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Winning back the Internet by building our own

**We already have the power, the materials and the
motive to win back the Internet. But we have to
start with the first step first: owning our own
infrastructure.**

Tech Learning Collective

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the Internet's earlier promises and take it out of the hands of its corporate and governmental owners. That is why radical tech education efforts such as those by the Tech Learning Collective focus on infrastructure, not coding. Instead of learning to become programmers useful only for large companies who already control your access to digital information, students are taught fundamental internetworking skills overlooked by the rush-to-employment programs of various school-to-corporation pipelines. It is why projects like the Shift-CTRL Space Library, which offers a pre-packaged collection of software to more easily share collections of e-books — PDFs, zines and more — are built using widely available Free Software and without consideration for available capital-I Internet access as it is traditionally envisioned.

We already have the power, the materials and the motive to fight and win back the Internet. But we cannot start at the last step of building — even more — “new” apps. We have to start with the first step first: owning our own infrastructure.

When mentioning the year 2001, most people may think of the attacks on 9/11. But five months prior to that historic date, another event occurred that would continue to shape history in less dramatic but equally profound ways. In April that year, American computer programmer Bram Cohen began designing BitTorrent, a new file sharing protocol that would almost single-handedly change the music, TV and movie industries for decades to come.

The technology was not in itself a completely new idea. After all, similar technologies like the well-known File Transfer Protocol (FTP) had been designed and deployed for copying files between computers before. What made this one so potent was the way it reflected the fractured, organic structure of its underlying medium, the Internet itself.

Instead of treating each file as a single monolithic whole, this new technology broke each file apart into a set of similarly-sized pieces and treated each piece independently of any other piece. Unlike earlier client-server technologies like FTP, this new “peer-to-peer” technology could retrieve any piece of the whole from any other peer who already had a copy of that piece, even if that peer did not have all the pieces like a traditional server would.

BitTorrent and its segmented-file transfer technology is to this day the bane of corporate gatekeepers like the Record Industry Association of America (RIAA) and Motion Picture Association of America (MPAA). Like the earlier emergence of the Internet, BitTorrent catalyzed a wave of rebellious activity from ordinary people who were disadvantaged by punitive legal and oppressive political regimes. Most of these rebels probably would not have described themselves that way, or identified what they were doing as a form of “direct action” or “civil disobedience,” but like most successful revolutions, the cyber rebellion that BitTorrent ignited started in the cracks where existing regimes cannot easily see or police behavior.

Fighting for the freedom to share

With BitTorrent, there is no more famous example than The Pirate Bay, which its founders proudly intended as a way for everyday people to simultaneously improve their lives and fight against globalist organizations such as the World Intellectual Property Organization (WIPO). By making the simple act of sharing without regard to copyright laws or global trade agreements easy and normal, people were more easily able to access the things they needed without being forced to ask or pay for permission to have them.

This “freedom to share” was one of the early promises of the Internet we must win back. Many onlookers heralded the early Internet as an inherently democratizing tool that would inevitably lead to a reformation of society with equality and justice for all. Of course, it did not turn out that way.

Some will remember the Crypto Wars in the 1980s and 1990s, in which governments reserved encryption technology solely for military use. Cypherpunk and early “Hacker” culture sprang from this era. Sadly, techno-utopians at the time like the “High Tech Hayekians” mostly focused on new and shiny gadgets, centering pro-capitalist market economics while ignoring the forces of industrialization poisoning the soil on which they were building their Cyberspace Garden of Eden.

In short order, Internet access itself was commercialized and the telecom industry waged legislative war against community groups and municipal governments that prevented them from erecting their own networking infrastructures. The logic of the telecom monopolies was simple and devastatingly effective: to share, you must first connect, so instead of losing the battle to share, they would win the war of connectivity. In other words, they recognized that they could not win against a rapidly rising number of increasingly sophisticated people using ever-improving encryption and privacy tools, but they

them in, no user account required. One way to think about these interconnected pockets of computers is the same way as you would think about the multiple computers connected to the Wi-Fi network in your house: you only need one connection leading to other people’s computers, but you can connect many hundreds if not more computers to that one connection at the same time.

Internetworking technologies, like BitTorrent, are built on the notion of smaller pieces, each of them individually-addressable segments, that can be composed together to create a larger whole. Neither the Internet nor BitTorrent file transfers are actually monoliths. That means we do not need any person’s or any company’s permission, license key or commercial product to create our own, to interconnect them to our peers, and to run and maintain useful services on them. It is long past time for us to stop asking or paying for permission to build the world we want to live in.

Join enough individually operated internets together — that is, run another Ethernet cable to the next building, and the next, and the next — and we will have a newly minted “Internet” to rival the current one. Except, this time, we will own it outright instead of renting access to it.

What if you live too far away from the infoshop or the buildings in our example, above? We mentioned earlier that having or using our own internets does not require disconnecting from the global Internet because connecting to other networks is always optional. This means you can still securely piggyback on an existing capital-I Internet connection to knit your own networks together by using Virtual Private Networking (VPN) and/or Tor (Onion service) routing technologies until such time as the people who own the computers in between you and your desired destination connect their computers to yours.

These more infrastructural components of telecom autonomy are the first prerequisite steps we must take to secure

cause every location in cyberspace feels no further than any other location. But we must resist the temptation to abandon the physical realm, and thereby the Earth, by focusing instead on interconnecting our local networks with the local networks of those around us. This enables local coordination on local infrastructure, rather than on Facebook's, which is a key step towards a community-owned and surveillance-resistant network.

