

**Das terrestrische
Internet**



THE TERRITORIAL INTERNET
THE TERRESTRIAL INTERNET
THE ORGANIC INTERNET

NetHood

This text was written by Panayotis Antoniadis as a contribution for the book „Auf den Boden kommen“, published by the Neustart Schweiz association, based in Zurich. The book is curated and edited by Hans Widmer (aka P.M., author of bo-lo‘bolo), who translated this text in German.

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The term „terrestrische“ in the German text, comes from Bruno Latour’s **terrestrial** attractor introduced in his book Down to Earth, and highlights the contrast between an Internet built on the ground and not in the Cloud. The term **territorial** introduced for the first time in this booklet, highlights the locality of an Internet whose infrastructure is owned and managed by local communities. Finally, the term **organic** has been coined by Panayotis Antoniadis to describe an Internet that develops in a bottom-up grassroots way, promoting physical interactions over digital, less efficient but more healthy. The three terms are used interchangeably, to highlight every time different aspects of the same in principle concept. An Internet that is made to serve the people on the ground, and not the corporations of the Cloud.

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THE POLITICS OF SERVERS

What is a server?

At the core of all digital web sites, platforms, communication tools, in short the Internet, we find different types of servers. Servers are special purpose computers responsible to receive requests, store and transfer data, and perform a wide variety of computations, with the use of software programmed to offer a specific (digital) service.

The “body” of the Internet is a huge collection of servers interconnected with cables. Its soul is claimed by a few big corporations, and there are only a few places of resistance.

Here is an example of an important group of servers, that exercise a lot of power in the Internet ecosystem: DNS (Domain Name System) servers translate human readable web addresses, domain names or URLs, like <https://neustartschweiz.ch>, to an IP (Internet Protocol) address like 192.354.985.234, that is a numeric identifier that reveals the actual location of the corresponding server in the overall network. In the case of web sites like the one of Neustart Schweiz, the servers are responsible to host and serve the data of the corresponding web site, from simple personal blogs to huge digital platforms like Facebook, Google, and the like. We all need to pay to own a nice domain name whose distribution is managed by a federation of national authorities in more or less transparent and democratic ways.

The Google search engine is another popular group of servers, which act as the main gateway to the content hosted in numerous individual web sites around the world. Google in essence stores locally, in its own servers, the information available in all other Internet web sites, indexes it, and replies to queries

about it, having the absolute power on the order that the search results appear, and thus our perception of what is the most important information sources for a specific keyword, an immense power indeed.

Our laptops, smartphones, and desktop computers connect everyday to hundreds or thousands of such interconnected servers to read news, send emails, participate in online meetings, find our way in the city, live a digital life. These personal computers are the clients. But in essence they are built from the same material with the servers. They are all computers, as the clients and the servers of a restaurant are all humans.

Like the client computers which live in our houses, the server computers are also physically located somewhere, often very far from their clients thanks to the highspeed optical cables minimizing the distance between computers in the world. Indeed, the Cloud is not an airy constellation but a very massive collection of circuits, cables, and bare metal, very carefully arranged and secured in huge data centers. „There is no cloud, just other people’s computer“ is the slogan of a recent campaign by the Free Software Foundation Europe.

When servers are ecological?

Unfortunately, the amount of energy consumed today by these data centers but also for manufacturing electronic devices, building software, running content moderation centers, and many more complementary to the core service processes exceed by far the actual needs of society for communication and computation. One of the reasons for this waste of energy and resources is the concentration of power and control of our digital lives to a handful of corporations.

These corporations, to satisfy their stakeholders add a significant amount of profit-making layers on top of the basic communication services, most notably advertising and surveillance, but also manipulation mechanisms that aim to increase the dependence of their „users“, us.

In a world where digital technology and platforms should be designed to serve the real needs of the people while minimizing its ecological impact, the Internet ecosystem would look very different. But it is extremely difficult to create alternative imaginaries and political processes that would support such alternatives. And this is especially so for the new generations born inside the Internet „cloud“.

