive hooovers," Abbie Grotke, who runs the Library of Congress's Web-archive team, says. "We can't Hoover, because we have to notify site owners and get permissions." (There are some exceptions.) The Library of Congress has something like an opt-in policy; the Internet Archive has an opt-out policy. The Wayback Machine collects every Web page it can find, unless that page is blocked; blocking a Web crawler requires adding only a simple text file, "robots.txt," to the root of a Web site. The Wayback Machine will honor that file and not crawl that site, and it will also, when it comes across a robots.txt, remove all past versions of that site. When the Conservative Party in Britain deleted ten years' worth of speeches from its Web site, it also added a robots.txt, which meant that, the next time the Wayback Machine tried to crawl the site, all its captures of those speeches went away, too. (Some have since been restored.) In a story that ran in the Guardian, a Labour Party M.P. said, "It will take more than David Cameron pressing delete to make people forget about his broken promises." And it would take more than a robots.txt to entirely destroy those speeches: they have also been collected in the U.K. Web Archive, at the British Library.



Old "Petabox" Version
Manufactured by Capricorn Technologies



Brewster Kahle with Old "Petabox"
At Internet Archive HQ



New "Petabox" Version
Manufactured by Capricorn Technologies



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The U.K. has what's known as a legal-deposit law; it requires copies of everything published in Britain to be deposited in the British Library. In 2013, that law was revised to include everything published on the U.K. Web. "People put their private lives up there, and we actually don't want that stuff," Andy Jackson, the technical head of the U.K. Web Archive, told me. "We don't want anything that you wouldn't consider a publication." It is hard to say quite where the line lies. But Britain's legal-deposit laws mean that the British Library doesn't have to honor a request to stop collecting.

Legal-deposit laws have been the standard in Western Europe for centuries. They provide national libraries with a form of legal protection unavailable to the Library of Congress, which is not strictly a national library; also, U.S. legal-deposit laws have exempted online-only works. "We are citadels," Gildas Illien, the former Web archivist at the Bibliothèque Nationale de France, told me. The Internet Archive is an invaluable public institution, but it's not a national library, either, and, because the law of copyright has not kept up with technological change, Kahle has been collecting Web sites and making them freely available to the public without the full and explicit protection of the law. "It's extremely audacious," Illien says. "In Europe, no organization, or very few, would take that risk." There's another feature to legal-deposit laws like those in France, a compromise between advocates of archiving and advocates of privacy. Archivists at the BnF can capture whatever Web pages they want, but those collections can be used only in the physical building itself. (For the same reason, you can't check a book out of the Bibliothèque Nationale de France; you have to read it there.) One result is that the BnF's Web archive is used by a handful of researchers, a few dozen a month; the Wayback Machine is used by hundreds of thousands of people a day.

In 2002, Kahle proposed an initiative in which the Internet Archive, in collaboration with national libraries, would become the head of a worldwide consortium of Web archives.

(The Internet Archive collects from around the world, and is available in most of the world. Currently, the biggest exception is China—"I guess because we have materials on the archive that the Chinese government would rather not have its citizens see," Kahle says.) This plan didn't work out, but from that failure came the International Internet Preservation Consortium, founded in 2003 and chartered at the BnF. It started with a dozen member institutions; there are now forty-nine.

Something else came out of that consortium. I talked to Illien two days after the massacre in Paris at the offices of Charlie Hebdo. "We are overwhelmed, and scared, and even taking the subway is terrifying, and we are scared for our children," Illien said. "The library is a target." When we spoke, the suspects were still at large; hostages had been taken. Illien and his colleagues had started a Web archive about the massacre and the world's response. "Right now the media is full of it, but we know that most of that won't last," he said. "We wrote to our colleagues around the world and asked them to send us feeds to these URLs, to Web sites that were happening, right now, in Paris, so that we could collect them and historians will one day be able to see." He was very quiet. He said, "When something like that happens, you wonder what you can do from where you sit. Our job is memory."

The plan to found a global Internet archive proved unworkable, partly because national laws relating to legal deposit, copyright, and privacy are impossible to reconcile, but also because Europeans tend to be suspicious of American organizations based in Silicon Valley ingesting their cultural inheritance. Illien told me that, when faced with Kahle's proposal, "national libraries decided they could not rely on a third party," even a nonprofit, "for such a fundamental heritage and preservation mission." In this same spirit, and in response to Google Books, European libraries and museums collaborated to launch Europeana, a digital library, in 2008. The Googleplex, Google's headquarters, is thirty-eight miles away from the Internet

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Archive, but the two could hardly be more different. In 2009, after the Authors Guild and the Association of American Publishers sued Google Books for copyright infringement, Kahle opposed the proposed settlement, charging Google with effectively attempting to privatize the public-library system. In 2010, he was on the founding steering committee of the Digital Public Library of America, which is something of an American version of Europeana; its mission is to make what's in libraries, archives, and museums "freely available to the world . . . in the face of increasingly restrictive digital options."

Kahle is a digital utopian attempting to stave off a digital dystopia. He views the Web as a giant library, and doesn't think it ought to belong to a corporation, or that anyone should have to go through a portal owned by a corporation in order to read it. "We are building a library that is us," he says, "and it is ours."

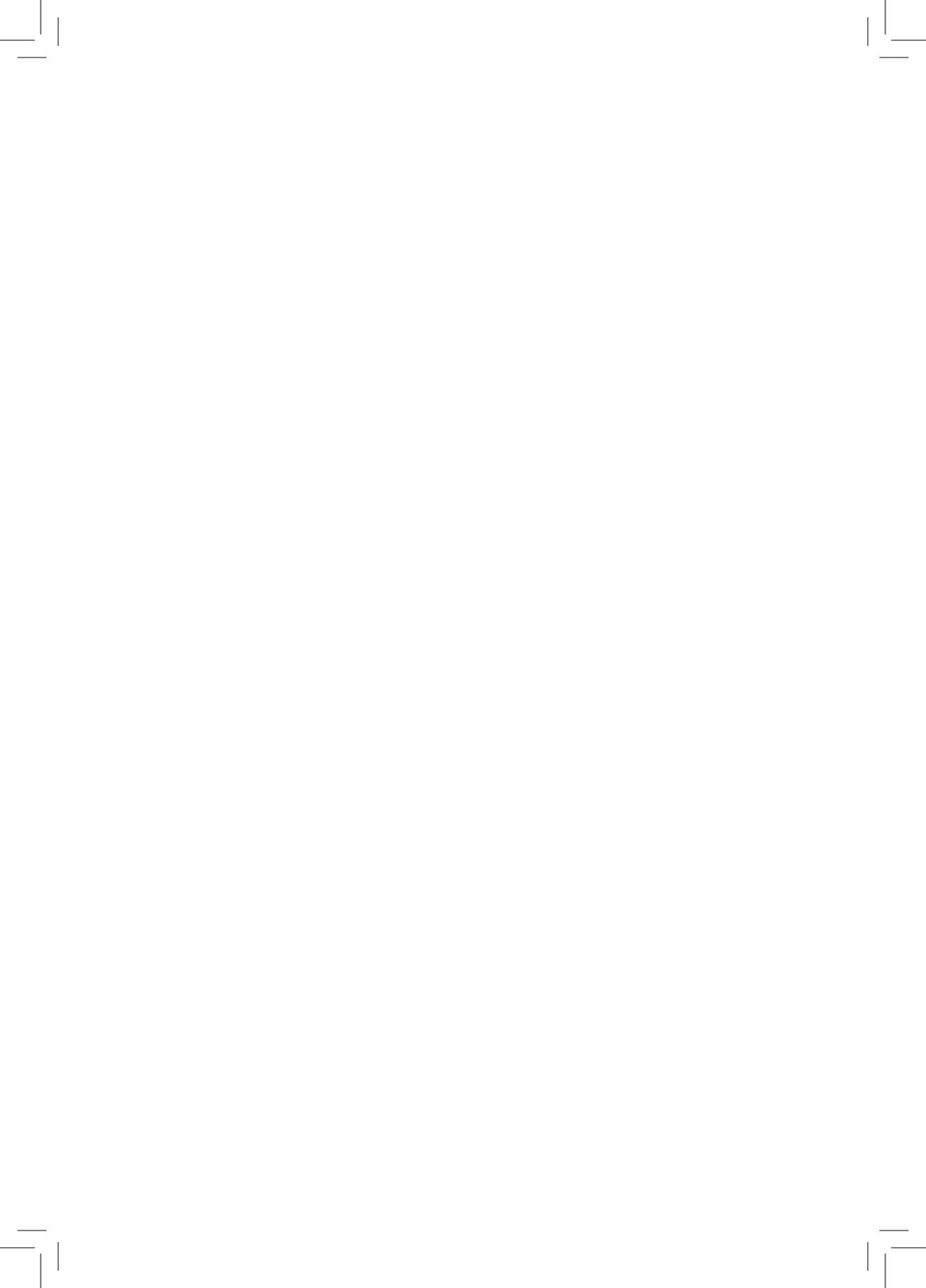
When the Internet Archive bought the church, Kahle recalls, "we had the idea that we'd convert it into a library, but what does a library look like anymore? So we've been settling in, and figuring that out."

