

Digital communication infrastructures and the principle of universality

Challenges for Nordic media welfare state jurisdictions

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ABSTRACT

This chapter examines to what extent the digital communication infrastructure of Norway is subject to regulation of the Internet's physical infrastructures. To assess how communicative power is distributed, we map the ownership of access networks and backbone infrastructures to ascertain how the Norwegian infrastructure regulation is legally geared to protect universalist principles in media welfare states. Included in the mapping are backbone networks (fibre cables, Internet exchange points, content delivery networks, and data centres) and access networks (broadband wire and electromagnetic radio frequencies). Our findings reveal that backbone infrastructures are essentially unregulated and increasingly controlled by foreign companies and energy companies. This implies an uneven jurisdictional reach of Norwegian legislators, leaving an open gate for large multinational companies to establish infrastructures that generate, store, and distribute data. The result is a potential loss of data sovereignty and communicative power by Norwegian citizens.

KEYWORDS: digital infrastructures, universality, data sovereignty, welfare state, media regulation

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Introduction: Communication infrastructures

A founding principle of the media welfare state is universal access to open channels of communication. While not always visible, these channels are supported by a wide range of digital infrastructures. Here, we agree with Parks and Starosielski's (2015: 6) argument that "capitalist societies generally educate people to appreciate the 'conveniences' and 'choices' of modern consumer technologies, but to remain blind to the infrastructures that support them". Communication infrastructures are the technologies that support and facilitate the exercise of free speech and information rights, whereby communication and debate take place. In the Nordic countries, communication infrastructures are, in regulation, designated as telecommunications and broadcasting spectrums licensed by the state. However, the expanding landscape of actors at the platform and backbone levels of the media system challenge the definition of what exactly entails infrastructures in today's communication ecology. The increasing ownership of digital communication infrastructures by global players such as Google, Facebook, or Microsoft effectively surrenders the control of these strategic networks of communicative power and threatens the data sovereignty that the Nordic media model tries to retain (Hummel et al., 2021). While data sovereignty is a complex, multidimensional concept with a wide range of potential connotations, in this context, it refers to the level of independence, autonomy, and control that states have over digital infrastructures (Couture & Toupin, 2019). Furthermore, as these ecologies become digital, the concept of data sovereignty means that information stored in digital binary form is subject to national rules and regulations. In this chapter, we therefore ask the following:

RQ. To what extent is data sovereignty protected by infrastructure regulation in Norway?

We address this question by critically interrogating how the principle of universality is retained within an expanding infrastructure ecology. The empirical foundation for the discussion is drawn from a mapping of the technical backbone networks of digital communication systems in Norway and their access networks (see Flensburg & Lai, 2020). As these backbone infrastructures (content delivery networks, Internet exchange points, and submarine cables) are increasingly controlled by foreign companies, their operations fall largely outside the purview of state regulatory power, challenging the jurisdiction of welfare states over communication infrastructures. Jurisdictional power is further challenged by the expansion of actors involved in infrastructural control, particularly by the energy companies that assume larger and larger shares of backbone infrastructures and access networks (broadband, 5G, and data centres). To that end, the boundaries of communication infrastructures expand towards sectors whose regulation lies outside the jurisdictional reach of media regulators, raising questions as

to the future of universalism and freedom of speech in the Nordic welfare states. We argue that if data are a resource that supports free speech, the infrastructures that support the broad distribution of data as capital among citizens should be a priority in democratic societies (see Fischli, 2022). The contribution of this chapter is thus to expand the definition of communication infrastructures to account for how communicative power in welfare state societies is distributed among the actors involved in its infrastructures. Following Flensburg and Lai's overview of the Nordics in their contribution to this volume (Chapter 8), our aim is to take a closer look at how Norway is legally geared to assert data sovereignty and protect universalist principles through digital infrastructures as the network of actors in the media ecology expands. Norway, as a "land of legacies", is particularly interesting because incumbents play a large part in the communications infrastructure, and it is unclear whether foreign multinationals are making ground in infrastructure capture to the same extent as in other countries.

The Nordic context

Freedom of expression in the Nordic states is predominantly positively regulated: Overall, Nordic states are responsible for ensuring a civil sphere (Engelstad & Larsen, 2019). In law, communication infrastructures should provide a means for expression, debate, and information. In liberal media systems such as the US, expression is largely negatively defined: Here, the state should only ensure that no measures serve to curtail free expression. Reversely, welfare states render governments responsible for providing citizens with the means to exercise citizenship and free speech. The means by which democracy can be exercised are manifested as communication infrastructures – hence the so-called infrastructure demand in the Norwegian constitution that makes the government responsible for facilitating an open and informed public debate. This translates to state intervention, ownership, and investment in infrastructures that ensure content delivery to all households and universal access to services such as the Internet, telecommunications, and broadcasting (Ala-Fossi, 2020).

Nordic states thus actively support communication institutions, providing the infrastructure for a liberal public sphere through the arm's-length principle. This means that media have established systems of self-governance and self-regulation beyond state interference that essentially ensure that journalism can criticise the state while still retaining public funding (Hjarvard & Kammer, 2015). Communication services are therefore understood as public goods (Ala-Fossi, 2020), regulated to guard against market failure, which can occur when the market is unable to provide important goods and services that citizens need (Pickard, 2017). Publicly owned and regulated communication infrastructures have thus been thought of as "cultural and informational safety nets [that can serve as] vehicles for active social trans-

formation” (Syvertsen et al., 2014: 44–45). While public service institutions have been instrumental in building digital infrastructures in the Nordics, for example, through the development of digital terrestrial television and digital radio, broadband, Internet, and mobile technology have followed more market-led developments, where state involvement has been limited to securing efficient services and defining minimum standards. Beyond these infrastructures, backbone networks such as submarine cables, content delivery networks, and data centres remain largely unregulated, introducing a host of new actors into the communication ecosystem, including very large online platforms (European Union 2020a, 2020b), regional energy companies, and global technology giants. This development has therefore raised concerns over how this new layer of “networked gatekeeping” (Barzilai-Nahon, 2009) challenges traditional media operators.

