

Towards an Infrastructure for a Democratic Digital Public Sphere

Volker Grassmuck¹

preprint to be published in: Alexander Baratsits (ed.), Building a European Digital Public Space, Strategies for taking back control from Big Tech platforms, iRights.Media, Berlin 2021

Abstract

The Internet is great but broken. Back in the day, it brought us the Usenet Newsgroups, the Blogosphere and John Perry Barlow's Declaration of Independence. Now, the Internet is dominated by monopolistic, addictive, asocial platforms that pit us against one another in a deluge of fake news, hate speech, disinformation and worse. Something has gone terribly wrong. This text identifies the public sphere as the place for individual and collective opinion forming as the most important function of the digital realm that needs fixing. It suggests a shared and open sociotechnical infrastructure for pluralistic and federated platforms in Europe, and shows that most of the building blocks already exist. A different Internet is possible.

The public sphere

The Internet affects almost everything under the sun: banking, shopping, entertainment, navigation, health care, government services, farming, hanging out with friends and, not least, sex, drugs and rock 'n' roll. Much of what people used to do offline, they now do online. And most of these activities use commercial platforms.

Markets inherently tend toward concentration. In their digital online incarnations, they do so at a greater accelerated pace and on a more globalised scale than in any previous

¹ Senior Researcher in the H2020 project European Media Platforms (EuMePlat) at the Hans Bredow Institute, Hamburg.

phase. Market actors build systems that serve their profit interest. They do so by serving the needs and desires of their customers and binding them to services, so they can continue to extract value from them. This logic has both created highly useful services and all the problems we associate with platform capitalism.

The word “platform” etymologically refers to a raised stage on which musical and other performances are presented, or speeches are delivered, a place or an opportunity to express one’s opinion, a tribune or pulpit. In this sense, the Greek *agora* was a platform, the public sphere from which democracy was born. In computing platform means the hard- or software foundation of a particular environment, a microprocessor or computer architecture, an operating system, a database or a browser and, most commonly, a server that delivers services to software clients.

“Platform capitalism” then is the current phase of capitalism where value extraction is concentrated in a few global corporations, often clustered as GAFAM (Google (Alphabet), Apple, Facebook, Amazon and Microsoft), which now include Chinese companies Alibaba and Tencent. Their platforms are stages for individual and collective opinion forming and for commercial messages, alongside all the other functions they provide to different markets. With billions of users, they make all other public sphere forms and places shrink in comparison.

The public sphere emerged in the eighteenth century in diverse spaces like coffee houses, salons and theatres and most significantly in the form of mass media (Habermas 1962), which differentiated into a functional system of society (Luhmann 1996). Journalism professionalised at the end of the nineteenth century. A journalistic ethos was self-organised and institutionalised in press councils and editorial statutes that shield journalism from the commercial influence of owners and advertisers. The self-confidence of the profession posited itself as the fourth power in the state with the task of checking the other three powers in the public interest. Since Public Service Media (PSM) are politically mandated, they need to be primarily shielded against political instrumentalisation, against becoming state media, the mouthpiece of government. Therefore, civil society, in the form of broadcast councils, was tasked with controlling and overseeing publicly funded infrastructure and autonomous journalistic-editorial operations. They ensure that PSM provide trustworthy information and education, give voice to a broad spectrum of societal opinions, including those of minorities, and are factor and forum in opinion forming, including space for citizen media, and local and regional discourse.

When in the 1980s, cable and satellite created new transmission capacities and commercial broadcasting was permitted, it became apparent that profit-oriented media only provide selective elements of the public sphere. They have what the German Federal Constitutional Court in its rulings on PSM has called a distinct *eigen-rationality* from that of PSM. The inherent incentive of for-profit broadcasters is to provide popular content that attracts the largest possible audience at the lowest possible cost as targets for advertising or as subscribers. In contrast, there is no incentive for PSM to extract value; rather, they are legally obliged to serve all citizens and the public good.

Today, digital platforms have become the raised stage on which to express one's opinion. They constitute an ever-increasing part of the public sphere where journalists inform, public intellectuals frame, citizens opine, and politicians vie for voters and marketers for customers. They are media, yet they persistently resist being accountable and regulated by media laws that have evolved to ensure a fair and diverse public sphere in the public interest, arguing that as tech companies they only provide their users with the means of expressing themselves.

Digital platforms provide many other services that need scrutiny, most notably advertising, but their public sphere function is special. It is the place where this discussion takes place, where we as a society inform ourselves, debate and negotiate where our collective future should lead. It is the space where opinions are formed individually and collectively that eventually lead to collective action, to laws and regulations, to agreed norms that guide our interactions and the development of the sociotechnical environment we live in. To fix the public sphere on the Internet, we have to look back at its history and understand what was there before and why things went so terribly wrong.

Newsgroups and the Blogosphere

The Internet was developed from basic research on the means for networking computers financed by the US military funding agency DARPA and conducted at both military-industrial labs and universities. In academia it met the scientific ethos of communism (Merton 1942), the hacker spirit of computer scientists (Levy 1984), the spirit of the student movement of 1968 and the ensuing social movements of the 1970s. Researchers organised themselves in working groups on mailing lists, which were joined under the Internet Engineering Task Force (IETF) in 1986.

The Internet is a stack of protocols that came to be conventionally organised in the seven-layer OSI model (Open Systems Interconnection). The model begins with physical

bit transmission layer 1 and culminates in application layer 7, which services web browser, email and messaging clients, through which users interact with the data universe and each other.

The user herself is not part of the model. She is sometimes referred to as “layer 8”. In fact, various extensions of the OSI model from technology to social have been proposed: for example, layer 8 for finance and layer 9 for politics (McOrmond 2004); or layer 8 for the individual, layer 9 for the organisation and layer 10 for the state (Farquhar 2010). There is a clear sense that the Internet is a techno-social sphere.