From the lobby, we headed up a flight of yellow-carpeted stairs to the chapel, an enormous dome-ceilinged room filled with rows of oak pews. There are arched stained-glass windows, and the dome is a stained-glass window, too, open to the sky, like an eye of God. The chapel seats seven hundred people. The floor is sloped. "At first, we thought we'd flatten the floor and pull up the pews," Kahle said, as he gestured around the room. "But we couldn't. They're just too beautiful."

On the wall on either side of the altar, wooden slates display what, when this was a church, had been the listing of the day's hymn numbers. The archivists of the Internet have changed those numbers. One hymn number was 314. "Do you know what that is?" Kahle asked.

It was a test, and something of a trick question, like when someone asks you what's your favorite B track on the White Album. "Pi," I said, dutifully, or its first three digits, anyway. Another number was 42. Kahle gave me an inquiring look. I rolled my eyes. Seriously? But it is serious, in a way. It's hard not to worry that the Wayback Machine will end up like the computer in Douglas Adams's "Hitchhiker's Guide to the Galaxy," which is asked what is the meaning of "life, the universe, and everything," and, after thinking for millions of years, says, "Forty-two." If the Internet can be archived, will it ever have anything to tell us? Honestly, isn't most of the Web trash? And, if everything's saved, won't there be too much of it for anyone to make sense of any of it? Won't it be useless?

The Wayback Machine is humongous, and getting humongouser. You can't search it the way you can search the Web, because it's too big and what's in there isn't sorted, or indexed, or catalogued in any of the many ways in which a paper archive is organized; it's not ordered in any way at all, except by URL and by date. To use it, all you can do is type in a URL, and choose the date for it that you'd like to look at. It's more like a phone book than like an archive. Also, it's riddled with errors. One kind is created when the dead Web grabs content from the live Web, sometimes because Web archives often crawl different parts of the same page at different times: text in one year, photographs in another. In October, 2012, if you asked the Wayback Machine to show you what cnn.com looked like on September 3, 2008, it would have shown you a page featuring stories about the 2008 McCain-Obama Presidential race, but the advertisement alongside it would have been for the 2012 Romney-Obama debate. Another problem is that there is no equivalent to what, in a physical archive, is a perfect provenance. Last July, when the computer scientist Michael Nelson tweeted the archived screenshots of Strelkov's page, a man in St. Petersburg tweeted back, "Yep. Perfect tool to produce 'evidence' of any kind." Kahle is careful on this point.



“This (scanning project) is our chance to one-up the Greeks! It is really possible with the technology of today, not tomorrow. We can provide all the works of humankind to all the people of the world. It will be an achievement remembered for all time, like putting a man on the moon.”

— Brewster Kahle

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When asked to authenticate a screenshot, he says, “We can say, ‘This is what we know. This is what our records say. This is how we received this information, from which apparent Web site, at this IP address.’ But to actually say that this happened in the past is something that we can’t say, in an ontological way.” Nevertheless, screenshots from Web archives have held up in court, repeatedly. And, as Kahle points out, “They turn out to be much more trustworthy than most of what people try to base court decisions on.”

You can do something more like keyword searching in smaller subject collections, but nothing like Google searching (there is no relevance ranking, for instance), because the tools for doing anything meaningful with Web archives are years behind the tools for creating those archives. Doing research in a paper archive is to doing research in a Web archive as going to a fish market is to being thrown in the middle of an ocean; the only thing they have in common is that both involve fish.

The Web archivists at the British Library had the brilliant idea of bringing in a team of historians to see what they could do with the U.K. Web Archive; it wasn’t all that much, but it was helpful to see what they tried to do, and why it didn’t work. Gareth Millward, a young scholar interested in the history of disability, wanted to trace the history of the Royal National Institute for the Blind. It turned out that the institute had endorsed a talking watch, and its name appeared in every advertisement for the watch. “This one advert appears thousands of times in the database,” Millward told me.

It cluttered and bogged down nearly everything he attempted. Last year, the Internet Archive made an archive of its .gov domain, tidied up and compressed the data, and made it available to a group of scholars, who tried very hard to make something of the material. It was so difficult to recruit scholars to use the data that the project was mostly a wash. Kahle says, “I give it a B.”

Stanford's Web archivist, Nicholas Taylor, thinks it's a chicken-and-egg problem. "We don't know what tools to build, because no research has been done, but the research hasn't been done because we haven't built any tools."

The footnote problem, though, stands a good chance of being fixed. Last year, a tool called Perma.cc was launched. It was developed by the Harvard Library Innovation Lab, and its founding supporters included more than sixty law-school libraries, along with the Harvard Berkman Center for Internet and Society, the Internet Archive, the Legal Information Preservation Alliance, and the Digital Public Library of America. Perma.cc promises "to create citation links that will never break." It works something like the Wayback Machine's "Save Page Now." If you're writing a scholarly paper and want to use a link in your footnotes, you can create an archived version of the page you're linking to, a "permalink," and anyone later reading your footnotes will, when clicking on that link, be brought to the permanently archived version. Perma.cc has already been adopted by law reviews and state courts; it's only a matter of time before it's universally adopted as the standard in legal, scientific, and scholarly citation.

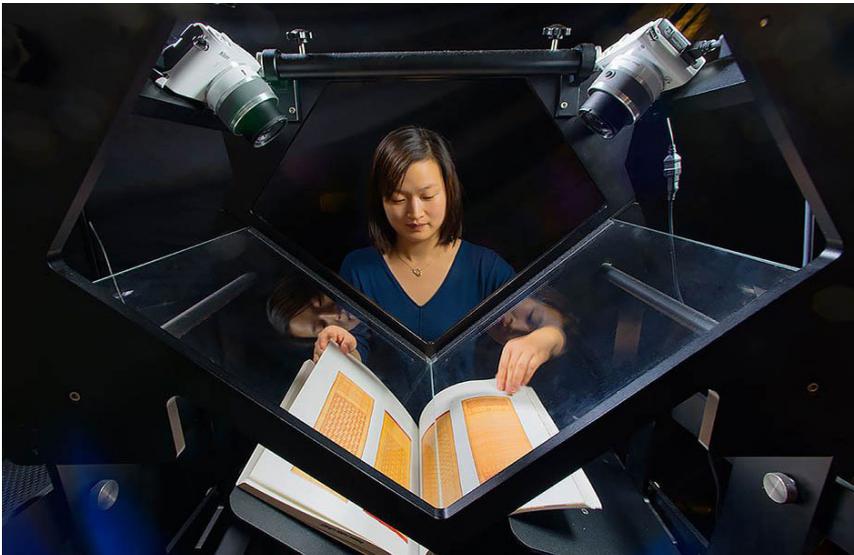
Perma.cc is a patch, an excellent patch. Herbert Van de Sompel, a Belgian computer scientist who works at the Los Alamos National Laboratory, is trying to reweave the fabric of the Web. It's not possible to go back in time and rewrite the HTTP protocol, but Van de Sompel's work involves adding to it. He and Michael Nelson are part of the team behind Memento, a protocol that you can use on Google Chrome as a Web extension, so that you can navigate from site to site, and from time to time. He told me, "Memento allows you to say, 'I don't want to see this link where it points me to today; I want to see it around the time that this page was written, for example.'" It searches not only the Wayback Machine but also every major public Web archive in the world, to find the page closest in time to the time you'd like to travel to. ("A world with one archive is a

The Cobweb

really bad idea,” Van de Sompel points out. “You need redundancy.”) This month, the Memento group is launching a Web portal called Time Travel. Eventually, if Memento and projects like it work, the Web will have a time dimension, a way to get from now to then, effortlessly, a fourth dimension. And then the past will be inescapable, which is as terrifying as it is interesting.