Two complicating factors in how these infrastructures are regulated concern the definition of relevant technologies and the reach of cultural policy. In the Finnish, Icelandic, and Norwegian constitutions, the infrastructure demand is technology neutral, while the Danish and Swedish constitutions specify protected media technologies, which make them somewhat vulnerable to technological developments (Norwegian Government, 2019). Moreover, the technical infrastructures that support content delivery and access are often beyond the reach of media policymakers and hence the principles of democracy, diversity, and inclusion that regulate media actors and content. For instance, the regulation of the mobile spectrum is designated to the Ministry of Transport and Communication in Finland, while broadband is regulated by the Communications Authority in Norway, which falls under the purview of the Ministry of Local Government and Regional Development. In Denmark, digital infrastructures are regulated by the Agency for Digital Government, which reports to the Ministry of Finance. In Sweden, the Post and Telecom Authority is independent of any particular Ministry, and the Electronic Communications Office of Iceland regulates the sector under the Ministry of Infrastructure. The regulation of communication infrastructures thus involves authorities in the field of finance, competition, transport, and regional development – jurisdictions that lie well beyond the auspices of media and cultural policy.

This raises new questions about the scope of actors involved in the communication infrastructures, the dependencies that arise for national players as the media landscape shifts towards datafication and platform alignment (Nieborg & Poell, 2018), and how these developments impact on the principle of universality that aims to ensure freedom of information and expression. The question of how communicative power is distributed in society thus reaches beyond the scope of media infrastructures and media regulators to include a range of new actors and technologies that shape the infrastructure for free speech in the Nordic region.

Universalism

The principle of universality means that all citizens are equally entitled to the services and benefits provided by the state (Kildal & Kuhnle, 2007). In essence, according to Esping-Andersen (1990), it serves to emancipate individuals from the negative consequences of market and class mechanisms. Universally allocated services are distributed evenly, available to all, adequate, and used by the majority of citizens. Eligibility and entitlement to universal services are defined as rights, and the rules associated with the service apply to all beneficiaries. Universalism is often mobilised in social services to promote equality, participation, and social rights, and therefore generally applies to public goods (Anttonen & Sipilä, 2014), which are goods that benefit society beyond the economic transaction itself – goods that society needs, but consumers tend to undervalue. States tend to support goods of this nature to ensure citizens have access to beneficial goods and services that would otherwise not survive on market terms alone (Allern & Pollack, 2019). States can therefore exercise their sovereignty in such domains to protect citizens' individual and collective interests (Chapdalaine & McLeod Rogers, 2021).

Anttonen and Sipilä (2014) have asserted that universalism is intimately tied to the democratic nation-state, its jurisdiction, and the rights and legal status of its citizens. Universalism can therefore only be provided by the state, and the legitimacy of public funding is based on liberal principles of representation and the rule of law. While the literature points towards a myriad of uses and definitions of the term, it is mostly applied in the social sciences to issues concerning the redistribution of taxes and policymaking at the state level. In philosophy or theology, universalism reflects the notion that some ideas have universal application, that there is a universal truth, or that there is a fixed essence to human nature that enables us to live by universal principles, reflected, for instance, in Sustainable Development Goals or the Universal Declaration of Human Rights (Benhabib, 2007). In the context of relativism, globalisation, and postmodernism (see, e.g., Benhabib, 1994; Gunaratne, 2009), universalism functions more like a justification strategy, or a defence of rationality, understood in juridical terms as entitlement to rights that also acknowledges the capability of communicative freedom in others. Communicative freedom in turn requires the reciprocity, equality, and agency that play out during political deliberation (Benhabib, 2007). In the context of freedom of information and expression, then, the Norwegian infrastructure demand reflects the core tenets of universalism in that it presupposes equal rights, inclusion, and reciprocity. Moreover, it presupposes that these infrastructures enable agency in communicative action, rendering unto citizens the communicative power needed to legitimate state power. As power also materialises through infrastructure, the material and territorial aspects of infrastructure contribute to shaping communicative action through data ownership and control (Musiani, 2022). As a result, data sovereignty in

the Norwegian context should encompass the hallmark of Nordic modes of deliberation and representation that purposefully include the widest variety of stakeholders.

Universalism has thus been a founding principle for the development of communication infrastructures in the Nordic countries (Syvertsen et al., 2014). This pertains to the postal service, telegraph and telephony, broadcasting, and Internet access. In fact, according to Enli and colleagues (2018), universalism or equal access is a key legitimator of state intervention, particularly in cases where states step in to regulate commercial markets where private vendors operate public goods. This happened in the case of the telegraph, radio, and cinema. In the Nordics, the state has therefore acted as both proprietor and operator of communication infrastructures. Lately, however, the state has moved somewhat away from ownership and shifted more towards regulation. Despite this trend, noted Syvertsen and colleagues (2014), universalism has been one of the key factors in making the Nordic countries world-leading in Internet access and broadband coverage. To that end, they wrote that the principle of universalism “is strongly reaffirmed with the commitment to universal access to digital infrastructure” (Syvertsen et al., 2014: 121). However, while the principles behind universalism justify state intervention, this does not seem to extend to the backbone infrastructures of the Internet. As the Nordic states move from being proprietors to acting as regulators, the question becomes what jurisdiction states have over Big Tech platforms that operate as “territories” of their own, where data flows, algorithms, and protocols shift data sovereignty away from the state and towards the private realm (Cohen, 2017). We contend that communication infrastructures should include all the physical and material infrastructures that enable communication to take place. Moreover, we argue that the communicative power of citizens relies on these infrastructures, and that as a result, they should be included in the infrastructure demand under universalist principles.

Communicative power

The concept of communicative power is foundational to Habermas’s (1996) theory of democracy, as it derives political power, and thus legitimacy, from the communicative power of citizens and their capacity to engage in political debate (O’Mahony, 2010; Reunanen & Kunelius, 2020). Here, “communicative” refers to normative ideals of communicative action, while “power” refers to the empirical potential of making a difference in decision-making (Reunanen & Kunelius, 2020). Communicative power thus serves as a resource against economic and administrative power and is the “expression of citizens’ political autonomy” (O’Mahony, 2010: 53). How society enables public discussion, and the norms that guide that discussion, is what generates communicative power (Flynn, 2004). Hence, it necessitates the free processing

of information, collective exercise through shared beliefs, and a non-coercive space. As Kreide (2016: 484) noted, communicative power “is the power to question”. As communicative power translates into political power through law, according to Flynn (2004: 435), “the exercise of state authority through administrative power is only legitimate if bound to this discursively generated communicative power”.

While the concept of communicative power has mainly been discussed in political and deliberative theory related to the media (e.g., Reunanen & Kuneilius, 2020), it has also been mobilised in research relating to communication infrastructures, primarily through two vantage points – in questions regarding the potential of social media to enhance deliberation and participation in democratic processes (e.g., Loader & Mercea, 2011; Sormanen & Dutton, 2015), and research on how sociotechnical systems influence society (e.g., Bohman, 2010; Dutton et al., 2004; Ross & Chiasson, 2011). Research here has considered to what extent social media allows users to bypass powerful and established institutions to form effective social movements (Sormanen & Dutton, 2015), and how to develop democratic information system processes and technologies (Ross & Chiasson, 2011). To some extent, this research finds that technology systems and platforms tend to shape the rules and norms that govern communicative action, posing limitations either through functionalities, in the case of information systems, or restricting legitimacy, as in the case of Facebook “slacktivism”. Moreover, the concept of data power introduces new dimensions of sovereignty and control to communicative practices that need to account for the impacts of datafication on the material infrastructures of media systems (Kennedy & Bates, 2017).