Transitioning from the current corporate Internet to an ecologically sustainable and democratic one, a terrestrial, territorial, and organic Internet, requires a high level of consciousness that servers and the software running on them, needs to be controlled by the different communities involved depending on the service, from the neighbourhood to the global level. For example, Wikipedia has a global scope and should be distributed in multiple locations around the world. But the room reservation system for a cooperative housing project's digital platform does not need to be hosted on a server in Finland, owned by a company in San Francisco.

This simple image of different servers residing at the territorial level whose services correspond to, and controlled democratically by the corresponding communities toward a more sustainable future, sounds logical and attractive. But such decisions are complex and depend on various underlying global political processes, and power structures that are very difficult to disturb and isolate.

A complex set of questions

How would we answer some of the following questions as society if our minds and current lifestyles were not so dominated by the forces of consumerism and capitalism?

Do we need more or less digital communications?

Do we need more or less strict copyright laws?

Do we need a global public sphere without borders or some intimacy should be secured at different scales?

Do we need artificial intelligence and automation or we should expect a certain level of engagement and deeper understanding of Internet tools by their users?

Whom should we trust to take care of our data? A global organization or the neighbour next door?

Shall we aim for global efficiency or local resilience?

The answers to these questions would affect significantly the overall design choices on digital infrastructure and tools.

A complex set of answers

First, the co-location of servers is more efficient both economically and ecologically, while they can be controlled from (very) far away. You just need the password. Indeed, Facebook's or Google's servers are not all located (only) in San Francisco. They are deployed all over the world, often not very far in distance from their clients for performance reasons, but they are all controlled and orchestrated from far, from the headquarters of these companies. The need to place servers locally, one of the principles of the territorial Internet, is not because of the transport of the data would increase the CO2 as sending pears from Argentina to Switzerland does. But because the needs for democracy and self-determination cannot be fulfilled when a group of people does not have direct access and control over the data stored and the software used to facilitate their digital interactions. Instead, when this control is centralized by big organizations, it leads inevitably to the dependence of the controlling entity for its own survival on the ever increasing use of its services; in a way this could be seen the „second watershed of tools“ as analyzed by Illich for the case of education, transport, and health, this time for the case of the Internet. Having said this, one could still imagine servers providing services at the neighbourhood level could be hosted at the district or city level and so on, given that the requirement of democratic governance is fulfilled.

Second, the physical borders of digital communications and services are not always well defined. For example, there is often the need of people to share content to multiple layers, sharing for example the same photos with their family and with their international friend network. And there is also the need of governments to surveil and control. The „smart“ city is actually an evolution of „state intelligence“, where the state is now replaced by global corporations and „intelligence“ through tapping phones is now replaced by smart ubiquitous surveillance of everything, from locations, contacts, feelings. The idea of a global public sphere is very attractive but it comes at the expense of blurring the borders between the public and the private. The concept of the organic Internet, which advocates for the creation of local digital spaces from the bottom-up, does not aim to abolish the global nature of the Internet, but add more options to it, in the same way that cities offer both public and more intimate private spaces, and that the need for urban agriculture projects does not exclude the existence of a global food distribution network for what makes sense.

Third, the need for copyright protection of content can lead to significant waste of energy and resources. Think of Youtube, Vimeo and other video streaming services, for example, which make it difficult to download a media file on your computer to use the local copy in future viewing operations. The continuous downloading of media content from remote servers instead of local copies consumes a huge amount of bandwidth resources not really required by the actual service. On the other extreme, liberating content and facilitating local storage could lead to an excess amount of content replication, each person holding a huge media library in their own homes. It is critical to include the ecological perspective when we take such technological design decisions and find the „sweet spot“ between convenience and energy consumption.

