# Autonomous Infrastructure for a Suckless Internet

How can we promote an internet that respects human rights? Investing in autonomous infrastructure built and operated by politically motivated techies, who put their skills at the service of the public interest, may be the answer.

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DOI: 10.1145/3220877

he hopes of past generations of hackers and the libertarian declarations of internet independence have long been retired like old, toothless unicorns. Rampant censorship, pervasive multi-site surveillance, and the mass monitoring of people enabled by the progressive integration of data analytics into governance systems signals our internet might indeed be doomed. It is widely known that the internet embeds countless vulnerabilities exploited by private and state actors alike, and these malicious uses are a function of the malleability of the infrastructure. However, a combination of diverse factors, such as the commercialization of the infrastructure, the privatization of law enforcement on the web, and the extension of the battlefield to cyberspace, have augmented these vulnerabilities.

The problem at hand is not merely technological. Rather, it has to do with how power—the ability to influence, funnel, and control the behavior of people—is played out by technological means. There are at least two ways to tackle the question, depending on whether the "solution" is to be technical or political. One might try to incrementally fix glitches, or instead nurture privacyaware developers and infrastructure operators who will eventually construct alternative arrangements.

Based on a decade-long qualitative

analysis of radical internet projects,<sup>1</sup> this essay reflects on the role of autonomous internet infrastructures in the struggle toward a "suckless" internet that is rights respecting by design. How these infrastructures are built and operated by politically motivated techies, who put their skills at the service of the public interest, is also considered. And an argument is made for autonomous infrastructure scaling up and federating to operate at a deeper level of the internet architecture.

#### A ROUGH TIMELINE OF AUTONOMOUS INFRASTRUCTURE

The internet has its roots in a military project, but also in the counter-culture of the 1960s peace movements. However, the progressive commercialization of the internet ecosystem soon forced those interested in the creation of al-

<sup>1</sup> See Stefania Milan's *Social Movements and Their Technologies: Wiring Social Change* (Palgrave Macmillan, 2013). Unless otherwise stated, all direct quotes appearing in this article are from Milan's book.



ternative models and horizontal relationships to mobilize on the fringes of the mainstream. Such alternativeness, "measured in distance from the centers of state and capital," manifested at many levels of the hardware and software infrastructure [1]. For example, the free software movement emerged during the 1980s with the goal to liberate software from constraints in the use and access to its source code. The struggles around the plumbing, however, have been less noticeable. For the purposes of this essay, I discuss three developments that are tightly connected to social-justice struggles: community wireless and cell networks, civic society-led networking experiments from the Bulletin Board System (BBS) to internet cables, and grassroots internet service providers (ISPs). The three examples promote "new modes of organization and responsibility" around and toward internet infrastructure [2].

Operating at the bottom of the internet network layer, community wireless (Wi-Fi) networks are a sort of scaled-down internet interconnecting a group of people sharing specific, often progressive, goals and motivations, or small areas like parks and neighborhoods. A community Wi-Fi network is a mesh network of low-cost Wi-Fi equipment placed on terraces and roofs with the goal of creating wireless connections.

The first was the Memory Project, established in Berkeley, California, in 1973. Many followed across the world, leveraging community expertise and engagement, volunteer work, non-hierarchical organizational models, and open-source software. Ninux (ninux.

Technology is also a political project, and infrastructures can be configured and operated as a political subject in their own right. org), an Italian community Wi-Fi network started in Rome by a group of students and hackers in 2001, counts 330 active nodes. More recently, similar experiments have emerged around cellular services. In Mexico, for example, the Oaxaca-based non-profit Rhizomatica lays down cellular networks in rural areas ignored by major telecoms, combining artisanal antennas and open-source software. At its core, community Wi-Fi and cell networks projects have countercultural values and a vision of technology for all. They contribute to carve out non-commercial spaces where citizens can experiment with autonomy, civic participation, and grassroots innovation.

In the early 1980s, the International Coalition for Development Action, a federation of development nongovernmental organizations (NGOs) headquartered in Belgium, undertook a series of experiments with international computer networking funded by the Canada-based International Development Research Centre. Given the positive results of the tryout, a coalition of grassroots NGOs from four continents, whose interests ranged from women's rights to the environment and sustainable development, gathered in Velletri, a small city outside Rome. They agreed to institute a global network for computer communications amongst the organized civil society. Interdoc was born. It provided email and bulletin board conferencing facilities. Linking the nascent digital infrastructure with the promotion of social justice, the Velletri Agreement nurtured a series of network experiments catering to different sectors of the organized civil society. Among these were the BBSbased Fidonet, PeaceNet (U.S.), Green-Net (U.K.), and the European Counter Network catering to the most radical fringes of the European social movements. Some are still in operation. Seeking to promote ways of communicating freed of commercial barriers, in 1988 PeaceNet and GreenNet teamed up to lay down the first NGOowned transatlantic cable.