Theoretically, accounting for communicative power in platformisation processes has demonstrated how social and technical subsystems shift systemic power through functionalities that work according to their own logics by controlling resources (cf. Nieborg & Poell, 2018). Communicative power is thus expressed through institutional design and is only enabled when incorporated into institutionalised processes of decision-making (Bohman, 2010). What is important for communicative power, according to Dutton and colleagues (2004), is how networks are designed and configured to facilitate access and the distribution of knowledge and proficiency to use technology. While Dutton and colleagues were talking about broadband and Wi-Fi Internet access in the early 2000s, their assertion that choices about technology reconfigure communicative power still resonates in terms of what technology means today, particularly as its regulation involves a range of interests and stakeholders.

The concept has, therefore, mainly been mobilised in the literature to evaluate the introduction of new technologies and platforms, such as broadband or social networking sites. As of yet, however, the question regarding the distribution of communicative power has not been considered much in research

within the so-called infrastructural turn that considers the expanded ecology of communication infrastructure on the ability of citizens to participate in democracy (Van Dijck et al., 2018). Nor has communicative power been related to the principle of universalism that supports the regulation of communication infrastructures in the Nordic region. As we aim to demonstrate, however, the two concepts are closely intertwined, to the extent that universalism provides the principle means to enable participation in democracy.

Data and method

Our research design is based on the work of Flensburg and Lai (2020) and their mapping of the digital communication system in Denmark. While Flensburg and Lai included devices and access networks, backbone networks, platforms, and content in their mapping of the infrastructures needed for users to access content (i.e., on their mobile phone), our concern is mainly to investigate physical infrastructure, to which we designate the technical backbone networks of the communication infrastructures in Norway and their access networks. Our key aim is to identify the technologies involved in the communicative infrastructure, the actors involved through ownership, and the legal jurisdictions to regulate them. Backbone networks are operationalised as fibre cables, Internet exchange points, content delivery networks, and data centres. Access networks are operationalised as broadband wire (copper, coaxial, and optical fibre) and mobile broadband or electromagnetic radio frequencies (4G and 5G). The justification for limiting our mapping to these infrastructures is that they lie beyond the purview of established media regulation. The aim of the mapping is thus to highlight the range of infrastructure actors and networks considered within the parameters of communication infrastructures, with particular attention paid to issues of ownership and control over essential communication services.

The method applied to our study is primarily document analysis. The analytical procedure for document analysis includes finding, selecting, appraising, and synthesising data found in documents (Bowen, 2009). As documents come in many forms, sense-making and cross-referencing information found in documents are key to the analytical procedure, especially in surveying fast-moving markets such as the technology sector. For this research process, which hinges on identifying and locating technical infrastructure and the actors involved in their ownership, operation, and regulation, we mobilised three types of document searches. First, we searched relevant government reports and white papers to map the policies, responsible agencies, and key sectoral players. These documents were key to identifying the actors involved in the backbone infrastructures and access networks. This document analysis was supplied by a general web search to locate players that have emerged in the content delivery network, Internet exchange point, data centre, and

broadband sectors since the publication of relevant government reports. Importantly, the web search revealed that many official reports were less detailed in their overview of key actors than was necessary for our mapping. A database was established to systematise this data, using a basic Excel spreadsheet. Second, we used a database search (regnskapstall.no) to trace the ownership control of each company listed in the database. To ascertain foreign ownership, we again had to use web search, by which the data was primarily obtained through financial news sites or stock trading sites. And third, we surveyed the industry trade press and mainstream news media to track ownership and policy developments over time. The database was then used to analyse the distribution of backbone and access network technologies, ownership (foreign or domestic, and private or public), and legal jurisdiction. There are inherent limitations to this method, the most significant being that the rapidly shifting landscape under study only enables a snapshot of an ecology under development.

Findings

The analysis reveals two aspects of particular relevance to the question of universalism, communicative power, and sovereignty: 1) that while access networks (broadband) are subject to regulation, backbone infrastructures (content delivery networks, Internet exchange points, and submarine cables) are unregulated and increasingly controlled by foreign companies, and 2) that energy companies are assuming more and more control across access networks and backbone infrastructures (broadband, 5G, and data centres). This implies an uneven jurisdictional reach of Norwegian legislators, leaving an open gate for large multinational companies to establish infrastructures that generate, store, and distribute data. The result is a potential loss of data sovereignty and communicative power by Norwegian citizens.

Backbone infrastructures

Included in backbone infrastructures are submarine cables (see Table 9.1a), content delivery networks (see Table 9.1b), Internet exchange points (see Table 9.1c), and data centres (see Table 9.1d). Submarine cables are optical fibre cables that carry Internet signals between continents; there are currently 14 submarine communication cables connected to Norway. Six of these are owned by Norwegian energy companies, most of whom are regional players (e.g., Lyse, BKK, Eidsiva). National players Telenor and Statnett own three of these nationally controlled cables. A further two are owned privately by Norwegian Internet companies (Bulk, N0r5ke fiber). One is owned by Google and Facebook together with Bulk and Aqua Comm.

Content delivery networks are geographically distributed groups of servers that work together to deliver fast Internet. These networks do not host con-

tent but act as caches to speed up the delivery of content at the edges of the network. As such, they hold strategic positions as gatekeepers of content quality for the end user. There are currently eight content delivery network providers in Norway. One is owned by Telenor, where the Norwegian state is the majority shareholder, while the rest are foreign-owned, six of which have ownership registered in the US. Among the main providers are Akamai, Azure (owned by Microsoft), and CloudFront (owned by Amazon).

Internet exchange points are physical locations where Internet service providers (such as Telenor) and content delivery networks connect. There are currently 11 Internet exchange points in Norway. Six of these are owned and operated by the University of Oslo. Of the remaining, all are privately owned, the largest actor of which is the technology company Bulk.

Data centres are physical structures that provide networking, computing, and storage. They consist of servers that need large amounts of energy to run and cool the farm. This sector is difficult to map, due in part to definitional looseness, but there are approximately 20 data centres in Norway at the time of mapping, most of which are colocation facilities. Many of these data centres are owned by primary industries (fishing, mining, and energy companies), or they are private- or family-owned. Since 2020, foreign owners have moved in to acquire seven of these centres.

