

Public goods and private property

A waltz between Big Tech and the Nordic welfare states

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ABSTRACT

The Internet's evolution into a critical societal infrastructure has reconfigured the material conditions for communication and led to the emergence of a wide range of new media and communication platforms. Yet, media system analyses continue to focus on legacy media institutions rather than on the broader digital ecosystem that these are embedded in and increasingly come to rely on. In this chapter, we suggest a new path for analyses of the power structures and dynamics that shape contemporary digital communication environments. Foregrounding the material resources that enable and constrain Internet-based communication, we explore how digital infrastructures are organised and controlled in the four largest Nordic countries. We thereby provide an alternative basis for discussing the mutual influence of the welfare state and the increasingly globalised and commercial communication system, and we conclude that the four media welfare state pillars suggested by Syvertsen and colleagues are theoretical ideals rather than empirical realities.

KEYWORDS: Internet infrastructures, datafication, Big Tech, political economy, digital communication systems

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Introduction

The Nordic region is one of the most digitalised in the world, with nearly universal Internet coverage, high-speed broadband connections, and substantial usage of all kinds of digital services (Randall & Berlina, 2019). Over the past decades, the Internet has evolved into a critical societal infrastructure that supports an ever-growing range of everyday activities and key societal functions, while simultaneously disrupting a multitude of established institutional arrangements. Yet, studies that investigate digital market structures and regulatory arrangements beyond the sphere of legacy media are few and far apart, meaning that the state of established welfare institutions and policies are rarely assessed in the context of the broader digital ecosystem. To address this dearth of research, in this chapter, we ask the following:

- RQ. How does the rise of the Internet as a common and increasingly dominant infrastructure for communication influence the structural arrangements and dynamics that surround mediated communication in Nordic welfare states?

In approaching this complex and broad question, we stress the interplays and conflicts between welfare state institutions and global Big Tech companies, probing into how they mutually shape the structural arrangements of contemporary Nordic communication environments. More specifically, we challenge persistent analytical approaches to studying media systems and welfare states (Syvertsen et al., 2014), arguing that they overemphasise (continuing) ideological and institutional logics while omitting (changing) material and infrastructural conditions.

This chapter is structured into four main sections. In the first, we briefly review existing studies of digital media systems in the Nordic region, arguing that researchers need to re-adjust their epistemic practices and analytical approaches if they are to address urgent questions about contemporary communicative power structures and modes of governance. We then move on to analyse and discuss how key components of the Internet infrastructure are owned and controlled across the four largest Nordic countries. Building on this, in the following sections, we consider why our findings speak to and challenge the four pillars of the media welfare state as theoretical ideals rather than empirical realities. In the concluding section, we suggest ways forward for research and regulation alike.

Continuities and changes

Existing studies of (digital) media structures in the Nordic region often emphasise the perseverance of democratic corporatist modes of governance (Hallin & Mancini, 2004; Humprecht et al., 2022) and the continuation of established and historically engrained welfare principles and policies (Enli

et al., 2018; Syvertsen et al., 2014). As Jakobsson, Lindell, and Stiernstedt outline in the Introduction of this volume, Syvertsen and colleagues (2014: 2, 120) have pointed to four fundamental pillars that “continue to be present in the 21st century” and find a “high degree of continuity regarding the empirical realities of how the media systems operate”. Other studies challenge this emphasis on continuity and path dependencies, arguing that the economic crisis of the press, the broken ties between media institutions and the political system, and the fading positions of public service media are evidence of a decline of the welfare-oriented and democratic corporatist model (Hjarvard & Kammer, 2015; Ohlsson, 2015).

Common for most studies of media and communication structures in the Nordic region is, however, a persistent focus on legacy media such as newspapers and broadcasters as analytical units of analysis for investigating market developments and regulatory arrangements. It is unclear whether – and how – they include non-native so-called new media (social media, streaming services, and other digital platforms) in their definition of a national media system (see also Hardy, 2010). They also tend to neglect the fact that even national legacy actors, when venturing online and distributing their content over the Internet, become embedded in a global digital ecosystem, where the underlying infrastructures that they depend on are controlled by other market actors, regulatory schemes, and modes of governance, which all go well beyond those included in established analytical frameworks. As a result, studies that apply the variables and dimensions used to analyse analogue media systems see contemporary digitalised communication environments “in the rear-view mirror” (Ala-Fossi, 2020: 146).