At the back of the chapel, up a short flight of stairs, there are two niches, arched alcoves the same shape and size as the stained-glass windows. Three towers of computers stand within each niche, and ten computers are stacked in each tower: black, rectangular, and humming. There are towers like this all over the building; these are only six of them. Still, this is it.

Kahle stands on his tiptoes, sinks back into his sneakers, and then bounds up the stairs. He is like a very sweet boy who, having built a very fine snowman, drags his mother outdoors to see it before it melts. I almost expect him to take my hand. I follow him up the stairs.



Archivist at Internet Archive
Scanning a Book

“Think of them as open stacks,” he says, showing me the racks. “You can walk right up to them and touch them.” He reaches out and traces the edge of one of the racks with the tip of his index finger. “If you had all the words in every book in the Library of Congress, it would be about an inch, here,” he says, measuring the distance between his forefinger and thumb.

Up close, they’re noisy. It’s mainly fans, cooling the machines. At first, the noise was a problem: a library is supposed to be quiet. Kahle had soundproofing built into the walls.

Each unit has a yellow and a green light, glowing steadily: power indicators. Then, there are blue lights, flickering.

“Every time a light blinks, someone is uploading or downloading,” Kahle explains. Six hundred thousand people use the Wayback Machine every day, conducting two thousand searches a second. “You can see it.” He smiles as he watches. “They’re glowing books!” He waves his arms. “They glow when they’re being read!”

One day last summer, a missile was launched into the sky and a plane crashed in a field. “We just downed a plane,” a soldier told the world. People fell to the earth, their last passage. Somewhere, someone hit “Save Page Now.”

Where is the Internet’s memory, the history of our time?

“It’s right here!” Kahle cries.

The machine hums and is muffled. It is sacred and profane. It is eradicable and unbearable. And it glows, against the dark.