Overall, the backbone infrastructures of the communication system in Norway is rapidly expanding. Norwegian-built data centres are attracting interest from foreign-based, commercial investors and technology companies. The ownership structure is complicated, with actors entering and disappearing from the scene. Most of the private actors in this sector are owned by holding companies, making it difficult to map and trace key actors and stakeholders. In essence, this is an opaque and unregulated space. The only jurisdiction that applies to this realm is general competition law, while issues pertaining to this sector range across competition, consumer, and data protection law (Konkurransetilsynet, 2021). As the Norwegian Competition Authority notes, this market is dominated by large, international players. While the Competition Authority has expressed concern regarding the extent to which Big Tech companies move in to acquire sectoral actors before they grow large enough to create competition, their jurisdiction has so far only been applied to national players. Moreover, the European Union telecommunications sector regulator BEREC (2022) has pointed to growing interdependencies between sectors in the Internet ecosystem, particularly between telecom and content delivery network markets, noting the overall heavy influence of platform players like Alphabet, Apple, Meta, Amazon, and Microsoft.

Table 9.1a Submarine cables

Actors	Owners	Owners' owners	Private/ public	Country
Andøya-Longyearbyen	Space Norway	Government of Norway (100%)	Public	Norway
Bodo-Rost Cable	Telenor	Government of Norway (53.96%), Folketrygdfondet (4.71%), State Street Bank and Trust (1.88%), JP Morgan Chase Bank (1.09%), Other (38.35%)	Public	Norway
Celtic Norse	NTE Marked AS (33,33%) Eidsiva Energi AS (33,33%) TrønderEnergi AS (33,33%)	Nord-Trøndelag Elektrisitetsverk AS (100%) Hafslund Industrielt Eierskap AS, (50%), Innlandet Energi Holding AS (49.40%) 15 Municipalities + Kommunal Landspensjonskasse Gjensdige forsikring (13.32%)	Public	Norway
EuroConnect1	Altibox (Lyse AS)	Stavanger Municipality (45.73%), Sandnes Munic. (19.53), Sola (8.74%), Time Minuc. (5.83%), Klepp Munic. (4.22%), Hå Munic. (3.78%), Randaberg Munic. (3.27%), Eigersund Munic. (2.95%), Strand Munic. (2.53%), Other (3.42%)	Public	Norway
Eviny Digital	Eviny AS	Statkraft Industrial Holding AS (43.42%), Bergen Municipality (37.75%), Alver Munic. (3.45%), Øygarden Munic. (3.42), Askøy Munic. (2.48%), Sunnfjord Munic. (2.27%), Tysnes Kraftlag AS (1.70%), Other (5.50%)	Public	Norway
Havfrue AEC2	Aqua Comms Bulk Google Meta	Digital 9 Infrastructure PLC (100%) Peder Nærbø (100%) Alphabet (100%) Mark Zuckerberg (13,6%)	Private	US
Havsil	Bulk	Peder Nærbø (100%)	Private	Norway
NO-UK	NO-UK Com AS	Altibox Carrier AS (37.43%), Haugaland Kraft AS (26.27%), Eviny Digital AS (20.74%), Jakob Hatteland Holding AS (8.1%), Polysys AS (4.69%), Green Mountain AS (2.01%)	Public	Norway
N0r5ke Viking	N0r5ke Fibre AS	N0r5ke Communication Services (100%)	Private	Norway
Polar Circle Cable	KystTele	Kjell Ivar Hansen Røsnes (100%)	Private	Norway
Skagenfiber West	Altibox (Lyse AS)	Stavanger Municipality (45.73%), Sandnes Munic. (19.53), Sola (8.74%), Time Munic. (5.83%), Klepp Munic. (4.22%), Hå Munic. (3.78%), Randaberg Munic. (3.27%), Eigersund Munic. (2.95%), Strand Munic. (2.53%), Other (3.42%)	Public	Norway
Skagerak 4	Statnett	Government of Norway (100%)	Public	Norway
Svalbard Undersea Cable System	Telenor	Government of Norway (53.96%), Folketrygdfondet (4.71%), State Street Bank and Trust (1.88%), JP Morgan Chase Bank (1.09%), Other (38.35%)	Public	Norway
Tampnet Offshore FOC Network	3i Infrastructure plc (50%) APC (50%)	3i Group plc (30.2%) Government of Denmark (100%)	Private	UK, Denmark

Table 9.1b *Content delivery networks*

Actors	Owners	Owners' owners	Private/ public	Country
Akamai	Akamai	Publicly traded	Private	US
Azure	Microsoft	Publicly traded	Private	US
BunnyCDN	–	Dejan Pelzel	Private	Slovenia
Cloudflare	–	Publicly traded	Private	US
CloudFront	Amazon	Publicly traded	Private	US
Fastly	–	Publicly traded	Private	US
Lumen	–	Publicly traded	Private	US
Telenor CDN	Telenor	Norwegian State (53.96%), Folketrygdfondet (4.71%), State Street Bank and Trust (1.88%), JP Morgan Chase Bank (1.09%), Others (38.35%)	Public	Norway

Table 9.1c *Internet exchange points*

Actors	Owners	Owners' owners	Private/ public	Country
Bergen Inter- net Exchange	Oslo University	Government of Norway (100%)	Public	Norway
CE-CIX Nordics	Deutsche Com- mercial Internet Exchange	Eco- Association of the Internet Industry	Private	Germany
DigiPlex Norway	Infrastructure Norway AS	Infrastructure Nordics 2	Private	Luxem- bourg
FIXO Free Internet Exchange	Bulk	Peder Nærbø (100%)	Private	Norway
FIXO Kristian- sand	Blix Group AS	Erik Hjelle Blix (100%)	Private	Norway
FSIX Free San- defjord IX	Terrahost	Epik Holdings INC (100%)	Private	US
NIX Oslo 1	Oslo University	Government of Norway (100%)	Public	Norway
NIX Oslo 2	Oslo University	Government of Norway (100%)	Public	Norway
Tromsø Inter- net Exchange	Oslo University	Government of Norway (100%)	Public	Norway
Trondheim Internet Exchange	Oslo University	Government of Norway (100%)	Public	Norway
Stavanger Internet Exchange	Oslo University	Government of Norway (100%)	Public	Norway