Digital communication systems

Based on an analytical framework revolving around the key concept of digital communication systems (Flensburg & Lai, 2019; Lai & Flensburg, 2023), this chapter provides an alternative to the mediacentric approaches described above. Theoretically anchored in the broader concept of a communication system (Jensen, 2015, 2022; Jensen & Helles, 2022), this epistemic and analytical shift in perspective emphasises both the material and the institutional arrangements that enable and constrain communication as well as how these diverge and develop across historical periods and societal contexts. Moving beyond the national, legacy institutions that served as gatekeepers for communication in the analogue age, this approach encourages researchers to take a step back and ask *how* peoples’ mundane digital communication activities are controlled, by *whom*, and under *what* regulatory conditions.

Rather than an a priori focus on particular institutions (such as news media), this entails identifying the underlying infrastructural resources that support *any* kind of digital communication, mapping out the market actors

owning and controlling them, as well as the forms and degrees of state regulation that apply to them. In doing so, we recast the underlying material infrastructures as an independent and essential analytical dimension for understanding institutional arrangements – but we also acknowledge that technological developments, especially in the early stages, are highly dependent on the economic and political characteristics of their evolutionary contexts (Hughes, 1994). In other words, we set out to investigate the mutual influences of material technologies and political economies in shaping communication environments.

Digital communication systems then refer to societies where the Internet comprises a common and dominant infrastructure for communication *and* the institutional arrangements that shape – and are shaped by – it. To be able to empirically map, analyse, and compare digital communication systems, we distinguish between four layers of Internet infrastructure: 1) access networks that allow individual users to access the Internet; 2) backbone infrastructures that enable individual access networks to connect and exchange data globally; 3) applications that provide interfaces for communicating digitally; and 4) data that flow through and between networks and applications. By mapping the technological characteristics, ownership structures, and regulatory conditions of each layer, we can compare different contexts and highlight differences and similarities in the ways digital communication is organised and controlled.

Applying this approach, this chapter builds on an empirical and comparative analysis of Denmark, Finland, Norway, and Sweden (see Lai & Flensburg, 2023) that investigates the endurance and continued presence of the four institutional “pillars” in contemporary Nordic societies, where the Internet constitutes a common and increasing dominant infrastructure for communication. In doing so, we argue that the epistemic and analytical adjustments outlined above disclose power structures and institutional arrangements that are invisible to classic media system analyses.

Digital infrastructures and political economies in welfare states

This section provides a brief rundown of the infrastructures and political economies that shape digital communication systems in the four largest Nordic countries. In comparing the four contexts, we emphasise both the similarities – or what we might refer to as the characteristics of a Nordic digital communication system – and the differences between the countries as they relate to, for instance, varying geopolitical conditions, market arrangements, and regulatory approaches.

The last mile

When mapping the technologies and political economies that support Internet-based communication, the last mile (or first, depending on how you consider it) of the Internet's infrastructure – namely the access networks that connect individual users to the global network of networks – is an obvious place to start. High-speed broadband connections and extensive mobile networks constitute an essential foundation for the comprehensive digitalisation of the Nordic societies and the everyday lives of the people who live there. The capital regions of Denmark, Finland, and Sweden hold the highest shares of daily Internet users in the European Union (more than 95% of adults) (Eurostat, 2021), while even the sparsely populated Northern areas of Finland, Norway, and Sweden are, by all comparisons, well-connected (European Commission, n.d.). However, when zooming in on the technologies that allow Nordic citizens to access the Internet, the countries' infrastructural paths to reach these levels of digitalisation differ in important ways.