Usenet, the first instantiation of a comprehensive networked digital public sphere, was conceived by two graduate students at Duke University in 1979. Based on mail and the Network News Transfer Protocol (NNTP), it allows users to post messages in newsgroups organized into subject hierarchies like sci.* (sci.math, sci.physics, etc.), comp.*, talk.* or alt.*. News content is exchanged among a large number of servers that store and forward messages to one another via news feeds, even to dial-up bulletin board systems beyond the Internet. Users access the network through a newsreader client, allowing them to subscribe to groups and participate in global discussions. Ronda and Michael Hauben documented the world of Usenet and the roots of cooperative online culture in their seminal book on the Netizens (1996).

At the end of the 1980s, Tim Berners-Lee invented the graphical user interface to the Internet: the WorldWideWeb. Working at the public research centre CERN and in the self-evidence of the Mertonian sharing spirit, standing on the shoulders of those who had freely shared the preceding protocols of the Internet, Berners-Lee did so too. He also created the first weblog in November 1990 and the WWW Consortium (W3C) to keep his protocols open and consistent.

The number of weblogs grew rapidly and at the turn of the century they had evolved into a distributed yet even more highly interconnected communication space: the “blogosphere”. The multitude of individual blogs, which are now supported by Content management systems (CMS), became interlinked by trackbacks and pingbacks that let one blogger and her readers know that another blogger had referenced her post and facilitated cross-blog conversations.

An additional protocol was to allow users to read subscribed blogs in a feed reader. The first version was published in 1999 as RDF Site Summary (RSS). This came at a time when Berners-Lee was promoting the idea of the “Semantic Web”. The original Web contained little information about its resources (i.e., metadata) and the Resource

Description Framework (RDF) adds a layer of meaning. It describes resources of various types in a structured metadata model that can be read and processed automatically to create knowledge graphs. However, the grand vision of a Semantic Web appeared to overburden the rather mundane task of syndicating blog posts. As Harry Halpin recounts, the syntax of RDF made RSS difficult to understand for developers and, therefore, remained virtually unusable. This led David Winer to remove any traces of RDF complexities, use a simple XML-based syntax and rename it “Really Simple Syndication”. The use of this version of RSS exploded from 2002 onwards allowing blog rolls, audio files and other data to be syndicated across websites and feed readers. It also facilitated services like search engines, ad networks and analytics (e.g., for meme tracking across the entire blogosphere). Yet the different philosophies of rich RDF and simple XML could not be consolidated, splintering the standard into incompatible versions:

“Due to this ego-driven standardization failure, the decentralized RSS-based Web 2.0 was crippled at birth. The IETF finally managed to fix the wreckage of the three different incompatible versions of RSS by creating the XML-based Atom, but by then it was too little, too late. In the wild, RSS usage was split between the different incompatible formats. Facebook and Twitter dropped RSS support, and eventually in 2013 Google canceled support of their popular RSS reader. The hope of decentralizing the Web 2.0 via decentralized status feeds was dead.” (Halpin 2019)

It is hard to estimate how big the global blogosphere was at its peak in the late 2010s. Technorati indexed about 112.8 million blogs and 2 billion links in 2008.

From the building blocks of protocols, identifiers, metadata, addressing, routing schemes, etc., different architectures and ecosystems can be built. The entirely server-less architecture of Peer-to-Peer (P2P) networks, made famous by Napster and developed further as Bittorrent and wireless mesh networks, continue today: for example, the InterPlanetary File System (IPFS) was launched in 2015. The distributed and federate structure of the blogosphere has been taken up by the “Fediverse”. Services like Mastodon, PeerTube, Friendica, Nextcloud and GNU Social can be run on any number of nodes, each with their own code of conduct, terms of service, privacy options and moderation policies, all interconnected through W3C’s ActivityPub protocol.

From the blogosphere to platform capitalism

Nevertheless, server-client platforms are currently the Internet’s dominant architecture, having eclipsed classic blogs in the late 2000s. Social dialogue across a multitude of sites

became centralised on global intermediaries like Facebook (2004), Youtube (2005, acquired by Google in 2006), Twitter (2006), Tumblr (2007), Posterous (2008, which closed in 2012 after most of the team was taken over by Twitter), Whatsapp (2009, acquired by Facebook in 2014) and Instagram (2010, acquired by Facebook in 2012).

Social platforms do not provide content themselves but create feedback loops among their users. Search is a case in point. Web 1.0 brought forth an ever-growing number of information resources, but where was the “telephone book” that allowed you to find a service when you needed one? In the mid-1990s, services like Yahoo were scraping and indexing all webpages. The big question then was how to present the information if there were, say, 10,000 search results. Should they be have been ordered as they come out of the database, chronologically, alphabetically or ranked by how often the search term appears on a page? Two Stanford PhD students had an ingenious idea. They realised that people are constantly making decisions about pages they find so important that they let others know about them on their own webpages by setting links. In a research project from 1996 onwards, they developed the PageRank algorithm that grades a website by the number of pages and the importance of those pages that link to it. By harvesting millions of individual link decisions, they were able to approximate the ‘relevance’ of sites for any given search term.

What became Google (1998) is therefore based on data analysis of the sum of dispersed human decisions. It is as much a technical device as a social one, not unlike the citation index in science metrics. This approach proved so successful that Google search became a central gateway for navigating the Web, an infrastructural service much like a public utility.

Google built an analytics and advertising environment around its search engine. Social platforms provide their services for free to the end-user and are financed nearly entirely by advertising. For this purpose, an entire ecosystem of platforms and ad tech companies emerged that is quite different from the world of offline media ads. It starts with creating data profiles of individual users that are then auctioned to advertisers in real time. The more information is collected on the user’s preferences, choices and behaviour, the more accurate the inferences on how well they fit the advertiser’s intended target group (Ryan 2018). The prerequisite for this model is therefore the systematic and comprehensive surveillance, third-party tracking and profiling of users.