Table 9.1d Data centres

Actors	Owners	Owners' owners	Private/ public	Country
AQ Compute Hønefoss	Aquila Capital	Investment firm	Private	US
Basefarm OSL3 & OSL5	Orange	Government of France (13.4%)	Private	France
BlueFjords	Bluefjords AS	Fjordane IT AS/Iteam 10 (18.87%), Enivest AS (17.63%), Arne Myklebust AS (13.95%), Øystein O. Høyheim (6.849%), Snøtun AS (1.721%)	Private	Norway
Bulk NO1 Campus & OS-IX	Bulk	Peder Nærbø (100%)	Private	Norway
Datafjellet	Berger Toresen Holding (65%), Bårdsen Holding (35%)	Rune Berger Toresen, Åge Bårdsen	Private	Norway
Digiplex Ulven, Rosenholm, Fetsund	IPI Partners	Investment firm	Private	US
Green Mountain DC1 & DC2 OSL1, OSL2 RJU1, SVG1	Azrieli Group	Investment firm	Private	Israel
Kryptovault	KV Group	Investment firm	Private	Norway
Lefdal Mine	Ameriprise Financial	Investment firm	Private	US
Lerøen Datapartner	FSN Capital Partners	Investment firm	Private	Norway
Microsoft Stavanger & Oslo	Microsoft	Publicly traded	Private	US
Terrahost DC1-DC2	Terrahost	Epik Holdings INC	Private	US
Troll Housing 1& 2	Naas Kalksteinsbrudd	Naas Family (100%)	Private	Norway
Troll Mountain	Naas Kalksteinsbrudd	Naas Family (100%)	Private	Norway
Storespeed		John Ragnar Amundsen	Private	Norway

COMMENTS: Table 9.1a–d list the actors involved at each level of the infrastructure, their owners, and the major companies that own the owners (as of June 2023). Ownership share is noted where this is known and up to 1 per cent. Private/public refers to whether the actors have majority ownership within the private sector or public sector (the state).

Access networks

Access networks enable end users to, through their devices, access the global Internet. These consist of DSL broadband (see Table 9.2a), cable television broadband, fibre broadband (see Table 9.2b), and mobile broadband

(see Table 9.2c). These networks are considerably more stable than backbone infrastructures, primarily because they constitute scarce and valuable resources such as ground cables and electromagnetic frequencies that need to be physically put in the ground (in the case of cables) or are auctioned by the government (in the case of 4G and 5G mobile broadband frequencies). Due to the regulatory history of the Norwegian telecommunications sector, broadband infrastructures in Norway are largely regionally affiliated cooperative networks that are commercially operated but owned predominantly by public institutions through local municipalities or the state.

DSL broadband consists of a mix of technical solutions, but ultimately, this is a digital subscriber line broadband that uses copper-based landlines for Internet access. As Telenor plans to discontinue its copper wire in 2025, this technology will soon become obsolete. There are eleven broadband operators in Norway, most of which are owned by telecom companies (Telia and Telenor), energy companies (e.g., Lyse and Eidsiva), and private individuals, but the state and municipalities also own DSL infrastructure. Two foreign-based companies operate in this market.

Cable television broadband is comprised of coaxial or hybrid fibre cables that deliver television and Internet to homes. Typically, the cables to homes are connected to fibre cables in the street. As with DSL broadband, ownership here is dominated by legacy telecoms (Telia and Telenor), energy companies, and municipalities, as well as some private and family ownership. Broadband infrastructures are thus predominantly regional with control flowing from infrastructure development in local communities, led particularly by local and municipal-owned energy companies with the technical and engineering skills to run cables, facilitating entry into the telecom markets. The fibre broadband structure follows more or less the same logic; however, in this market, there are many more operators (over 70), most of which are regional structures that connect to the main cables owned and operated by Altibox, a subsidiary of Lyse.

Mobile broadband is Internet delivered to your mobile phone. Mobile broadband is licensed infrastructure, primarily because this is part of the electromagnetic radio frequency spectrum that is considered a scarce resource and thus administered by the Norwegian Communications Authority. The 4G and 5G bandwidths are owned by Telenor, Telia, and Lyse. This market is thus dominated by publicly owned companies.

Access networks are regulated under the Norwegian Communications Authority and are subject to the Electronic Communications Act (LOVData, 2004). The Act pertains to the electromagnetic frequency spectrum and its physical infrastructure. Provisions are based on principles of universal service, security, transparency, and fair pricing. Contrary to backbone infrastructures, then, access networks are highly regulated under detailed legislation that largely conforms to European Union directives. As Flensburg and Lai

note (see Chapter 8), the Norwegian digital access structure is dominated by legacy players more so than other Nordic countries. There is therefore a certain path dependency to access regulations inherited from spectrum regulations pertaining to old communications networks in radio and telephony.

Table 9.2a *DSL broadband*

Actors	Owners	Owners of owners	Private/ public	Country
Altibox	Lyse AS	Stavanger Municipality (45.73%), Sandnes Munic. (19.53), Sola (8.74%), Time Munic. (5.83%), Klepp Munic. (4.22%), Hå Munic. (3.78%), Randaberg Munic. (3.27%), Eigersund Munic. (2.95%), Strand Munic. (2.53%), Other (3.42%)	Public	Norway
Eidsiva Bredbånd	Eidsiva Energi AS (90,05%)	Hafslund (50%), Innlandet Energi Holding AS (49.4%)	Public	Norway
GlobalConnect	GlobalConnect	Investment company	Private	Sverige
NextGetTel	Kistefos Venture Capital AS	Christen Sveaas (100%)	Private	Norway
VEV Romerike	–	Høland og Setskog Elverk (100%)	Private	Norway
Sandefjord Bredbånd	–	Sandefjord Municipality (100%)	Public	Norway
Sigdal Bredbånd	Lyse AS	Stavanger Municipality (45.73%), Sandnes Munic. (19.53), Sola Munic. (8.74%), Time Munic. (5.83%), Klepp Munic. (4.22%), Hå Munic. (3.78%), Randaberg Munic. (3.27%), Eigersund Munic. (2.95%), Strand Munic. (2.53%), Other (3.42%)	Public	Norway
Telenor	Telenor	Government of Norway (53.96%), Folketrygdfondet (4.71%), State Street Bank and Trust (1.88%), JP Morgan Chase Bank (1.09%), Other (38.35%)	Public	Norway
Telia	Telia AB	Government of Sweden (39.5%)	Private	Sweden, Finland
Telio	Telecom Holding 3 AS	Christen Sveaas (100%)	Private	Norway
Via Bredbånd	BigBlu Broadband	Publicly traded	Private	UK

Table 9.2b Cable television broadband (hybrid fibre coaxial net)