In 1994, the Zapatista uprising in Southern Mexico demonstrated the potential of the internet as a site of struggle, with the insurgents managing to transform a rural, local struggle into a global information guerilla movement. The Zapatistas inspired a series of novel experiments in autonomous infrastructure, especially in the realm of alternative service providers. These small-scale ISPs provided webbased services-such as website hosting, email, distribution lists, and chat rooms-and managed the machines in which these services ran. They promoted anonymous remailers and encryption services, and platforms for blogging and knowledge sharing, such as wikis. Examples include, Riseup Networks and May First/People's Link in the U.S., the Amsterdam and Utrecht Subversive Center for Information Interchange in the Netherlands, Nodo50 and SinDominio in Spain, Aktivix and Plentyfact in the U.K., SO36 and Nadir in Germany, and Autistici/ Inventati in Italy. Operated by techaware activists, since the early 2000s these ISPs have provided the digital backbone to many international activist networks. Occasionally, they have been subject to repression for hosting political and controversial content. In the late 2000s, some of these grassroots ISPs entered the realm of social networking services. Riseup, for example, launched Crabgrass, a social network platform designed to support self-organization efforts.

## WHEN TECHNOLOGY AND POLITICS SPEAK THE SAME LANGUAGE

"Socializing knowledge, without creating powers," reads the manifesto of a grassroots ISP offering email services and web hosting at no cost to leftist activists. Its politics are clear:

'We want to open up the web in order to be able to act on two levels: on the one hand, to defend the right of each individual to free communication, anonymity, privacy, and access to the resources of cyberspace; on the other hand, we want to contribute to offline activism projects operating in our social reality. We believe that creating an independent server is an excellent starting point to reach these objectives' (the manifesto has been redacted to prevent the identification of the group).'

### At its core, community Wi-Fi and cell networks projects have countercultural values and a vision of technology for all.

The services of grassroots ISPs might look no different from those of corporate providers. However, the latter emerge from the radical social movement scene, and therefore operate under distinct values. Their services often combine hardware and software, from the network to the application layer. While the heterogeneity of autonomous infrastructuring discourages generalization. For the purposes of imagining what a suckless internet would look like, it is worth understanding how values translate to working infrastructure in the examples mentioned. These values vary along the political spectrum, but are all part of the progressive social change narrative.

Firstly, autonomous infrastructures are firmly positioned outside the state and business realms. It is an issue of both ownership and modus operandi. They are generally non-profit projects facilitating access at no cost for their users. They are owned and controlled by groups whose agenda foregrounds participation, empowerment, and social justice. Volunteer staff are the chief operators. Users of the services are invited into a community where the relationships between infrastructure operators and their adopters are, to the extent possible, horizontal.

Secondly, creating and operating autonomous infrastructures is an "attempt to express peoples' political aspirations in the form of code," and to "implement our politics in our technology as we continue to refine it." Autonomous infrastructures experiment with translating human rights to privacy, freedom of expression and association into running code. The way these infrastructures are created, run, and developed reflects as much as possible the direct, participatory, collective, and autonomous nature of grassroots movements. This might translate, for example, to the refusal to cooperate with user traceability requirements, law enforcement, and security agencies.

Thirdly, autonomous infrastructures promote decentralization visà-vis the rapidly concentrating tech ecosystem. Instead of centralizing services and data, these projects recognize access to and ownership over infrastructure represents a form of power. They decentralize resources and data ownership, seeking to redistribute power, "building up structures where everyone can participate in an equal way." Users and developers alike are expected to embody "a willingness and predisposition to sharing and distributing not only resources, but also knowledge, skills, ideas and desires individuals have."

Fourthly, autonomous infrastructures are designed to enable and promote self-determination in the tech realm seen as the "control over" technology, to learn its capabilities and limitations. Technology becomes a means of emancipation from corporate and governmental control, whereby developers and users, not large companies, shape the rules of participation. The goal is to "bypass the mainstream by creating living alternatives to it," and "keep building working structures and alternatives that are diametrically opposed to the ways capitalism forces us to function in our everyday lives. Our job is to create selfmanaged infrastructures that work regardless of 'their' regulation, laws, or any other form of governance."

#### **TWO LESSONS TO MOVE FORWARD**

Autonomous infrastructures set out working examples of alternative modes of organization, closer and fairer relationships between infrastructure operators and users, and novel responsibilities towards the latter. They are unique in today's tech panorama because they are organic to contemporary struggles. They are at the service of, and an integral part of, contemporary movements, and contribute to their political agenda an emphasis on digital rights, privacy protection, and access to knowledge. They partake in creating here and now a suckless internet, proposing a solution that is simultaneously political and technical, where technology is a means to equality and self-determination and not just an end in itself.

While the autonomous infrastructures described here only cater to a minuscule subset of the population, they offer two key lessons for the near future. Firstly, technology is also a political project, and infrastructures can be configured and operated as a political subject in their own right, designed to support, among other things, horizontal relationships and privacy-respecting interactions. Secondly, if we do not like the "surveillance internet," we can still organize to create our own. It is time, however, to scale up the struggle and the ambitions, in two ways: by creating federated infrastructures that are more stable and thus able to be resilient to state and corporate pressures; and by moving deeper into the infrastructure, and the logical layer of the internet architecture in particular, toward an internet that respects human right by design.

#### Acknowledgments

This project has received funding from the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation program (grant agreement No 639379-DATACTIVE). See http://data-activism.net.

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