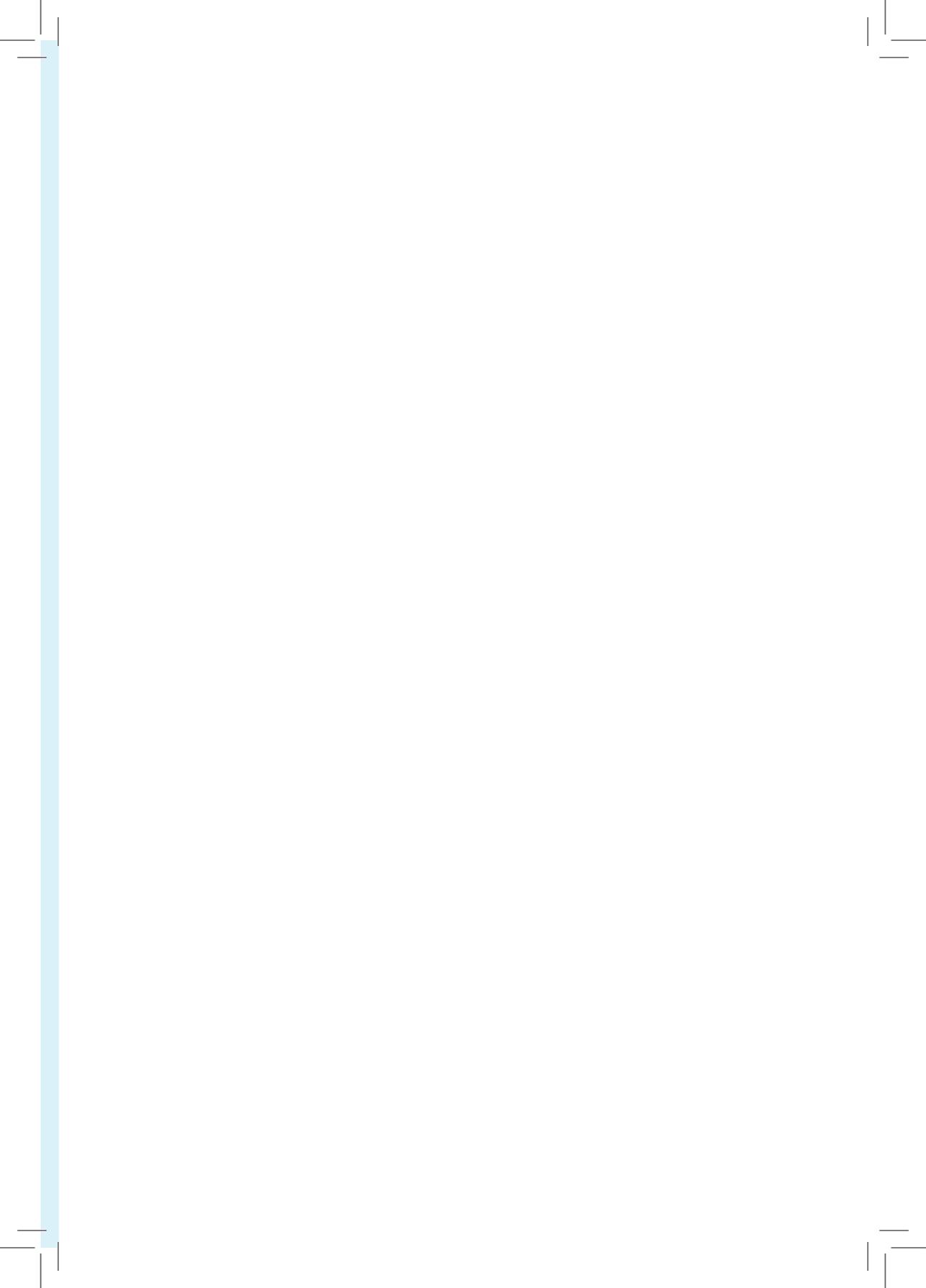




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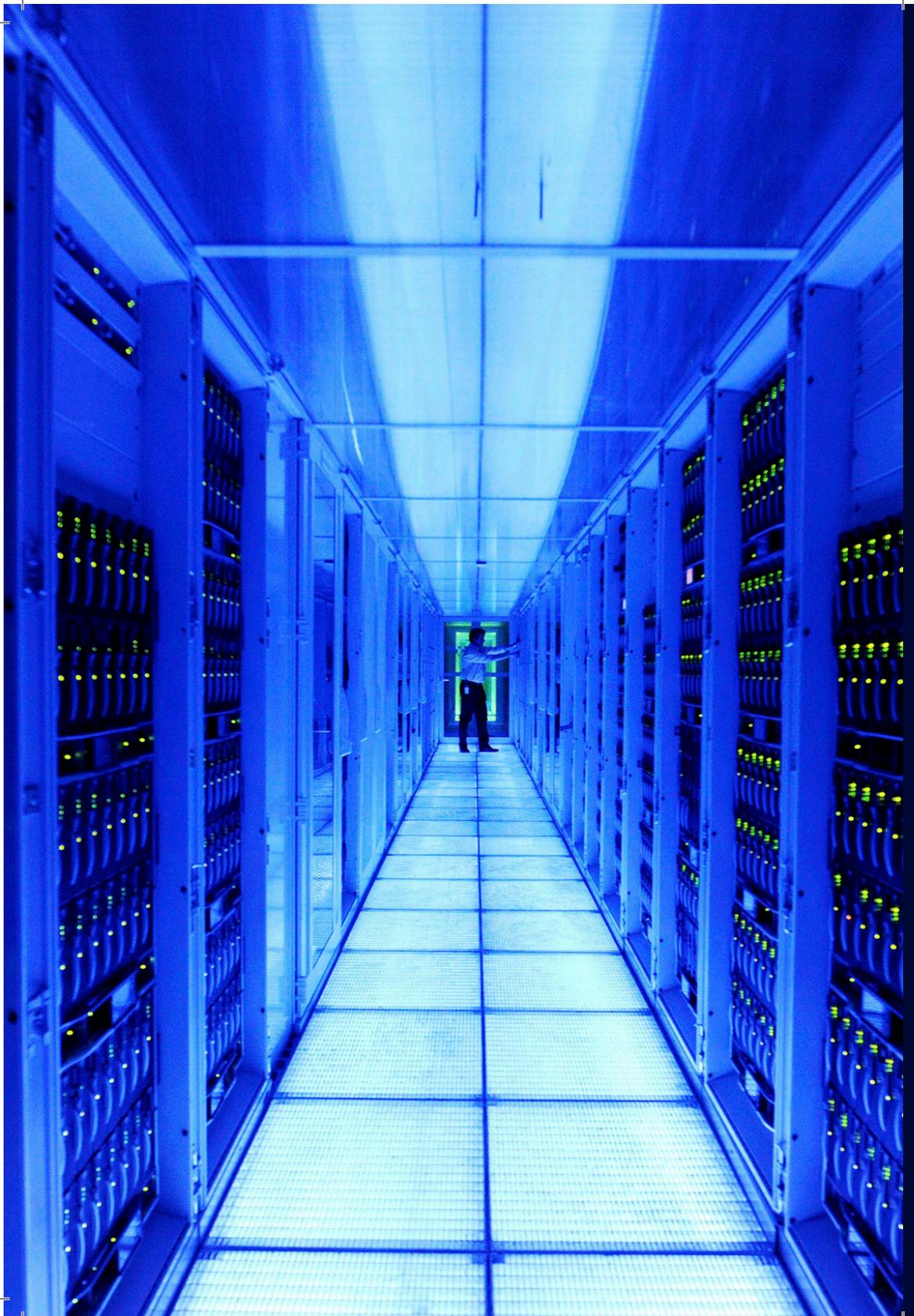
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The Web's Grain

Frank Chimero

2

The Web's Grain

That sound, of course, is the audio handshake of a modem connecting to the internet. And the fiery feeling in the chest it creates is the warm pang of nostalgia. I've managed to tether that grating sound to all the wonder and magic I felt my first years on the internet. Back then, if you told me that I'd get to spend the next decade or so making things for the web—well, that would be just about the best news I could be told.

But things have changed, as they always do. I'm writing this fifteen years after the bing-bongs, and the fascination has faded. What happened is what always happens: the wonder I felt was diminished by experience.

The awe goes—time takes it.

There's a quote from the French philosopher Gaston Bachelard: "We begin in admiration and end by organizing our disappointment."

Now, this is a bit pessimistic—he is a French philosopher, after all—but right now the

statement does ring true for the technology industry. Think about the weight we've added to the world: attention-greedy devices and services, new business structures that turn out to reinforce existing inequalities instead of working against them, technocratic blowhards, never mind the surveillance shit storm we all now must navigate.

How could any self-aware person who works in technology not start to organize their disappointment? It's gotten to where several of my peers are floating half-hearted speculations about their next careers. This isn't good: you want the talented and mindful people to stick around, not get husked out, then leave frustrated, exhausted, and conflicted.

The closer I get to it all, the more I become confused and overwhelmed. A thing I knew so well has reached out wider and wider, only to make less and less sense. So last year, instead of being stubborn, complaining, or feeling powerless, I went searching

for a different perspective. I wanted to take something big and make it small again. This was urgent: I needed a way to re-engage with my craft on a foundational level. Otherwise, I'd also be looking for a second career.

In Buddhism, there's something called the beginner's mind. If you've ever done any kind of guided meditation, you're probably familiar. It refers to having an attitude of openness, of eagerness. You drop your heavy preconceptions and revitalize a practice by finding a new way to look at it. Making things for the web started to feel very heavy to me, so this seemed to be what I needed.

Most investigations into beginner's mind eventually lead to the same zen koan. It's a small story, and it goes like this: Before I began to practice, mountains were mountains and rivers were rivers.

After I began to practice, mountains were no longer mountains and rivers were no longer rivers.

Now, I have practiced for some time, and mountains are again mountains, and rivers are again rivers.

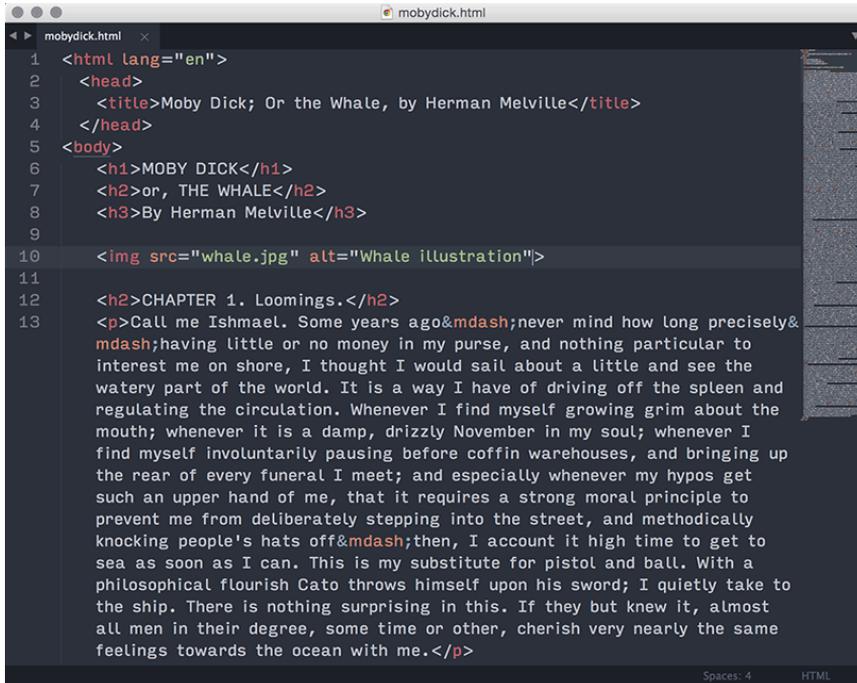
So what's the lesson? Here's my take: we eventually work through the naive belief that profundity comes from complication. It simply isn't so. Things have enough depth and worth on their own terms. No metaphors or analogies are needed for insight, only the willingness to listen to the subject speak for itself, even if it contradicts received wisdom.

I'd like to do some listening today.



The Web's Grain

What is there to see when you look at a website as itself? A lot, actually, but let's simplify things down to their core. As we go through this, please excuse me for stating the obvious. My intent is to describe and document the apparent. Rivers as rivers, remember?



```
mobydick.html x
1 <html lang="en">
2   <head>
3     <title>Moby Dick; Or the Whale, by Herman Melville</title>
4   </head>
5   <body>
6     <h1>MOBY DICK</h1>
7     <h2>or, THE WHALE</h2>
8     <h3>By Herman Melville</h3>
9
10    
11
12    <h2>CHAPTER 1. Loomings.</h2>
13    <p>Call me Ishmael. Some years ago&mdash;never mind how long precisely&mdash;having little or no money in my purse, and nothing particular to interest me on shore, I thought I would sail about a little and see the watery part of the world. It is a way I have of driving off the spleen and regulating the circulation. Whenever I find myself growing grim about the mouth; whenever it is a damp, drizzly November in my soul; whenever I find myself involuntarily pausing before coffin warehouses, and bringing up the rear of every funeral I meet; and especially whenever my hypos get such an upper hand of me, that it requires a strong moral principle to prevent me from deliberately stepping into the street, and methodically knocking people's hats off&mdash;then, I account it high time to get to sea as soon as I can. This is my substitute for pistol and ball. With a philosophical flourish Cato throws himself upon his sword; I quietly take to the ship. There is nothing surprising in this. If they but knew it, almost all men in their degree, some time or other, cherish very nearly the same feelings towards the ocean with me.</p>
```

Here we have a very vanilla website. No styles, just markup. All defaults.