Fourth, the levels of digitization in our societies can change dramatically the energy consumed by the Internet. Should all citizens require a smartphone to have the right to vote? Should there be limits on the individual use of the Internet? Should we all have our own personal computers, indeed many of them, small and big, or we could share them? Do we need always to see the faces of all participants of an online conference? In the case of food, there are some physical constraints of the body that put a limit. In the case of digital technology is time and attention the only constraints, which are now slowly reached without realizing it. Interestingly, it was in the name of „saving time“ that technological progress has been so much praised and instead today no-one seems to have free time any more! The power of manipulation and addiction from corporate digital services should not be underestimated.

Fifth, the labor required to produce high quality services can vary significantly depending on the expected levels of usability and reliability. When google servers are down it is „breaking news“ these days. But 100% availability of servers, and one-click services cost money and energy. Progressive people often understand the need for putting more effort in relation to food production, like in the example of the Ortoloco Community Supported Agriculture (CSA) cooperative in Zurich that requires its members to actually go to their farm regularly and help with various tasks, from the treatment of the ground to the distribution of the vegetables to their neighbourhood. The same progressive people are often reluctant to give up the comfort that modern smooth interfaces provide, even if they are expensive in terms of energy, since they require enormous amounts of research, testing, but also computation (analyzing of data to provide personalized experiences), etc.

Imagining a sustainable Internet

More than one books are needed to discuss in depth all these issues, and how a realistic path from today's digital world to the organic, terrestrial, and territorial Internet could be made possible. Creative commons licensing, free and open source software, open hardware, and a healthy Internet diet will be certainly part of the final solution.

For now we invite you to consider the digital infrastructure required to facilitate processes, equip spaces, enrich communication in the description of sustainable alternatives in housing, agriculture, education, energy, and so on at different geographic scales or „glomos“ according to Hans Widmer's framework. In which ways could it be designed in a more democratic way? Where should the different parts of digital platforms (from hardware to software) should be developed, where the corresponding servers should be hosted and which actors should be responsible for their management and control?

To facilitate your imagination assume that all technical, economic, political, and social processes are in place to allow for communities to decide on the types of digital services that they need to provide locally and which need to be taken care of at „higher“ levels and limit your reasoning to the appropriate balance of social benefits in relation to energy costs.

When a service is placed in a certain glomo it can still have a global scope since local servers can be federated. The email service works like this technically, if we ignore the totally unnecessary domination of gmail, but other services like video conferencing or messaging there is a lot of room for improvement.

You can attempt to go only a few years back when there was no Internet, and life was still good?, and then think for what is the Internet is really needed today and why. Why it sounds unimaginable to constrain ourselves to just a few hours of Internet access per week? And even more unimaginable to get rid of our personal computers and access the Internet through shared devices like the good old Internet cafes?

At the same time rich people are paying for smartphone-free vacations in resorts where their mobile phones are confiscated by force. What stops us to organize our life in such a way without having to pay for a bodyguard that keeps the smartphone away from us?

There are many different answers and many different ways to build a more organic Internet and a more healthy life supported by digital technology and not dictated by it. Some of them would sound very bizarre today.

- Web sites with „opening hours“ during the day running on locally generated solar energy.
- Obligatory signage for addictive social media platforms that are (very) dangerous for our mental health, like for cigarettes, or for informing for the location of the server where a web site is hosted, as with the origin of food products.
- Emergency scenarios and exercises in case of large scale failures and/or attacks on the local digital infrastructure. Could we live without our devices for a few days, or even more?
- Internet free zones in the city

The most important is to create the suitable environment that key decisions around investments on infrastructure, use of software, and data management are made democratically, which is only feasible if enough alternative solutions are made possible, which is not the case with the corporate Internet.

PRACTICAL PROJECTS AND STARTING POINTS

Free software and self-hosting

There are numerous projects around the world producing free and open source software for different types of applications, including digital platforms, servers of top quality like NextCloud, Etherpad, Wiki platforms, Framadate, and more. Framasoft based in France, framasoftware.org, is a very interesting initiative that invested a lot of resources in making accessible such software both in technical terms, e.g., providing hosting for them while encouraging people to self-host the services that they use often, but also in terms of communication creating brands like the „Chatons“, chatons.org, for making such software alternatives more attractive and recognizable while providing suitable hosting solutions. In parallel, the organization LaQuadrature-DuNet, lqdn.fr, is playing a more active political role campaigning against surveillance and other abusive behaviours on the Internet by corporations and states.