Actors	Owners	Owners of owners	Private/ public	Country
Altibox	Lyse AS	Stavanger Municipality (45.73%), Sandnes Munic. (19.53), Sola (8.74%), Time Munic. (5.83%), Klepp Munic. (4.22%), Hå Munic. (3.78%), Randaberg Munic. (3.27%), Eigersund Munic. (2.95%), Strand Munic. (2.53%), Other (3.42%)	Public	Norway
ATMCom	–	Svein Reidar Olsen (60.89%), Harald Tuen (26.22%), Christ-Henning Ljosheim (6.66%), Ann Jorid Aspen (4.88%), Øyvind Fjærn (1.33%)	Private	Norway
Bardufoss kabel-TV	Homenet AS	GlobalConnect AS (100%)	Private	Norge
Hammerfest Energi Bredbånd	Hammerfest & Hasvik municipalities	Hammerfest Municipality (90%), Hasvik Munic. (10%)	Public	Norway
Modum Kabel-TV & Ringnett	Cosan AS (100%)	Arve Andersen (100%)	Private	Norway
NEAS	Near Konsern	Kristiansand Municipality (39.73%), Kommunal Landspensjonskasse (33.33%), Averøy Munic. (9.8%), Aure Munic. (6.93%), Tingvoll Munic. (5.73%), Smøla Kommune (4.46%).	Public	Norway
Nokab	Nokab Holding AS	Nielsen Family (94.99%), Per Runar Furuseth (5%)	Private	Norway
Telenor	Telenor	Government of Norway (53.96%), Folketrygdfondet (4.71%), State Street Bank and Trust (1.88%), JP Morgan Chase Bank (1.09%), Others (38.35%)	Public	Norway
Telia	Telia AB	Government of Sweden (39.5%)	Private	Sweden, Finland
Signal Bredbånd	Lyse	Stavanger Municipality (45.73%), Sandnes Munic. (19.53), Sola (8.74%), Time Munic. (5.83%), Klepp Munic. (4.22%), Hå Munic. (3.78%), Randaberg Munic. (3.27%), Eigersund Munic. (2.95%), Strand Munic. (2.53%), Other (3.42%)	Public	Norway
Sognernett	Sogn Service Holding AS	Tor Ellefsen (100%)	Private	Norway
Sortland Elektro	Sortland Elektro Eiendom AS	Erik Endresen (50%), Tor Endresen (50%)	Private	Norway
Årdalsnett	Årdal kraftlag (66%)	Årdal Municipality (100%)	Public	Norway
	Eninvest AS (33,96%)	Eviny AS (52.51), Sogn og Fjordane Energi (38.74), Eviny Digital (3.6%), Tussa IKT (2.15%), N Helgheim AS (1.73%)		

Table 9.2c *Mobile broadband (4G and 5G)*

Actors	Owners	Owners of owners	Private/ public	Country
Altibox	Lyse AS	Stavanger Municipality (45.73%), Sandnes Munic. (19.53), Sola (8.74%), Time Munic. (5.83%), Klepp Munic. (4.22%), Hå Munic. (3.78%), Randaberg Munic. (3.27%), Eigersund Munic. (2.95%), Strand Munic. (2.53%), Other (3.42%)	Public	Norway
Telenor	Telenor	Government of Norway (53.96%), Folketrygdfondet (4.71%), State Street Bank and Trust (1.88%), JP Morgan Chase Bank (1.09%), Other (38.35%)	Public	Norway
Telia	Telia AB	Government of Sweden (39.5%)	Private	Sweden, Finland

COMMENTS: Table 9.2a–c list the actors involved at each level of the infrastructure, their owners and the major companies that own the owners (as of June 2023). Ownership share is noted where this is known and up to 1 per cent. Private/public refers to whether the actors have majority ownership within the private sector or public sector (the state).

Discussion

Access markets in Norway fall under the jurisdiction of the Ministry of Local Government and Regional Development. This is highly regulated infrastructure, expressly subject to the principle of universality to ensure fair and equal access to all citizens. As a result, this is a transparent sector, subject to the jurisdictional reach of national authorities. While the backbone infrastructures of the Internet fall under the general purview of competition law and are thus monitored by the Norwegian Competition Authority, they are subject only to laws intended to curtail the abuse of market power. Universality does not apply here. Furthermore, while the definition of “carriage” applies to all providers of Internet access under the Norwegian Electronic Communications Act, overseen by the sector regulator the Norwegian Communications Authority, the law only pertains to open traffic, exempting content delivery networks and private submarine cables.

Legally, however, the field is about to shift somewhat, with the adoption of the European Union’s Digital Markets Act and the revision of the Norwegian Electronic Communications Act. While the Digital Markets Act is a competition law intent to ensure fair digital markets, it will significantly increase the transparency of the sector. The Digital Markets Act pertains to intermediation services such as online marketplaces and app stores, search engines, social networking sites, video sharing platforms, number-independent interpersonal electronic communication services, operating systems, cloud services, and advertising services and networks. The proposed amendment to the Electronic Communications Act suggests extending the act to include number-independent services such as WhatsApp and Messenger under its jurisdiction. It also proposes to include data centres that host cloud services,

primarily for reasons relating to data security (NKKom, 2021). Per the suggested new definition, electronic communication services will likely be expanded to include services that also transmit signals between systems, such as machine-to-machine communication, which, depending on interpretation, could include data centres, cloud services, and content delivery networks. These amendments would thus bring some of the backbone players in under telecom regulations, and thus under the principle of universalism.

The laws pertaining to telecommunications are founded on universalism and thus recognise the common good characteristics of these infrastructures for enabling communication, albeit under the purview to ensure fair competition. Infrastructures for communication are key to enabling citizens to exercise the communicative power they need to question authority and thus make that authority legitimate (Flynn, 2004; Kreide, 2016). We can ask, then, how and to what extent the infrastructures analysed here – the backbone and access networks of the Internet – enable distributed communicative power as they are currently regulated. In the Nordics, the commitment to a sound digital infrastructure (Syvertsen et al., 2014; see also Norwegian Government, 2021) first and foremost associates universalism with access and is thus regulated at the access point of the Internet – with broadband. As of yet, then, backbone Internet infrastructures are not considered to be communication infrastructures. However, the proposal suggests that lawmakers are certainly beginning to think of sites for data processing and storage in this way, or at least to see them as markets where power can be exercised to curtail competition.