The first thing to notice about this page is that it is fluid—it adapts to the width of the viewport to fill it up. We can't quite say it's responsive, because responsive sites require media queries, but this site, like a responsive one, isn't opinionated about the size of the viewport. It works well at whatever size you throw at it.

The page's fluidity leads to the second thing to notice: the page is vertical.

MOBY DICK

or, THE WHALE

By Herman Melville



CHAPTER 1. Loomings.

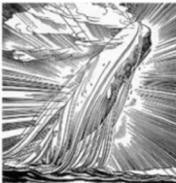
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There now is your insular city of the Manhattoes, belted round by wharves as Indian isles by coral reefs—commerce surrounds it with her surf. Right at the streets take you waterward. Its extreme downtown is the battery, where that noble mole is washed by waves, and cooled by breezes, which a few hot previous were out of sight of land. Look at the crowds of water-gazers there.

Circumambulate the city of a dreamy Sabbath afternoon. Go from Corlears Hook to Coenties Slip, and from thence, by Whitehall, northward. What do you see?—Posted like silent sentinels all around the town, stand thousands upon thousands of mortal men fixed in ocean reveries. Some leaning against the

```
mobydick-resp.html
mobydick-resp.html
1 <html lang="en">
2   <head>
3     <title>Moby Dick; Or the Whale, by Herman Melville</title>
4     <style>
5       article, figure { float: left; }
6       figure { width: 50%; }
7       figure img { width: 100%; }
8       article { width: 50%; }
9     </style>
10  </head>
11  <body>
12    <h1>MOBY DICK</h1>
13    <h2>or, THE WHALE</h2>
14    <h3>By Herman Melville</h3>
15
16    <figure>
17      
18    </figure>
19
20    <article>
21      <h2>CHAPTER 1. Loomings.</h2>
22      <p>Call me Ishmael. Some years ago&mdash;never mind how long
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particular to interest me on shore, I thought I would sail about a little
and see the watery part of the world. It is a way I have of driving off
the spleen and regulating the circulation. Whenever I find myself growing
grim about the mouth; whenever it is a damp, drizzly November in my
soul; whenever I find myself involuntarily pausing before coffin
```

Line 8, Column 25 Spaces: 2 HTML

The Web's Grain

Okay, terribly obvious, but let's tease this apart.

Elements get stacked like a layer cake by default, and it make sense—vertical stacks are much easier to adapt across all kinds of screen sizes, because you don't have layout issues to manage with more or less space across. You simply keep the elements the full width. This is especially handy for design methods like mobile first, since narrower screens can't necessarily hold designs where elements are beside one another. By stacking, you get greater consistency in a design, what ever the screen size.

But not every site can be a big vertical stack of bricks, can it? What happens if you place things side-by-side? This leads us to the primary visual challenge of responsive design. It's the big daddy, the ur problem, the foundational thorn in your side that, for some reason, I have never seen documented.

I'm going to go back to my vanilla HTML page, but let's add a couple lines of CSS so that our image is beside the text, and both scale in width as the viewport changes.

I'll explain what's happening. When I change the window width, the image gets taller as it gets wider, because its proportions are fixed. The text, on the other hand, gets shorter as it gets wider since it has no fixed proportions.

If you've ever designed a responsive website, this is the source of all your sadness. This is the fount of your tears, the wellspring of your suffering. If you believe in the afterlife, this is the circle of hell where they light the soles of your feet on fire. You know how people say to add a breakpoint to a responsive design when the layout starts to look weird? This is the thing that makes the layout look weird. Every time. But, this contradiction is unavoidable and unsolvable, so the only choice is to recognize it as implicit to the medium, and devise strategies to manage it.

The Web's Grain

Most of the solidified techniques about our practice come from the natural ways of the web that have been there since the start. The answer is right there in front of us, in the website itself, and each step we take away from its intentions makes our creations weaker. What does it look like when you work against the web's natural character? I think you make what I call "bicycle bear websites." Why? Because my response to both is the same.

"Listen bub," I say, "it is very impressive that you can teach a bear to ride a bicycle, and it is fascinating and novel. But perhaps it's cruel? Because that's not what bears are supposed to do. And look, pal, that bear will never actually be good at riding a bicycle." This is how I feel about so many of the fancy websites I see. "It is fascinating that you can do that, but it's really not what a website is supposed to do." For example, behold Apple's Mac Pro website. Same response as the bear on the bicycle: all glee, until things go haywire, and you realize it is coming right for you.

What is this monstrosity? Why does it feel like docking a spaceship? Why can't I scroll? And why is there lag on my fancy laptop? What's that sound? My computer's fan?

Apple's pursuit of cool yielded an incredibly fragile, willfully esoteric website that's good for no one. And I'm certain you can think of a few similar examples of your own: clumsy sites that work counter to the inclinations of the web. Back to the zen koan—if we see the mountains as mountains and rivers as rivers, these are the sites that try to be different, yet end up swimming up stream and climbing uphill.

I believe every material has a grain, including the web. But this assumption flies in the face of our expectations for technology.

Too often, the internet is cast as a wide-open, infinitely malleable material. We expect technology to help us overcome limitations, not produce more of them. In spite of those promises, we typically yield consistent design results.



We use flat colors and simple gradients, because they're lightweight, easy to draw with CSS, and can easily scale for areas of unknown proportions. Sites have large horizontal stripes of content, because of the vertical bias I mentioned earlier. We use text as interface, because the nuanced but significant differences in technology's abstractions are difficult to communicate visually. Ambient, atmospheric, blurred, or tinted photographs become background images, because we can't quite be sure how it will be cropped across different viewports. And big type is overlaid on top of these images because every client simultaneously wants big images and big type.

Plus it dances around those text versus image scaling problems I showed earlier. We use photography with props, because software is abstract and hard to embody, so we show it on a device in a related context to have it seem like the product that it is.

The Web's Grain

And mosaics, because every page presents a multitude of elements, and we need structured ways of showcasing this variety. The web is forcing our hands. And this is fine! Many sites will share design solutions, because we're using the same materials. The consistencies establish best practices; they are proof of design patterns that play off of the needs of a common medium, and not evidence of a visual monoculture.

So this is a good start, but it is only a start. Could those simple sites I showed earlier assist us beyond the page and provide a larger way to think? To put a finer point on it: What would happen if we stopped treating the web like a blank canvas to paint on, and instead like a material to build with? It turns out, I found the answer from a painter who also thought to step away from the canvas. Let's have a short art history lesson, shall we?

Meet David Hockney—artist, painter, and conflicted photographer. In the early

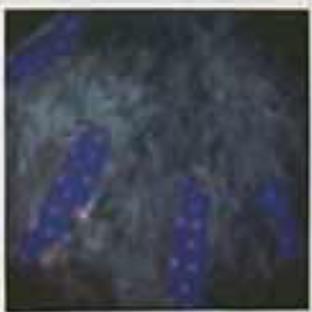
'80s, he took a small break from painting to pursue these mentioned photographic joiners. They were an investigation of time and space. Now, that seems really heady, but once you see them, you'll know exactly what I'm talking about. They kind of look like cubist paintings, but much quicker to read. I'd like to show you a few.

He started the project with Polaroids. You can see them tiled together here, because each individual photo can't capture the whole picture.

Inside, Hockney is using redundancy to show action. How many hands are there? How many heads does that man have? Two faces in this image, but you don't interpret it as a two-headed man. It is two glances at one face—facets of the same thing. It's so seamless, you'd probably not count the faces without me mentioning it. You just know, because this is how you see. You have a small focal range; your brain stitches the bits together into a complete whole.