Google added special searches like Google News (2002) that presents snippets from news sites. With Google Books (2004) it started to scan entire libraries providing full-text

searching on much of the world's printed knowledge. Google Arts & Culture (2009) does the same with artworks in museums across the world. It scans the physical world with satellites and Street View cars for Google Maps (2005).

Press publishers have complained that the company is freeriding on their investments when it shows snippets on Google News. With Axel Springer as a driving force, they decided to campaign for a new ancillary press publishers' right in addition to existing copyright. After failed attempts in Germany and Spain, this new right was passed into European law in the 2019 Copyright Directive in the Digital Single Market.

During the law-making process, as a public relations effort, platforms set up grant programmes to support media: Microsoft News, the Facebook Journalism Project and, largest of them all, Google's News Initiative. A study by Dachwitz and Fanta recounts how Google has distributed more than half a billion euros to major European news companies since 2013. Their conclusion: "Google is the world's biggest patron of journalism" (Dachwitz/Fanta 2020, 11). Since this battle over the new publishers' right was lost, Google's funding serves to tie media organisations more closely to the company's product ecosystem of analytics and advertising. Google is out to become the dominant "operating system" for digital journalism (Dachwitz/Fanta, 91).

As intermediaries, platforms bring together large numbers of suppliers and consumers of information, products and services. Early exemplars led to platformisation expanding to taxi services (Uber, Lyft), apartment rental (Airbnb), sales of handmade products (Etsy), restaurant reviews (Yelp), food delivery (Wolt), gig work in general (Amazon's Mechanical Turk, Airtasker.com) and specific sectorial on-call work such as in photography (Snappr, Scoopshot, Eyeem, Flytographer). In business lingo this wave of platformisation was termed the "sharing economy". In critical discourse it is discussed as "platform capitalism". The platform utilises the collective intelligence that manifests itself on the Internet and the willingness of people to share and cooperate (Grassmuck 2012), and channels them into an app that allows two or more sides to find each other. It internalises some of the transaction risks, provides a payment system and takes a commission; sharing economy, in this sense, means the intermediary platform takes a "share" of all transactions.

The more people are using a platform, the more valuable that platform becomes for everyone. This network effect creates a winner-takes-all situation for given services and locks-in users who find it useful but also increasingly difficult to leave the more their online interactions are stored in these walled gardens or data silos.

Public value, commons and co-ops

We conclude that platforms are a problem, but are they? Wikipedia is also a platform with the vision of “a world in which every single human being can freely share in the sum of all knowledge” It is open for everyone to read and to write, and is overseen by strict community guidelines. In some ways it operates like commercial social platforms, only that here the guidelines are not decreed by a company but actually agreed by the community of volunteers.

The logic behind Wikipedia is, of course, fundamentally different from that of for-profit platforms. Yochai Benkler calls it “commons-based peer production” to distinguish it from the productive work of employees in firms, following the directions of managers, and of market actors, following price signals. In this third mode, groups of individuals work together as equals on large-scale projects – his archetypical examples are Free Software and Wikipedia – free-licensing their results, following a range of motivations and social signals. “This mode has systematic advantages over markets and managerial hierarchies when the object of production is information or culture, and where the physical capital necessary for that production – computers and communications capabilities – is widely distributed instead of concentrated” (Benkler 2002).

The advantage becomes apparent when comparing the troublesome moderation system of commercial platforms with Wikipedia’s community-based quality control and fact checking that has proven astonishingly resilient against disinformation, spam, defacement, etc. Commons here does not refer to an imaginary, permissionless free access regime, which supposedly leads to its tragedy, but to the actually existing commons that economist Elinor Ostrom has researched. From her empirical work on communities of commoners, who sustainably organise their common resource, she has derived Eight Principles for Managing a Commons (Ostrom 1990; cf. Bloemen/Hammerstein 2017).

Science is a common endeavour to advance knowledge by standing on the shoulders of those before us. Based on the four ethical principles formulated by Robert Merton (1942), science has built its own commons infrastructure, including: open-access pre-print servers like arxiv.org at Cornell University; dictionaries like LEO established in 1995 at the Technical University Munich; Open Educational Resources (OER); and the Internet Archive, a non-profit guided by digital librarian Brewster Kahle, which, for its WayBackMachine, scrapes and archives the entire Web like Google.

In the 1980s and 1990s, there was a privatisation and marketisation phase in public administration, including broadcasting. Under so called New Public Management (NPM), corporate management techniques aimed to raise the efficiency of supposedly wasteful bureaucracy. The approach's apparent deficiencies led Harvard University management scholar Mark Moore to present an alternative concept for the management of public institutions in 1995 that he called "Public Value". His concept is deeply democratic. The task of the public sector is no longer to implement predefined goals as efficiently as possible. Rather, public value is based on the public negotiation of the collectively articulated and politically mediated preferences of citizens and, therefore, is something other than the sum of individual interests. The negotiation process is controlled by politics (i.e., "governance"). Its measure of success is based on not only results but also legitimacy, fairness and trust. Although Moore's concept does not directly address public broadcasting, the concept was adopted by the BBC in 2004 and, from there, has spread to PSM throughout Europe.

Politicians today focus on regulating Big Tech, but this was different at the time when Google Books was introduced. In 2005 then French president Jacques Chirac initiated a European search engine project called Quaero. The German government participated but withdrew a year later and pursued its own project of a semantic search engine named Theseus. Both eventually failed, but some stubborn academics have salvaged the idea from the wreckage by developing the Open Web Index. An index is the central element of any search engine, providing a structured copy of the entire Web on a cluster of several thousand servers, making it the most expensive to create and maintain. Only four comprehensive indices exist today, all of which are privately owned by Google, Bing, Baidu and Yandex. The Open Web Index should therefore be operated as a public infrastructure. Based on the index, any number of search engines can retrieve and rank information with algorithms optimised for various purposes, including data analysis, AI system operations, and academic and for-profit services (Huss et al. 2019; cf. OpenSearchFoundation.org).