As universalism is typically extended to services that intend to release citizens from the undue effects of unbalanced power relations (Esping-Andersen, 1990), the backbone infrastructures that enable the Internet to be accessed by citizens should constitute a collective interest (Chapdalaine & McLeod Rogers, 2021), not least as these infrastructures control the highways and junctures where data flow. The protocols and algorithms that platforms design and operate ultimately shape the norms and rules of this infrastructure (see Musiani, 2022). The physical infrastructure of the Internet therefore entails sociotechnical systems that influence the rules and norms that govern data, and thus communicative action (Bohman, 2010; Nieborg & Poell, 2018; Ross & Chiasson, 2011). The data that run through these systems increasingly drive not just competition in a market, but also decision-making (c.f. Kennedy & Bates, 2017; Van Dijck et al., 2018). The choices that stakeholders in this realm make about technology impacts the distribution of power within the system (Dutton et al., 2004). The kind of stakeholders that are involved therefore matters, as the makeup of stakeholders will shape the government's strategies to retain and sustain data sovereignty. Moreover, the kind of regulators that are involved matters. When backbone infrastructures remain essentially unregulated, it suggests that these crucial services are not

to be considered as public goods – that they play no part in enabling agency in communicative action.

Perhaps the reason for this is that competition regulators have yet to see concerns raised within these industries that would warrant them to consider legislation. Such omissions reflect a weakness in competition regulation, as authorities are largely reliant on input from public and private actors to evaluate competitive practices in particular sectors. The fact that the technical infrastructures of the Internet are beyond the comprehension of most citizens suggests that backbone infrastructures are indeed not universalist, as their legitimacy cannot be tested through common use. To that end, nor can it be ascertained to what extent they enforce the equal rights, inclusion, and reciprocity principles that enable communicative power (Benhabib, 2007). If universality is the means to emancipate and protect citizens from market mechanisms (Esping-Andersen, 1990), the concentration of the backbone markets should be a cause for concern. The entitlement to rights that universality presupposes presumes that infrastructures should enable agency in communicative action. The ways in which this agency is facilitated or curtailed is up to the actors that own and operate these basic services that are increasingly central to the digital governance of welfare states. This reality displays a crucial weakness in competition regulation for welfare state purposes. Competition law is only intent on ensuring fairness in competition. The Electronic Communications Act pertains specifically to communication infrastructures because this market should also be governed by universal provision, not just fair competition. Some markets trade in public goods that are susceptible to market failure and should be regulated with public interest in mind. However, if data are a resource that supports free speech, the infrastructures that transmit, store, and process this data should come under the sovereignty of the welfare state.

Conclusions

Our results show that, at this point, Norwegian actors are the main participants in the country's data infrastructures, with the exception of content delivery networks, and to a lesser extent, data centres. This implies that in the lifecycle of data, data storage is the weakest link in the risk of losing data sovereignty. This is problematic because, while the physical distribution of data seems to be within the grasp of national and local players, data require storage facilities that allow public access. When the value chain has a link that is overwhelmingly external, it can put at risk the capacity of small nations to control data flows and nationwide data access. Furthermore, we also see an increase in strategic purchases by international big actors in recent years. This confirms a trend in infrastructure capture similar to that of other countries (Zuboff, 2019). Moreover, energy companies play an increasing role at the

data layer of the communication infrastructure. The actors involved in the infrastructure that supports public communication are thus expanding, to the point where multiple stakeholders contribute to shaping the material and institutional logics that will govern data sovereignty in the future.

Our concern is that if Norway's regulation and governance of the data lifecycle (production, storage, and distribution) struggle to keep up with the expansion and changes of data demanded by industries and citizens, the communicative power of citizens might be at risk of losing its universal aims. If data storage infrastructure falls predominantly under foreign ownership, the whole structure may be less robust. With regard to the backbone and access network ownership, we see global changes, but Norway seems to have a slower pace of change. This should be considered good news, as Norwegian policymakers may have more time to react to the global trend of infrastructure capture.

Limitations and further research

This chapter is an exploration-based analysis of a descriptive dataset at a specific point in time (June 2023). As such, we depend on a cross-section of available information. The major limitation of this approach is that we do not have data on the evolution of ownership of these infrastructures. Hence, we cannot assess past or future changes in the market. In such a changing environment, it is impossible for us to make predictions. Instead, we rely on what we consider potential challenges in the future based on the current situation in Norway and the global trend. Other than previously reported indicators, we have few means to explain why our findings look the way they do, and while we do not claim any causal inference, it is also a limitation to address in further research. Future studies should focus on how and why different clusters of infrastructures seem to evolve differently, and what the real outcomes of such a diverse reality are. More research is also needed to assess how changes in the data infrastructure market affect the data experience of citizens, and whether the risks and challenges we identify in this chapter actually result in reduced communicative power.

References

- Ala-Fossi, M. (2020). Finland: Media welfare state in the digital era? *Journal of Digital Media & Policy*, 11(2), 133–150. https://doi.org/10.1386/jdmp_00020_1
- Allern, S., & Pollack, E. (2019). Journalism as a public good: A Scandinavian perspective. *Journalism*, 20(11), 1423–1439. <https://doi.org/10.1177/1464884917730945>
- Anttonen, A., & Sipilä, J. (2014). Varieties of universalism. *Draft paper prepared for the UN-RISD Conference, New Directions in Social Policy: Alternatives from and for the Global South, Geneva* (pp. 7–8).
- Barzilai-Nahon, K. (2009). Gatekeeping: A critical review. *Annual Review of Information Science and Technology*, 43, 1–79. <https://doi.org/10.1002/aris.2009.1440430117>
- Benhabib, S. (1994). In defense of universalism. Yet again! A response to critics of situating the self. *New German Critique*, (62), 173–189. <https://doi.org/10.2307/488515>
- Benhabib, S. (2007). Another universalism: On the unity and diversity of human rights. *Proceedings and Addresses of the American Philosophical Association*, 81(2), 7–32.
- BEREC. (2022). *Draft BEREC report on the internet ecosystem*. BoR, (22), 87. Body of European Regulators for Electronic Communications.
- Bohman, J. (2010). Democratizing the global order: From communicative freedom to communicative power. *Review of International Studies*, 36(2), 431–447. <https://doi.org/10.1017/S0260210510000094>
- Bowen, G. A. (2009). Document analysis as a qualitative research method. *Qualitative Research Journal*, 9(2), 27–40. <https://doi.org/10.3316/QRJ0902027>
- Chapdelaine, P., & McLeod Rogers, J. (2021). Contested sovereignties: States, media platforms, peoples, and the regulation of media content and big data in the networked society. *Laws*, 10(3), 66. <https://doi.org/10.3390/laws10030066>
- Cohen, J. E. (2017). Law for the platform economy. *University of California Davis Law Review*, 51, 133–204.
- Couture, S., & Toupin, S. (2019). What does the notion of “sovereignty” mean when referring to the digital? *New Media & Society*, 21(10), 2305–2322. <https://doi.org/10.1177/1461444819865984>
- Dutton, W. H., Gillett, S. E., McKnight, L. W., & Peltu, M. (2004). Bridging broadband internet divides: Reconfiguring access to enhance communicative power. *Journal of Information Technology*, 19(1), 28–38. <https://doi.org/10.1057/palgrave.jit.2000007>
- Engelstad, F., & Larsen, H. (2019). Nordic civil spheres and pro-civil states. In J. C. Alexander, A. Lund, & A. Voyer (Eds.) *The Nordic civil sphere* (pp. 39–63). Wiley.
- Enli, G., Syvertsen, T., & Mjøs, O. J. (2018). The welfare state and the media system: The role of media and communications in the evolution and transformation of Scandinavian welfare states. *Scandinavian Journal of History*, 43(5), 601–623. <https://doi.org/10.1080/03468755.2018.1474023>
- Esping-Andersen, G. (1990). *The three worlds of welfare capitalism*. Princeton University Press.
- European Union. (2020a). *Proposal for a regulation of the European Parliament and of the Council on contestable and fair markets in the digital sector (Digital Markets Act)*. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020PC0842>
- European Union. (2020b). *Proposal for a regulation of the European Parliament and of the Council on a single market for digital services (Digital Services Act) and amending Directive 2000/31/EC*. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020PC0825>
- Fischli, R. (2022). Data-owning democracy: Citizen empowerment through data ownership. *European Journal of Political Theory*. Advance online publication. <https://doi.org/10.1177/14748851221110316>
- Flensburg, S., & Lai, S. S. (2020). Mapping digital communication systems: Infrastructures, markets, and policies as regulatory forces. *Media, Culture & Society*, 42(5), 692–710. <http://dx.doi.org/10.1177/0163443719876533>
- Flynn, J. (2004). Communicative power in Habermas’s theory of democracy. *European Journal of Political Theory*, 3(4), 433–454. <https://doi.org/10.1177/1474885104045914>
- Gunaratne, S. A. (2009). Emerging global divides in media and communication theory: European universalism versus non-Western reactions. *Asian Journal of Communication*, 19(4), 366–383. <https://doi.org/10.1080/01292980903293247>