“I had always planned to make a large painting of the early spring, when the first leaves are at the bottom of the trees, and they seem to float in space in a wonderful way. But the arrival of spring can’t be done in one picture.”

— David Hockney





The Web's Grain

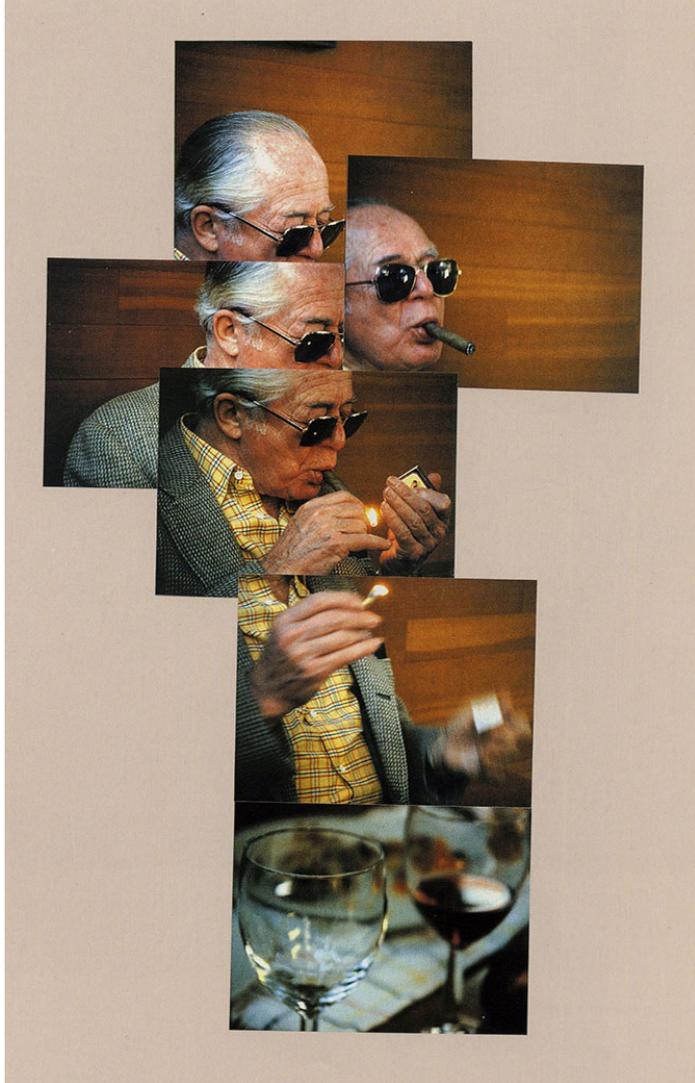
Here's another piece, even more advanced. This one is my favorite, because it's so economical—like a comic strip.

Do you see what's changed? Hockney stopped using Polaroids. The grid is gone, replaced by overlaid, borderless photos. Nothing cut or cropped, nothing tricky. Hockney's able to do a lot of work with only six images.

What would this method look like with many more? Hockney asked the same question.

The Scrabble Game, and in my opinion, it's the masterpiece from this era of Hockney's career. This piece is all over the place: so many faces, so many hands. The game board is out of sync from image to image, so you can actually piece together the plays in the order they were made. Also, there are no ends to my aggravation about how he does not see he has a word in his tiles. (Liqueur, anyone?)

So, do you see what's happened? Recall the first joiner I showed you with the Polaroids, and compare it to The Scrabble Game.







The Web's Grain

Hockney began with an image-making practice that relied on the grid necessitated by the Polaroids' borders and produced a rectangular final work. When he switched to normal film, he was able to overlay images in any necessary shape that accurately described the time and space of a scene. Nobody would set out to make a picture with these edges—what you see is what was required by the images he managed to snap.

In essence, Hockney abandoned the notion that a two-dimensional work of art needed to exist at a fixed, rectangular size. Instead, small individual photos were overlaid and assembled until they formed a complete picture. Individually, the photos don't mean much, but collectively they... does this seem familiar?

Okay, I'm sorry. I've tricked you, and we've come full circle. We're back to responsive design. Let's make an analogy.

The painting, to me, is like designing for the printed page. On the right, *The Scrabble Game*. This assemblage more closely resembles designing for a screen. Do you see it? It is control versus discovery, uniformity versus multiplicity. With the *Mona Lisa*, we have fixed, uniform edges that can be planned for with a high degree of certainty and control. We revere and celebrate this painting because of that exquisite control. With the joiner, we have a different kind of beauty. It is an edgeless surface of unknown proportions, comprised of small, individual, and variable elements from multiple vantages assembled into a readable whole that documents a moment.

Also known as web design. Here, I'll restate what I just said, but this time, imagine I'm talking about web design and not the Hockney photos: an edgeless surface of unknown proportions comprised of small, individual, and variable elements from multiple vantages assembled into a readable whole that documents a moment. That's a pretty good description of the visual challenges in interaction design, huh?

In November of 2013, I gave a talk called What Screens Want, where I tried to answer what it meant to natively design for screens. I said it was something I called flux—the capacity for things to change. This could be as showy as animation, but also as simple and fundamental as a spreadsheet sorting itself and showing new results. You can't do that on paper. So, designing for screens is managing this change over time, and expressing it in clear, communicative, and powerful ways. Now, after looking at Hockney's work for far too long, I can add another item to the list: edgelessness.

A lack of edges permeates the web at all levels. You just have to look for it: Edgelessness is in the web's structure: it's comprised of individual pages linked together, so its structure can branch out forever. Edgelessness applies to the screens that show the web, because they offer an infinite canvas that can scroll in any direction for however long.

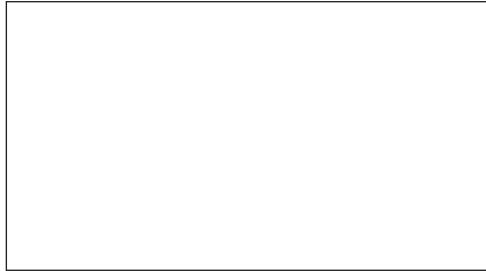
Boy, do we take for granted that a screen can show more content than is able to be displayed in a single shot. Edgelessness speaks to the diffusion of device and viewport sizes. Above is a chart of screen sizes across Android devices. How could there be a clear edge on a spectrum with such minor differences between each size?

And, most interesting to me, edgelessness means blurred lines between the disciplines that work together to make things for the web. Everyone that I've spoken with that's worked on a large responsive project with a big client says that the process disrupts workflows, expectations, and work culture. Simply put, the edgelessness of the web tears down the constructed edges in the company.

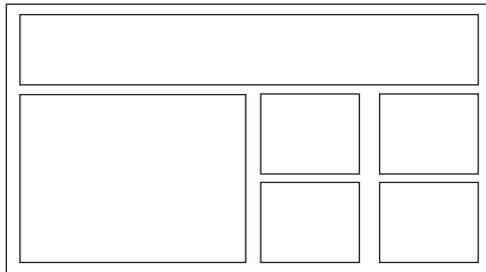
Everything is so interconnected that nobody has a clear domain of work any longer—the walls are gone, so we're left to learn how to collaborate in the spaces where things connect. Let's take a look at how edgelessness affects how we work.

The Web's Grain

Suppose you're about to start a web project with some sketches. How would you begin? You'd probably draw a box.



Then you'd fill that box with the page's elements.



Whoops.

Remember the Hockney photos? The size of what we're making is unknown until we know what we're putting there. So, it's better to come up with an arrangement of elements and assign them to a size, rather than the other way around. We need to start drawing, then put the box around it. Let me show you an example.

This set of images comes from the portfolio of Danish designer Kasper Laigaard. It's the perfect example of not drawing the box until you know what goes in it. Here, he's sketching out different content lockups for a redesign of Hello Monday, a digital agency in Denmark and New York. The sketches explain the idea more clearly than my words ever could.