Also in reaction to Google Books, in 2005 six European heads of state asked the EU to support the development of a public European digital library. Europeana.eu was established in 2008 and today provides access to 58 million digital objects from around 4,000 museums, archives and libraries across Europe with sophisticated search and filter tools, and themed collections and exhibitions. This has been achieved through a common metadata model that links the holdings of the different data silos. In May 2015 Europeana

became one of the European Commission's Digital Service Infrastructures (DSI) that deliver networked cross-border services to citizens, businesses and public administrations.

Platforms are not a problem per se. The fundamental distinction lies in their eigen-rationalities, their basic value orientation, ownership and governance: whether they are optimised for private profit or for public value.

The most explicit response to platform capitalism is "platform cooperativism". The concept was coined as a critique of the "sharing economy" by New School professor Trebor Scholz in 2014. It also builds on people's willingness to share and cooperate, and on the ability of platforms to match supply and demand, yet combines these aspects with the long tradition of worker-owned cooperatives. Therefore, the difference is not so much the technology used or the services offered (e.g., taxi rides and apartment rentals) but the ownership and democratic governance of the collective enterprise. The model of platform co-ops resonates across the globe and is being applied in sectors as diverse as childcare, data entry, urban recycling and home services. The model is developed further under the stewardship of the Platform Cooperativism Consortium and researched by the Institute for the Cooperative Digital Economy.

Another response to platform capitalism is a growing movement to re-decentralise the Internet as championed by the Internet Archive's Brewster Kahle, who issued a call for "Locking the Web Open" in 2015:

"Fortunately, the needed technologies are now available in JavaScript, Bitcoin, IPFS/Bittorrent, Namecoin, and others. We do not need to wait for Apple, Microsoft or Google to allow us to build this. What we need to do now is bring together technologists, visionaries, and philanthropists to build such a system that has no central points of control. Building this as a truly open project could in itself be done in a distributed way, allowing many people and many projects to participate toward a shared goal of a Distributed Web. Together we can lock the Web open." (Kahle 2015)

Many initiatives are working on different parts of the puzzle. Redecentralize.org is a meta-site for collecting emerging components for a world of open platforms and protocols. It lists free and open technology for the cloud and other storage, social networking, online cooperation, identity management, messaging, telephony, etc., and ethical alternatives to popular proprietary applications. PublicMediastack.com is a similar collection focused more directly on media.

Avoiding fallacies

When confronted with complex systems, we all have a tendency to reduce complexity by focussing on what seems to be the crucial element. As technologists, we furthermore tend to try and solve social problems through technology. As the online space is constituted by technology, the solution to every issue also always takes the shape of technology.

However, because it is also a human environment, it would be fatal to remove people from the equation. Like the parable of blind men whose conflicting views of what constitutes an elephant are formed by touching different parts of the animal, we run the risk of seeing the particular element we are focusing on as the panacea to all digital problems.

If platforms seem to be the problem, let's shift our focus onto protocols. Under the title "Protocols, Not Platforms: A technological approach to free speech" (2019), Techdirt editor Mike Masnick argues that building protocols rather than platforms would return the Internet to what it used to be. Protocols would revoke our reliance on "a few giant platforms to police speech online." He points out that Facebook, Google and Twitter hire thousands of staff for their moderation teams and develop AI to spot contentious content. With "decentralised" protocols, "there could be widespread competition, in which anyone could design their own interfaces, filters and additional services, allowing whichever ones work best to succeed, without having to resort to outright censorship for certain voices." In a "marketplace for filters", a million different content moderation systems would filter the same corpus of content and magically also improve users' control over their own data.

Masnick not only ignores the structural issues of upload filters and automated decision making (ADM), which have surfaced in the debate on the new EU Copyright Directive, but also more significantly reduces societal complexity to a naive trust in "free market" competition. If the market had responded to users' demands for privacy and data protection, public intervention in the form of the EU's General Data Protection Regulation (GDPR) would not have been necessary. As noted in relation to commons platforms, not even platforms are evil per se. In Masnick's argument we see a common fallacy of technologist at work: the techno-centric Californian ideology (Barbrook/Cameron 1995).

In the wider debate, algorithms, which are viewed as somewhat mystical powers that curate our online information environment, are often singled out as the main culprits. The proposed solution then is to force them to be transparent, subjected to expert oversight and democratic scrutiny. Technologists point out that this is easier said than done. But, of course, particularly when discussing self-learning algorithms and ADM, a

debate is needed regarding where this is taking us. Indeed, certain problems have become so apparent that the EU has recently proposed to regulate and even ban the most high-risk AI applications. Yet, the call for algorithm transparency is often like giving a black box name to a complex problem and delegating it to the experts.

“Decentralisation” is a key value in the struggle against platform capitalism. It is negatively defined as that which is not desired and focuses on avoiding centralised trusted third parties that could become single-points-of-failure or of censorship, most notably through trustless blockchain technology. Yet decentralisation might create many points of failure, whereas a central node might be trustworthy if its governance ensures that it is shielded from undue influence. Attempts to define the term “decentralised” show that it is hard to pin down, to the point where calls have been made to abandon it altogether. “A loaded term like ‘decentralized’ confuses discourse around individual properties that can be defined and described like censorship resistance, security, governance, and distribution. It has become a word that means ‘the opposite of all the bad properties of legacy systems.’ It’s the perfect word for scammers and authoritarians to hide behind” (Sheng 2018).