- Habermas, J. (1996). *Between facts and norms*. Polity.
- Hjarvard, S., & Kammer, A. (2015). Online news: Between private enterprise and public subsidy. *Media, Culture & Society*, 37(1), 115–123. <https://doi.org/10.1177/0163443714553562>
- Hummel, P., Braun, M., Tretter, M., & Dabrock, P. (2021). Data sovereignty: A review. *Big Data & Society*, 8(1), 1–17. <https://doi.org/10.1177/2053951720982012>
- Kennedy, H., & Bates, J. (2017). Data power in material contexts: Introduction. *Television & New Media*, 18(8), 701–705. <https://doi.org/10.1177/1527476417720034>
- Kildal, N., & Kuhnle, S. (2007). The Nordic welfare model and the idea of universalism. In N. Kildal, & S. Kuhnle (Eds.), *Normative foundations of the welfare state: The Nordic experience* (pp. 25–45). Routledge. <https://doi.org/10.4324/9780203695241>
- Konkurransetilsynet. (2021). *Annual report 2021*. The Norwegian Competition Authority.
- Kreide, R. (2016). Digital spaces, public places and communicative power: In defense of deliberative democracy. *Philosophy & Social Criticism*, 42(4-5), 476–486. <https://doi.org/10.1177/0191453715623831>
- Loader, B. D., & Mercea, D. (2011). Networking democracy? Social media innovations and participatory politics. *Information, Communication & Society*, 14(6), 757–769. <https://doi.org/10.1080/1369118X.2011.592648>
- LOVdata. (2004, November 1). *Act relating to electronic communications (The Electronic Communications Act)*. <https://lovdata.no/dokument/NLE/lov/2003-07-04-83>
- Musiani, F. (2022). Infrastructuring digital sovereignty: A research agenda for an infrastructure-based sociology of digital self-determination practices. *Information, Communication & Society*, 25(6), 785–800. <https://doi.org/10.1080/1369118X.2022.2049850>
- Nieborg, D. B., & Poell, T. (2018). The platformization of cultural production: Theorizing the contingent cultural commodity. *New Media & Society*, 20(11), 4275–4292. <https://doi.org/10.1177/1461444818769694>
- NKom. (2021). *Risikovurdering av ekomsektoren 2021: En sektor i endring [Risk assessment of the ecom sector 2021: A sector undergoing change]*. Norwegian Communications Authority.
- Norwegian Government. (2021, April 9). *Meld. St. 28 (2020–2021): Vår felles digitale grunnmur – Mobil-, bredbånds- og internettjenester [Report. St. 28 (2020–2021): Our common digital infrastructure – Mobile, broadband, and Internet services]*. Ministry of Local Government and Regional Development. <https://www.regjeringen.no/no/dokumenter/meld.-st.-28-20202021/id2842784/>
- O'Mahony, P. (2010). Habermas and communicative power. *Journal of Power*, 3(1), 53–73. <https://doi.org/10.1080/17540291003630361>
- Parks, L., & Starosielski, N. (2015). *Signal traffic: Critical studies of media infrastructures*. University of Illinois Press.
- Pickard, V. (2017). Rediscovering the news: Journalism studies' three blind spots. In P. J. Boczkowski, & C. W. Anderson (Eds.), *Remaking the news: Essays on the future of journalism scholarship in the digital age* (pp. 47–60). MIT Press.
- Reunanen, E., & Kunelius, R. (2020). The transformation of communicative power into political power. *Communication Theory*, 30(1), 1–20. <https://doi.org/10.1093/ct/qtz011>
- Ross, A., & Chiasson, M. (2011). Habermas and information systems research: New directions. *Information and Organization*, 21(3), 123–141. <http://dx.doi.org/10.1016/j.infoandorg.2011.06.001>
- Sormanen, N., & Dutton, W. H. (2015). The role of social media in societal change: Cases in Finland of fifth estate activity on Facebook. *Social Media + Society*, 1(2), 1–16. <https://doi.org/10.1177/2056305115612782>
- Syvetsen, T., Enli, G., Mjøs, O., & Moe, H. (2014). *The media welfare state: Nordic media in the digital era*. University of Michigan Press. <https://doi.org/10.3998/nmw.12367206.0001.001>
- Van Dijck, J., Poell, T., & de Waal, M. (2018). *The platform society: Public values in a connective world*. Oxford University Press. <https://doi.org/10.1093/oso/9780190889760.001.0001>
- Zuboff, S. (2019). *The age of surveillance capitalism: The fight for a human future at the new frontier of power*. Profile Books.