So just like Hockney's joiners, we're creating assemblages of elements, then associating them with the appropriate space.

The practice of assembling conflicts with most of the terminology we have in place for responsive design. Our words make it seem that we're designing how elements break down, but really, we should be focusing on how they build up. And this concept, just like the layouts we create, can reach out a bit further. We often think making things for the web is a process of simplifying—the hub, the dashboard, the control panel are all dreams of technology that coalesces, but things have a tendency to diverge into a multiplicity of options. We pile on more tools and technology, each one increasingly nuanced and minor in its critical differences. Clearly, convergence and simplicity make for poor goals. Instead, we must aim for clarity. You can't contain or reduce the torrent of technology, but you can channel it in a positive direction through proper

framing and clear articulation.

Technology only adds more—it is never this or that; it is always this and that. A quick example from my life: Twitter didn't replace Facebook. The iPad didn't replace my phone. My phone didn't replace my TV. Now, I watch YouTube on my iPad, toss the video up to my TV, while checking Twitter and Facebook on my phone. It's a little constellation of technology. But I keep asking myself: how many more things can I juggle? And for how long?

The answers offered are typically technological solutions. Algorithms. Automation. Tiny programs and sets of rules to filter out what bursts from the internet's flue hole. While well intentioned (maybe), these answers only become extra points of control and influence. Using technology to solve the problems it causes is as futile as cleaning a grass stain by rubbing grass on it. More technology only amplifies the problems created by an abundance of it. This leads to the most

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The Web's Grain

pressing question: How far out will technology grow? And when does it cross the line of comfort? We're building edgeless environments of divergency. Things are added in chaos, then if successful, they expanded further and further out until they collapse and rearrange. This is probably why responsive design feels so relevant, maddening, and divisive: its patterns mimic the larger patterns of technology itself.

What we build is defined and controlled by its unresolvable conflicts. In responsive design, it's the text and image conundrum I showed earlier. In other, more grand arenas, there is capital versus labor, or collective control versus anarchic individualism. In technology, I believe it comes down to the power dynamics of convenience. To create convenience—particularly the automated convenience technology trades in—someone else must make our choices for us. In other words: the less you have to do, the less say you have. Up to a point, swapping autonomy for ease is a pretty good trade:

who wants to run the math on their accounting books or call the restaurant to place a delivery order? But if taken too far, convenience becomes a Trojan Horse. We cede too much control and become dependent on something we can no longer steer. Platforms that promised to bring convenience to a process or intimacy to a relationship now wedge themselves into the transaction as new middlemen.

Then, we're left to trust in the benevolence of those who have the power to mold our dependencies. Citing a lot of the concerns I mentioned earlier, those people are less responsible and compassionate than we had hoped. In pursuit of convenience, we have opened the door to unscrupulous influence.

You could say that our current technological arrangement has spread out too far, and it is starting to look and feel wrong. Fortunately, we can treat this over-expansion just like everything else I've mentioned.

We can draw a line, and create a point of reassembly for what we've made. We can think about how to shift, move, and resize the pieces so that they fall back in line with our intentions. This power is compounded for those of us who make this technology. But this is not a technological response. It is an explicit act of will—an individual's choice to change their behaviors about what to use, where to work, what to adopt, what to pay attention to. It is simple mindfulness, that thing which needy technology makes so hard to practice.

And it starts with a question: what is technology's role in your life? And what, really, do you want from it? As for me? I won't ask for peace, quiet, ease, magic or any other token that technology can't provide—I've abandoned those empty promises. My wish is simple: I desire a technology of grace, one that lives well within its role.

How will we know that we're there? I suppose we'll look at what we've built, notice how the edges have dropped away, and actually be pleased it looks like it could go on forever.



Frank Chimero
Designer
Brooklyn, NY



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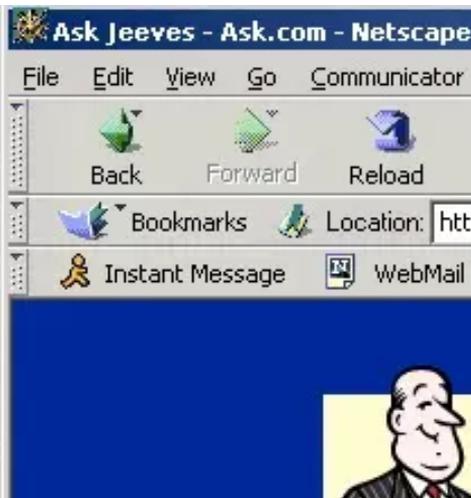
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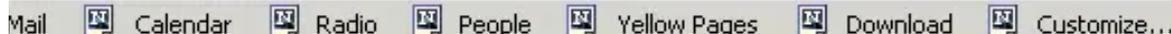
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The Curious Case of Internet Privacy

Free services in exchange for personal information. That's the "privacy bargain" we all strike on the Web. It could be the worst deal ever.

Cory Doctorow



The Curious Case of Internet Privacy

Here's a story you've heard about the Internet: we trade our privacy for services. The idea is that your private information is less valuable to you than it is to the firms that siphon it out of your browser as you navigate the Web. They know what to do with it to turn it into value—for them and for you. This story has taken on mythic proportions, and no wonder, since it has billions of dollars riding on it.

But if it's a bargain, it's a curious, one-sided arrangement. To understand the kind of deal you make with your privacy a hundred times a day, please read and agree with the following:

By reading this agreement, you give Technology Review and its partners the unlimited right to intercept and examine your reading choices from this day forward, to sell the insights gleaned thereby, and to retain that information in perpetuity and supply it without limitation to any third party.

Actually, the text above is not exactly analogous to the terms on which we bargain with every mouse click. To really polish the analogy, I'd have to ask this magazine to hide that text in the margin of one of the back pages. And I'd have to end it with This agreement is subject to change at any time. What we agree to participate in on the Internet isn't a negotiated trade; it's a smorgasbord, and intimate facts of your life (your location, your interests, your friends) are the buffet.

Why do we seem to value privacy so little? In part, it's because we are told to. Facebook has more than once overridden its users' privacy preferences, replacing them with new default settings. Facebook then responds to the inevitable public outcry by restoring something that's like the old system, except slightly less private. And it adds a few more lines to an inexplicably complex privacy dashboard. Even if you read the fine print, human beings are awful at pricing out the net present value of a decision whose consequences are far in the future. No one would take up smoking if the tumors sprouted with the first puff. Most privacy disclosures don't put us in immediate

physical or emotional distress either. But given a large population making a large number of disclosures, harm is inevitable. We've all heard the stories about people who've been fired because they set the wrong privacy flag on that post where they blew off on-the-job steam.

The risks increase as we disclose more, something that the design of our social media conditions us to do. When you start out your life in a new social network, you are rewarded with social reinforcement as your old friends pop up and congratulate you on arriving at the party. Subsequent disclosures generate further rewards, but not always. Some disclosures seem like bombshells to you ("I'm getting a divorce") but produce only virtual cricket chirps from your social network. And yet seemingly insignificant communications ("Does my butt look big in these jeans?") can produce a torrent of responses. Behavioral scientists have a name for this dynamic: "intermittent reinforcement." It's one of the most powerful behavioral training techniques we know about.

Give a lab rat a lever that produces a food pellet on demand and he'll only press it when he's hungry. Give him a lever that produces food pellets at random intervals, and he'll keep pressing it forever. How does society get better at preserving privacy online? As Lawrence Lessig pointed out in his book *Code and Other Laws of Cyberspace*, there are four possible mechanisms: norms, law, code, and markets. So far, we've been pretty terrible on all counts. Take norms: our primary normative mechanism for improving privacy decisions is a kind of pious finger-wagging, especially directed at kids. "You spend too much time on those Interwebs!" And yet schools and libraries and parents use network spyware to trap every click, status update, and IM from kids, in the name of protecting them from other adults. In other words: your privacy is infinitely valuable, unless I'm violating it. (Oh, and if you do anything to get around our network surveillance, you're in deep trouble.)