Only by breaking the Internet and our understanding of it into pieces, just like BitTorrent segmented files, can we begin to collaboratively reconstruct it anew, and in the process threaten the literal marketshare and metaphorical mindshare that these monopolies currently have over us.

Owning our own infrastructure

What does it take to build an internet? We will need computers, of course, but not especially powerful or expensive ones. As the Homebrew Server Club explains, "laptops make good homebrew servers since they are widely available, relatively powerful and energy efficient." Wire up two laptops together using a commonplace Ethernet (RJ-45) cable and you have the beginnings of an internet. Add a third laptop, or perhaps a card-sized Raspberry Pi, and you can run a dedicated service such as a website or shared address book or calendar. You can even create a Wi-Fi connection for roaming clients — perhaps your new tiny internet is in an infoshop — all without ever connecting to The Internet proper.

Next, we'll need imagination. Your internet may be small right now, but it can grow, just like the original internet grew to become The Internet we know today. Perhaps you publish a website of resistance poetry as part of a collection of ebooks (you are at an infoshop after all) and your neighbors want to browse the collection, too. Get another Ethernet cable and plug

could install themselves as toll collectors for Internet access itself.

This is how the modern Internet as we know it today was shaped. For years, we have seen the Internet used to surveil, divide and control people. Would-be dictators like Trump and others across the globe use the Internet to bend both people and institutions to their will using misinformation and fear. Today, for most of us the Internet is little more than a heavily surveilled, over-policed Electronic Strip Mall in which we are carefully herded from one company's property to another. But this, too, is not an inevitable outcome of the digital inter-networking technologies we have at our disposal.

BitTorrent succeeded not only as a technology in its own right, but also in frustrating efforts to police digital rebellions largely because it mirrored the decentralized nature of the network on which it was deployed; the Internet. BitTorrent and the software that makes the Internet possible are technologies that do not require any special permission or product to connect to, interoperate with, or extend.

For a very long time, no one paid for Internet access because Internet access was not something that was sold. It was like a public beachfront at the ocean. If you were near it, you could jump in, no credit card required. The nature of the technology itself meant that if you had a computer running an operating system with a TCP/IP software stack installed, like any modern Windows, macOS, or GNU/Linux distribution, you could extend the Internet. All you had to do is connect your computer to another computer already pre-attached to it. As with BitTorrent, there was no other special software or hardware required, and everyone who wanted to download files could, by definition, also upload files. And, more importantly, this is still true about internetworking software today.

What can we learn from BitTorrent's success 20 years later? If we want to accept the Internet's "offer of freedom," as envisioned by optimistic earlier generations, we must (re)learn

this vital lesson: the Internet we are made to pay for is not the only way to connect to one another. We merely need to pave our own digital pathways, to create our own lowercase-i “internets.”

At first, you might think this is a lot of work, but in reality much of the work has already been done. The resources this actually requires in terms of money and equipment are minimal and becoming ever more ubiquitous. There is also no need to write new code or build new apps to make this happen. Since there is so much existing software freely available already, nearly every imaginable need is accounted for. We already have all the raw materials we need to get the job done. The only thing we lack is broader commitment from neighborhood residents and community members, themselves.

Building our own internets

The Internet (capital-I) is the name of a specific network, the one in which specific computers and familiar services with names like Google, Facebook and the Wall Street Journal reside. In contrast, the word internet (lowercase-i) describes any network of interconnected networks. An internet of your own can host everything else: data you want to keep to yourself, posts that would be banned on corporate-controlled media (like many antifa groups have recently found with Facebook), or simply creative works you make for fun.

Of course, you can put such things on the computers owned by Google and accessed via the toll roads owned by Verizon, Rogers or Comcast, but the point is that you do not have to. Our own (lowercase-i) internet is also capable of providing the services most people use for many of their day-to-day needs, such as keeping phone numbers synchronized across multiple devices, planning their days with a digital calendar, or drafting documents.

The meaningful difference between that (capital-I) Internet and our own (lowercase-i) internet is *who owns the computers between us*, not the software on either end nor the software in the middle.

This distinction between features (like “document sharing”) and ownership is absolutely critical. Before the Internet was “The Internet,” it was simply one of several networks built in exactly the same way and using exactly the same technology as others were. Creating such networks today has never been easier, or less expensive. Indeed, today there are already many internets that you can connect to for free, like Guifi in Spain, and NYCMesh in New York City. For many years, Cubans have had their own internet they built themselves called the “street network” or SNET. The Personal Telco project maintains a list of many dozens more across the globe.

What is important to understand is that these networks were built with the same tools as the ones that built the Internet you pay for today: commonplace Ethernet cable, commodity computer hardware and the labor from people excited about spending their time sharing their digital creations with one another.

For Cubans, who were barred from connecting their own internets to the globally-networked Internet due to the US embargo, SNET provided everything you would expect to get through your computer, like news, games, blogs, social networking and more. It had all this even though it did not connect to the Internet we are most familiar with. Meanwhile, both Guifi and NYCMesh offer its users a combination of “intra-mesh services” and content for local residents similar to SNET along with more traditional Internet access, highlighting the fact that building our own internets is not an either-or proposition, nor a zero-sum game.

To make the Internet fulfill the promise of its earlier incarnations and beat back the forces of industrialization suffocating the promise of freedom online, we must first build new, local internets. The Internet collapses our experience of distance be-