“Interoperability” is another frequently heard term for fixing the Internet. It follows a mantra that Masnick is also singing: interoperability lowers entry barriers, creates competition on a “level playing field” and, therefore, “freedom of choice” for consumers (Andreoli 2019). Yet the free market has brought us Apple’s ecosystem where everything interoperates seamlessly and third parties can join if they adhere to Apple’s standards and rules. It would certainly be nice if messenger apps were interoperable, but, as Threema, Signal, Telegram, Whatsapp, etc. all follow different approaches to end-to-end encryption, making them interoperate would mean agreeing on one and dropping the rest, cutting short promising technological trajectories. Therefore, interoperability needs to be qualified. It has to be based on open standards that dominant actors adhere to rather than override with their own proprietary versions. But, more importantly, standards are not static. The main issue here is the governance of the development process that considers the virtues of different options.

The biggest keyword of them all is “sovereignty”. Once “sovereign” used to refer to the supreme power of the King, which in the nineteenth century was transferred to the democratic nation state with the people as its sovereign. In its extreme form of individual autarchy and self-sufficiency, sovereignty is aspired to by preppers awaiting doomsday. In the name of sovereignty, Russia strengthens its Internet laws and Lukashenko and the military regime in Myanmar complain about foreign interference. US law scholar Frank

Pasquale (2018) conversely analyses the “functional sovereignty” that major digital firms acquire by replacing territorial sovereignty of government.

To increase control over our personal data and decrease Europe’s dependence on Chinese and Taiwanese hardware and US-American Internet services are, of course, worthy goals to strive for. Yet in a highly interconnected world, where people are acting on a shared value basis, cooperation, interconnections and mutually strengthening efforts to solve common problems are preferable over wasteful and ineffective competition in a protectionist race to become the number one nation.

The way forward: Creating a shared digital public sphere

Our digital habitats and underlying sociotechnical infrastructures are currently dominated by the platform capitalist paradigm. But as we have seen, a different world was once possible and could be possible again.

The goal is fairly clear: a shared and open infrastructure for pluralistic and federated platforms in Europe. Unity in diversity is a key part of Europe’s identity. It should also guide the construction of its digital public sphere: a federated media universe with any number of nodes, all with their specific thematic, regional or functional scopes, some providing original content, others aggregating on specific themes, providing analytics, trending topics, each with their own moderation policies and business models, including platform co-ops, yet interlinked into something larger than the sum of its parts. It is not about “catching up” with Silicon Valley or China but about building something new: a digital public sphere that serves the public’s welfare, which is shielded, like journalism, against the influence of owners and advertisers and, like PSM, against the influence of politicians, and is placed under the control of civil society.

Information and knowledge institutions that share a similar eigen-rationality are logical partners: PSM have the legal remit to inform and educate universally. Cultural heritage institutions and the public sector under the emerging open data and re-usability regime have an obligation to preserve the wealth in their holdings, and make them accessible and available for re-use. Universities are tasked with creating new knowledge and making it useful to society. Through community commitment and commons-based activity, civic organisations peer-produce public value and ensure it stays permanently

available via free licensing. These services are not-for-profit, either publicly or community-funded with the mandate to maximise public as opposed to private value.

The building blocks of shared values, technology and governance already exist. Given the state of the digital public sphere, the need to act is felt by many. In June 2021 the Research Network on Innovation in Public Service Media Policies (InnoPSM.net) launched its manifesto for a network of Public Service Media Internet platforms, calling for a renewal of the PSM remit in the digital age. The proposal focuses on reinforcing PSM's proven strengths whilst ensuring its independence from corporate and political power through public funding. It calls for the international network of PSM platforms to "co-operate with others, including public organisations (universities, museums, libraries, and so on), civil society, civic and community media, artists, digital commons projects, platform co-operatives, and so on" (PSMIManifesto 2021).

PSM have an important part to play, but recent debate has shown that their remit and shrinking budgets leave most of them with only a very narrow corridor in which to act. Big institution inertia slows them down internally. Externally, they are under increasing attack, with rivals using every opportunity to innovate against them. But, most of all, they do not have a mandate for a European public sphere.

Arte rightfully calls itself "The European Culture Channel". Founded in 1990 from French and German PSM, its Interstate Treaty gives it unusual freedom but does not even provide it with a mandate for multilingual programmes. Arte does present subtitled programmes in English, Spanish, Polish and Italian that constitute a quarter of its video views (Cote 2019), but these translations are commissioned by the EU. Neither does Arte have a mandate for social dialogue: many Arte programmes provoke debate, but viewer discussions are conducted on Facebook or Youtube, each in their separate language space.

A significant impulse for a European public sphere came when Ulrich Wilhelm, former director of the Bavarian Broadcasting Corporation, took over as president of German broadcaster ARD from 2018–19. He made it clear from the outset that PSM could not shoulder the costs of a European infrastructure through the broadcast fee. His project, which began as a "European super media library", evolved into a European infrastructure for digital media platforms over the course of his presidency and culminated in an architectural proposal for the values, technologies, funding and governance of a European public sphere (Kagermann/Wilhelm 2020).

Although PSM cannot take the lead, their digital and R&D divisions need to be involved. In fact, they are already key players in a number of multi-stakeholder public sphere initiatives that have emerged across Europe.

In 2015 Green Member of Parliament Tabea Rößner initiated a two-year roundtable at the German Bundestag, which resulted in Ten Theses on the Future of PSM, calling for broadcasters to become platforms and more European (www.zukunft-oeffentlich-rechtliche.de). The European Public Open Spaces (EPOS) initiative with multi-stakeholder meetings in Berlin then followed in 2018 (EPOS 2018 ff). Klaus Unterberger, Head of the ORF Public Value Department, continued the debate in a similar public-civic initiative called Public Open Space with participants from Austria, Germany and Switzerland attending workshops in Vienna. The effort led to the launch of the POS vision in April 2019 (POS 2019).