The Curious Case of Internet Privacy

What about laws? In the United States, there's a legal vogue for something called "Do Not Track": users can instruct their browsers to transmit a tag that says, "Don't collect information on my user." But there's no built-in compliance mechanism—we can't be sure it works unless auditors descend on IT giants' data centers to ensure they aren't cheating. In the EU, they like the idea that you own your data, which means that you have a property interest in the facts of your life and the right to demand that this "property" not be misused. But this approach is flawed, too. If there's one thing the last 15 years of Internet policy fights have taught us, it's that nothing is ever solved by ascribing propertylike rights to easily copied information.

There's still room for improvement—and profit—in code. A great deal of Internet-data harvesting is the result of permissive defaults on how our browsers handle cookies, those bits of code used to track us. Right now, there are two ways to browse the Web: turn cookies off altogether

and live with the fact that many sites won't work; or turn on all cookies and accept the wholesale extraction of your Internet use habits.

Browser vendors could take a stab at the problem. For a precedent, recall what happened to pop-up ads. When the Web was young, pop-ups were everywhere. They'd appear in tiny windows that re-spawned when you closed them. They ran away from your cursor and auto-played music. Because pop-ups were the only way to command a decent rate from advertisers, the conventional wisdom was that no browser vendor could afford to block pop-ups by default, even though users hated them.

The deadlock was broken by Mozilla, a nonprofit foundation that cared mostly about serving users, not site owners or advertisers. When Mozilla's Firefox turned on pop-up blocking by default, it began to be wildly successful. The other browser vendors had no choice but to follow suit. Today, pop-ups are all but gone.



Cookie managers should come next. Imagine if your browser loaded only cookies that it thought were useful to you, rather than dozens from ad networks you never intended to interact with. Advertisers and media buyers will say the idea can't work. But the truth is that dialing down Internet tracking won't be the end of advertising. Ultimately, it could be a welcome change for those in the analytics and advertising business. Once the privacy bargain takes place without coercion, good companies will be able to build services that get more data from their users than bad companies. Right now, it seems as if everyone gets to slurp data out of your computer, regardless of whether the service is superior.

For mobile devices, we'd need more sophisticated tools. Today, mobile-app marketplaces present you with take-it-or-leave-it offers. If you want to download that Connect the Dots app to entertain your kids on a long car ride, you must give the app access to your phone number and location. What if mobile OSes were designed to let their users instruct them to lie to apps?

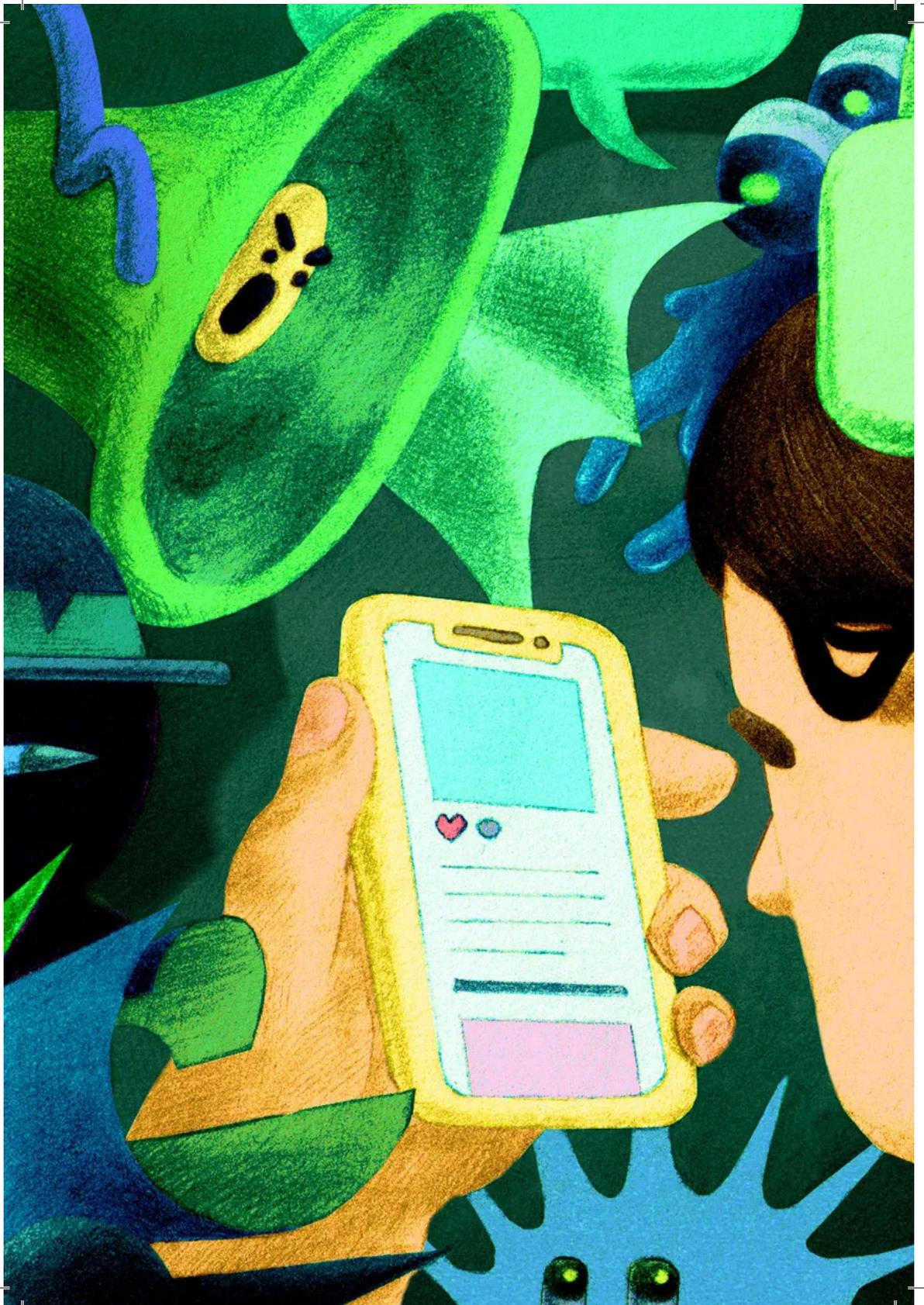
"Whenever the Connect the Dots app wants to know where I am, make something up. When it wants my phone number, give it a random one." An experimental module for Cyanogenmod (a free/open version of the Android OS) already does this. It works moderately well but would be better if it were officially supported by Google.



The Curious Case of Internet Privacy

Far from destroying business, letting users control disclosure would create value. Design an app that I willingly give my location to (as I do with the Hailo app for ordering black cabs in London) and you'd be one of the few and proud firms with my permission to access and sell that information. Right now, the users and the analytics people are in a shooting war, but only the analytics people are armed. There's a business opportunity for a company that wants to supply arms to the rebels instead of the empire.









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1. Chimero, Frank. “The Web’s Grain.” 15 Feb. 2015, <https://frankchimero.com/blog/2015/the-webs-grain/>

2. Doctorow, Cory. “The Curious Case of Internet Privacy,” MIT Technology Review, 6 June 2012, <https://www.technologyreview.com/2012/06/06/19572/the-curious-case-of-internet-privacy/>

3. Lepore, Jill. “Can the Internet Be Archived?” The New Yorker, 18 Jan. 2015, <https://www.newyorker.com/magazine/2015/01/26/cobweb>





This book was my final project for Core 2: Typography Class at Parsons School of Design during my Spring 2022 semester. The prompt was to create a book from semester readings, use at least three different typefaces, and should have minimum 48 pages. The theme of my book is internet and different sides of it. I am using Circular, Playfair, and Paralucent typefaces. The book has 88 pages and is perfect bound. The book also has stickers which I made using vinyl cutters. The whole book was design and built by hand in the Parsons Design Lab. As a little surprise for the readers, this book has a sticker sheet which was hand made using vinyl cutters.

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