Digitale Gesellschaft in Switzerland focuses more on the 2nd part, communication and campaigning, and the „Short Guide on Digital Self-Defense“ is a great entry point to the world of alternative software solutions to big Internet corporations: digitale-gesellschaft.ch/ratgeber/.

There are also numerous specialized software solutions following the free, libre, and open source software model, that are not always part of this wider ecosystem like the Juntagrigo job management system for agriculture cooperatives like ortoloco. See juntagrigo.org

Community-owned network infrastructure

There are numerous community projects building their own infrastructure (wireless or fiber) connecting to the Internet and deploying local services, like Freifunk.net in Germany or Guifi.net in Catalonia. A good starting point is the e-book by the net-Commons project: netcommons.eu/telecommunications-reclaimed. The project MAZI has developed a DIY networking toolkit for deploying small-scale local networks in physical spaces with the use of low-cost hardware like the Raspberry Pi. The official project funded by the EU Horizon2020 framework has finished in 2018, but it is evolving to a wider community which maintains a repository of projects in this direction at mazizone.net, promoting the concept of the „organic Internet“ developed during the project.

Organizational structures

It is important to note that democratic and ecological digital solutions require appropriate organizational structures. In this direction, platform cooperativism is a consortium promoting „initiatives“ focusing on the collective management of digital platforms. See <https://platform.coop>. Sensorica, sensorica.co (hardware products), Meet.coop, meet.coop (online meetings), and Loomio, loomio.org (collaborative decision making tools), are other good examples of organizations developing digital tools using the cooperative model.

The recently published „Handbook of Peer Production“ is a good entry point for understanding the wider picture of alternative digital technologies. See also the P2P foundation and the Institute of Network Cultures.

Hybrid spaces

One of the key principles of the organic Internet is that digital infrastructures should be grounded in physical spaces that can act as containers for building democratic and learning processes around digital technology.

The collective space L200 in Zurich was conceived as such a hybrid space, langstrasse200.ch, and the project C4R (Cultures 4 Resiliency) aims among others, to create a federated network of such hybrid spaces hosting their digital infrastructure locally, but stay interconnected for sharing knowledge. See c4r.info

Convivial tools

One of the biggest challenges for promoting digital tools that are more democratic and eventually more ecological is the very limited public imagination for the threats of today's corporate Internet and its possible alternatives. The International Research Centre for Electric Convivialities based in Italy (Centro Internazionale di Ricerca per le Convivialità Elettriche, CIRCE), circex.org, is building on Illich's concept of „tools for conviviality“ and produces a wide range of educational material, ranging from writings like the book „Internet, mon amour“, ima.circex.org/en/ to hacker pedagogy workshops, where participants are trained into questioning the design of digital tools, and understanding in more depth the power structures hidden behind.

In Switzerland, the 7at7 series is a collaboration of Swiss organization like Internet Society Switzerland Chapter, Digitale Gesellschaft, pEp foundation, NetHood, and more, developing a regular event, every 7th of the month at 7pm, for communicating important concepts on digital empowerment and digital self-defense to a wider public. See 7at7.digital

Digital sustainability

There is a lot of projects and discussions explicitly discussing the relationship between digital technology and sustainability. A lot of these initiatives are technology oriented promoting „technical fixes“ like GreenIT, the Internet of Things, or Blockchain that look more like „green washing“ than honest efforts to reduce the overall footprint of digital technologies. Bits & Bäume is a „movement“ in Germany that tries to develop alternative, truly ecological, perspectives on the notion of digital sustainability. See bits-und-baeume.org/en/.

Recently a new Digitale Gesellschaft working group started to develop a booklet titled „a short guide to digital sustainability and sustainable digitalization“, which was published by the newspaper WOZ and is available online at: digitale-gesellschaft.ch/nachhaltigkeit



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