Geert-Jan Bogaerts, Head of Innovation and Digital Media at the Dutch PSM VPRO, initiated PublicSpaces.net in the Netherlands, which entered the public arena with its June 2018 manifesto. The coalition of nearly thirty organisations includes other Dutch PSM, cultural heritage institutions like the Dutch Institute for Sound and Vision, film festivals and CSO like Waag and Wikimedia Netherlands. One of its core activities is to facilitate the sanitization of media site infrastructures. VPRO has evaluated its entire web technology stack based on the values stipulated in the manifesto and started to improve or replace noncompliant components. It also provides guidelines and encourages other media sites to do the same. The goal is to issue a badge – a quality seal, easily recognisable to users and partners – to those sites that rank highly. Another core activity is public outreach with the PublicSpaces Conference, which took place in March 2021 and is due to be held again in March 2022.

De Waag, a civic “future lab for technology and society” and member of the PublicSpaces coalition, has started its own initiative: the PublicStack.net is one of the most detailed concepts, covering everything from the hardware of chips and wires and their environmental impact all the way to the citizen who sits at the top of the public stack. Based on the stack, Waag created Digital European Public Spaces (DEPS), which researches and facilitates digital European public spaces that are open, democratic and sustainable.

The Beyond Platforms Initiative (BPI, beyond-platforms.org), meanwhile, was co-founded by Florian Hager, who from 2015 conceived of and was Managing Director of funk, the young content network of ARD and ZDF, and in 2020 became Deputy

Programme Director of ARD and Channel Manager of ARD-Mediathek. BPI started with a workshop in Berlin in August 2019 and has since developed its own stack from storytelling and values via infrastructure, content and user experience to distribution. The initiative has received funding from the city state of Hamburg since 2021.

In Austria the Cultural Broadcasting Archive (CBA, cba.media) has already built an extensive collection of more than 120,000 community radio and TV programmes, which it has started to interconnect to pendants in Germany, Ireland and Catalonia. CBA is now working to extend its infrastructure into a European Cultural Backbone 2.0.

In fall 2020 these civil society-driven multi-stakeholder initiatives joined together to form the European coalition Shared Digital European Public Sphere (SDEPS.eu). Although developing the concrete infrastructure and advocating for support in European policy has only just begun, the coalition has already been joined by NESTA, the independent UK innovation agency that drives the EC's Next Generation Internet (NGI) initiative, Europeana, BBC R&D, Wikimedia Germany and others. SDEPS is emerging as the place to bring the different European public sphere conversations together.

All these initiatives envision an integrated infrastructure that goes beyond the purely technical OSI stack to include value, human and social layers. They build on the components and sub-stacks for re-decentralising the entire Internet that are being developed by IETF, W3C, the blockchain world (and aggregated e.g., by [redecentralize.org](https://www.redecentralize.org)), and connect with the more directly public sphere-related stacks of Europeana, Wikipedia, academia and public sector open data.

At the outset I argued that the public sphere is special. Journalistic-editorial media have specific requirements for their infrastructure. SecureDrop, a free software platform that allows investigative journalists and whistleblowers to communicate securely, is an example of technology that can support the sector. It was originally developed by Aaron Swartz and Kevin Poulsen and is now maintained by the Freedom of the Press Foundation.

Despite their restrictions, PSM are in fact developing a stack for their specific needs, most notably the European Broadcasting Union (EBU), an association of 115 PSM in 56 countries. The EBU's R&D arm is building its own technology pyramid for media nodes in IP-based media facilities on open standards (EBU 2020). Some of its elements are generic to the Internet infrastructure such as cross-platform authentication and monitoring, and security. Most are relevant to media platforms beyond those of broadcasters. These include media cloud and transport, video and audio workflows, media registration and

discovery, the personalisation and recommendation system PEACH, and metadata, including AI-based automatic metadata extraction.

Given their eigen-rationality, PSM can let their technological development be guided by value decisions other than profit maximisation. Indeed, PSM are at the forefront of solving a root cause of surveillance capitalism's negative impact: personally targeted advertising. The solution to it is amazingly simple. After the GDPR came into force, NPO (Nederlands publiek omroepbestel), the umbrella organization for Dutch PSM, offered a true opt-out for third-party tracking cookies. The majority of users took advantage of this. As a result, in January 2020, NPO switched from personal to context-based targeting: ads are matched to user-selected content as opposed to personal profiles. It was expected that advertising revenue would plummet as a consequence, but the opposite was the case: Johnny Ryan, who was able to look at the data, found that in January 2020 revenues were 61% higher than the same month in the previous year; in February they were up 76% and kept rising even during the COVID-19 ad slump. This has burst the myth that online ad space can only be sold if users are extensively profiled. Problem solved (Ryan 2020).

The European digital public sphere should be of utmost concern to the EU. Indeed, the EC is already building Digital Service Infrastructures (DSI) in its Connecting Europe Facility (CEF) programme, which consist of providing generic, reusable building blocks that facilitate digital public services across borders and sectors, and operating services like translation. Currently, there are eight building blocks: Big Data Test Infrastructure, Context Broker, eArchiving, eDelivery, eID, eInvoicing, eSignature and eTranslation, including the core services of Europeana.

Given that many of the components for a shared European public sphere already exist, efforts are now focused on joining them together into a diverse and interoperable ecosystem. In the framework of the EU Next Generation Internet initiative (NGI), Katja Bego released "A Vision for the Future Internet" with the mission "to create a more democratic, resilient, sustainable, trustworthy and inclusive Internet by 2030" (Bego 2020). She proposes a "stack model of power" that includes not only technical layers but also a societal impact layer and particularly a software development layer, which she links to EU policy space.

The development process is indeed crucial to whether the resulting software is good or bad. Sociologist of technology Jan-Hendrik Passoth argues that it is not possible to programme democracy into algorithms. Just as polarisation and radicalisation are not intentionally hard-coded into recommendation algorithms, it is impossible to simply

change some parameters and turn them into diversity-enhancing democratic devices. Instead, we have to democratise the development and use of technology:

“Whether digital technologies are conducive or obstructive to democracy depends very specifically at least on the economic, political and cultural circumstances of their design, the diverse, creative forms of use, which of course are always bound back to social practice, as well as regulatory and institutional conditions.” (Passoth 2021)

Focus thus shifts to governance of the European public sphere’s infrastructure. It is clear that PSM cannot take the lead. Neither can market nor state. The best practice, which has emerged from PSM, is to give civil society control of the public sphere.

The development and maintenance of the public media stack’s technical layers could be organised in an IETF or W3C-like multi-stakeholder forum of working groups. To optimise its public value, the process should be peer-production based in the commons. Public funding demands that public money is spent for the public good. Elinor Ostrom’s Eight Principles for Managing a Commons are a good starting point for sustainably managing the shared resource. The operations of core services could become EU Digital Service Infrastructures (DSI), just as those of Europeana. Wherever media-related challenges have to be met at EU, national or regional levels, they can be built on the common pool and contribute innovations in return. A case in point is the current phase of interlinking ARD and ZDF media sites, providing common log-in, metadata, and search and discovery. If these were shared across an entire public sphere fediverse, their content would be just as easily discoverable as that of other PSM in Europe, of community media, science communications, Open Educational Resources and public sector data, always just one click away from the universal knowledge navigator Wikipedia.

An independent, democratically legitimated body accompanying the technical infrastructure’s development would be needed to avoid the errors of trying to design technical solutions to social problems. Passoth suggests a Digital Council, which would not be concerned with programming like a Broadcast Council but with “the technical and organisational standards and fundamental issues such as transparency criteria, interoperability or data sovereignty” (Passoth 2019).

A major step would be a large-scale pilot project in which all the different components could be assembled into ecosystems. The interactions between different elements could then be evaluated in a testbed, from log-in and recommendations to formats of participation. Mechanisms could be devised to ensure that agreed fundamental values – diversity in terms of organisation and content, for auditing and oversight, checks and

balances to protect against economic and political interests, criteria for individual and social wellbeing in the digital environment, and sustainable environmental impact – are met.

Given that all the necessary components already exist, conceiving and designing the public sphere's infrastructure isn't rocket science. "But assembling and expanding them into user-oriented public products and a scalable infrastructure requires stamina and support – both financial and non-material" (Passoth 2019).

Although the EU has long been funding R&D and technical infrastructural work, covered by programmes such as the Next Generation Internet (NGI), it only recently developed a mandate for the public sphere through the European Parliament Resolution "on creating a public sphere in Europe" in 2010. This comes as late recognition of what has been known since the first direct elections to the European Parliament in 1979: European democracy needs a European public sphere. The lack of it has been filled by mega-platforms that provide the grounds for polarisation and disinformation. The EU has committed massive funds to pursuing ambitious plans for post-COVID recovery, digitisation, infrastructure and a Green New Deal. The Commission has laid out its comprehensive "Digital Decade" framework to create "a fair and secure digital environment that offers opportunities for all". It includes explicit support for a European public sphere, like the European Data Journalism Network, the European Data News Hub and two pilot projects for new online media offers that encourage young people to engage more with the EU and connect them across borders and language barriers.

These are welcome elements for an emerging European digital sphere. So is the minimum corporate tax agreed at the G20 summit in July 2021. Some of these revenues should be devoted to fixing the damage to the public sphere that Big Tech has caused.

What is lacking is a civil-society and commons-based effort to build and manage the technical infrastructure for a public value oriented European public sphere.

The time is ripe. A crisis is a chance for change. The cumulative crises of COVID-19, climate and public sphere are a chance for big change. The need is felt in many quarters. The building blocks are there. The means are there. A civil society coalition is coming together. What is needed, is the political will to bring all together in a pilot environment and get going.

Bibliography

- Andreoli, Andrea (2019): Digital Platform Interoperability. A policy paper. Nov 2019.
<https://www.eumans.eu/sites/default/files/2019-12/Digital%20Platform%20Interoperability%20by%20Andrea%20Andreoli.pdf>
- Barbrook, Richard; Cameron, Andy (1995): The Californian Ideology. In: Mute.
<https://www.metamute.org/editorial/articles/californian-ideology>
- Bloemen, Sophie; Hammerstein, David (2017): Supporting the Commons. Opportunities in the EU policy landscape. Commons Network, April 2017.
https://www.commonsnetwork.org/wp-content/uploads/2018/05/CommonsPolicyOpportunities_FINAL-1.pdf.
- Bego, Katja (2020): NGI Forward: A vision for the future Internet. Working paper, September 2020.
<https://research.ngi.eu/longreads/a-vision-for-the-future-internet-a-summary/> &
<https://research.ngi.eu/wp-content/uploads/2021/02/Vision-for-the-future-internet-long-version-final-1.pdf>
- Benkler, Yochai (2002): Coase's Penguin, or, Linux and The Nature of the Firm. In: Yale Law Journal, December 2002, (112/3).
<https://www.yalelawjournal.org/article/coases-penguin-or-linux-and-the-nature-of-the-firm>
- Berners-Lee, Tim (1990): WorldWideWeb, launched on 13 November 1990.
<http://info.cern.ch/hypertext/WWW/TheProject.html>
- Cote, Marysabelle (2019): Arte als Pionier beim Aufbau einer europäischen Plattform. In: Medienwirtschaft 2019 (3).
- Dachwitz, Ingo; Fanta, Alexander (2020): Google, the Media Patron. How the digital giant ensnares journalism. OBS-Arbeitsheft 103. Frankfurt/M.: Otto Brenner Foundation.
https://www.otto-brenner-stiftung.de/fileadmin/user_data/stiftung/02_Wissenschaftsportal/03_Publikationen/AH103_Google_EN.pdf
- EBU (2020): The Technology Pyramid for Media Nodes. Minimum user requirements to build and manage an IP-based media facility using open standards and specifications, Version 2.0. Tech3371, July 2020.
<https://tech.ebu.ch/docs/tech/tech3371.pdf>
- EPOS (2018 ff.): European Public Open Spaces. <https://publicopen.space/epos/>
- Farquhar, Ian (2010): Engineering Security Solutions at Layer 8 and Above.
<https://web.archive.org/web/20120708004413/http://blogs.rsa.com/curry/engineering-security-solutions-at-layer-8-and-above>
- Grassmuck, Volker (2012): The Sharing Turn. Why we are generally nice and have a good chance to cooperate our way out of the mess we have gotten ourselves into. In: Sützl, Wolfgang; Stalder, Felix; Maier, Ronald; Hug, Theo (eds), Cultures and

- Ethics of Sharing, Innsbruck: Innsbruck University Press, pp. 17–34.
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2295622
- Habermas, Jürgen (1962/1990): Strukturwandlung der Öffentlichkeit. Frankfurt/M.: Suhrkamp.
- Halpin, Harry (2019): Decentralizing the Social Web: Can blockchains solve ten years of standardization failure of the Social Web? In: Bodrunova, S. et al. (eds), Internet Science (INSCI 2018), Lecture Notes in Computer Science, Springer, (11551).
https://doi.org/10.1007/978-3-030-17705-8_16
- Hauben, Michael; Hauben, Ronda (1996): Netizens. On the history and impact of Usenet and the Internet. <http://www.columbia.edu/~rh120/> Levy, Steven (1984): Hackers. Heroes of the computer revolution. New York: Delta Book.
- Huss, Nikolaus; Lewandowski, Dirk; Sander-Beuermann, Wolfgang; Ude, Albrecht (2019): Proposal for an Open Web Index.
https://openwebindex.eu/wp-content/uploads/2019/01/Open_Web_Index_proposal.pdf
- Kagermann, Henning; Wilhelm, Ulrich (eds) (2020): European Public Sphere. Towards digital sovereignty for Europe. acatech Impuls, 14 July 2020.
https://en.acatech.de/wp-content/uploads/sites/6/2020/07/aca_IMP_EPS_en_WEB_FINAL.pdf
- Kahle, Brewster (2015): Locking the Web Open. A call for a decentralized Web, 11 August 2015.
<http://brewster.kahle.org/2015/08/11/locking-the-web-open-a-call-for-a-distributed-web-2/>
- Luhmann, Niklas (1996): Die Realität der Massenmedien. Opladen: Westdeutscher Verlag.
- Masnick, Mike (2019): Protocols, Not Platforms. A technological approach to free speech. Altering the Internet’s economic and digital infrastructure to promote free speech. 21 August 2019.
<https://knightcolumbia.org/content/protocols-not-platforms-a-technological-approach-to-free-speech>
- McOrmond, Russell (2004): Layer 8 (Financial) and Layer 9 (Political) of the OSI Protocol Stack. Presentation. <http://www.flora.ca/osw2004/osw2004.pdf>
- Merton, Robert (1942): The Normative Structure of Science. In: The Sociology of Science, Chicago and London: University of Chicago Press, 1973, pp. 267–278.
- Ostrom, Elinor (1990): Governing the Commons: The evolution of institutions for collective action. Cambridge, UK: Cambridge University Press.
- Pasquale, Frank (2018): From Territorial to Functional Sovereignty. The case of Amazon. Open Democracy. 5 January.
<https://www.opendemocracy.net/en/digitaliberties/from-territorial-to-functional-sovereignty-case-of-amazon/>

- Passoth, Jan-Hendrik (2019): Europa braucht digitale Selbstbestimmung. Süddeutsche Zeitung, 23 June 2019.
<https://www.sueddeutsche.de/digital/passoth-internet-google-europa-infrastruktur-plattformen-1.4492770>
- Passoth, Jan-Hendrik (2021): Die Demokratisierung des Digitalen. Retten demokratische Algorithmen die Meinungsvielfalt? Konrad Adenauer Stiftung, Analysen & Argumente, (424), February 2021.
<https://www.kas.de/documents/252038/11055681/Die+Demokratisierung+des+Digitalen.pdf/f5170981-b35f-71a9-c1be-e83b43da0c7e?version=1.0&t=1611808618983>
- POS (2019): Public Open Space.
<https://public-open-space.eu/>
<https://publicopen.space/epos/2019/05/08/public-civic-initiative-public-open-space-launches-vision/>
- PSMI Manifesto (2021): The Public Service Media and Public Service Internet Manifesto, 17 June 2021.
<https://www.dropbox.com/s/cwn32clftbp5who/Public%20Service%20Media%20and%20Public%20Service%20Internet%20Manifesto.pdf?dl=0>
<https://www.youtube.com/watch?v=i0kiilUrF9o>
- Ryan, Johnny (2018): Tech Stole your Audience. Take it back. Vimeo, 19 June 2018.
<https://vimeo.com/275779181>
<https://slideshare.net/JohnnyRyan/tech-stole-your-audience-take-it-back>
- Ryan, Johnny (2020a): New Data Shows Publisher Revenue Impact of Cutting Third Party Trackers, 01 July 2020.
<https://brave.com/npo/>
- Ryan, Johnny (2020b): Update (Six Months of Data). Lessons for growing publisher revenue by removing third party tracking, 24 July 2020.
<https://brave.com/publisher-3rd-party-tracking/>
- Sheng, Tony (2018): Let's Ditch "Decentralized". 03 September 2018.
<https://tonysheng.substack.com/p/decentralized-definition>