Norway and Finland especially stand out due to their predominant reliance on, respectively, fixed and mobile broadband connections. While 90 per cent of all Norwegian households have a fixed broadband connection, only 30 per cent use mobile broadband (see OECD, n.d., for national and comparative information on broadband technologies). In Finland, the situation is the reverse: 91 per cent of Finnish households have a mobile broadband connection and just 57 per cent connect via fixed networks. We also see that Denmark, to a large extent, relies on historical telecommunications infrastructures, while Sweden has invested heavily in new high-speed fibre-optic networks (Forzati & Mattsson, 2014).

These infrastructural characteristics are closely related to both economic and political factors and serve as important backdrops for making sense of the political economy of access networks in each context. Taking the Danish incumbent telecommunications operator, TDC, as an example, the company's historical ownership of significant landline copper wire and cable television networks has been a clear advantage in the rollout of early broadband, which partly explains both the high reliance on these technologies and TDC's strong position in the Danish Internet service provider market. In contrast, Finland's reliance on mobile broadband has led to a more even competition between the three main operators – Elisa, Telia, and Telenor – reflecting the fact that mobile spectrum is allocated by state authorities and divided between competing market actors.

Looking at the ownership structures, legacy telcos with strong ties to the welfare states of the twentieth century continue to dominate this last mile of Internet service provision. The partly state-owned incumbents Telenor (Norwegian) and Telia (Swedish) hold an especially significant market share in all four countries (Nordic-Baltic Tele Statistics, 2020). The Danish and Finnish equivalents, TDC and Elisa, are both dominant in their home markets, but

less so in the wider Nordic market and beyond, reflecting varying degrees of commercial success that are also evident in the companies' revenue levels. For instance, TDC has reduced its yearly income from approximately 400 million euro in 2010 to just 20 million in 2020 (TDC, 2020), while Telenor, after a period of decline around the mid 2010s, has managed to regain and even enhance its economic strength through expansions outside the Nordic region (e.g., in Asia, see Telenor, 2022).

As hinted at above, fixed and mobile broadband is regulated quite differently, with the state playing a more active and facilitating role in the establishment and organisation of mobile networks and a more reactive and regulating role when it comes to fixed networks. All four countries have provided public funding for establishing fibre networks in rural and other non-profitable regions. Sweden led the way in this by giving the municipalities tax breaks worth of 310 million euro to develop local access networks, and providing 252 million euro for regional network planning (Forzati & Mattsson, 2014). The Swedish municipalities thereby played a key role in the early establishment of broadband infrastructures, while being obliged to make their network capacity available to external service providers to avoid local monopolisation (Hansteen, 2005). In contrast, broadband policies in Denmark and Norway have focused on stimulating the demand rather than supplying the infrastructures (Hansteen, 2005; Henten & Falch, 2014). Public digitalisation strategies in the late 1990s and early 2000s favoured the project-based funding of digital applications and services for public administration purposes, education, and so forth, which were seen as engines of digitalisation and something that could stimulate the demand for broadband build-out. However, the Norwegian government has also invested significantly in co-funding broadband projects in areas with no existing offers (OECD, 2008). Since 2016, similar support has been given in Denmark, albeit on a smaller scale, with the state allocating 13 million euro per year to (fixed) broadband projects in sparsely populated areas (Falch et al., 2016). Finland also funds the laying of fibre-optic networks (Nieminen, 2013).

While fixed broadband regulation is, as such, relatively similar across the four countries, mobile policies differ, with Finland being a clear outlier (Ala-Fossi & Bonet, 2018). The high prevalence of mobile broadband in Finland is directly related to the country's allocation of frequencies at relatively low costs that has served as an "indirect public support for telecom operators' mobile businesses [...] making it easier for the operators to invest in mobile networks [and] investments in fixed networks less attractive" (Ala-Fossi, 2020: 137). In contrast, mobile frequencies in Denmark, Sweden, and Norway have been auctioned off at high prices, making it more expensive for operators to build and run the mobile networks.

To sum up, the characteristics of the welfare state model are clearly present at the level of access networks. All four countries have taken signifi-

cant measures to ensure universal access to the Internet, and public funding schemes have guaranteed high coverage and high-capacity broadband. Legacy telecommunications companies with strong ties to the welfare state have established themselves as dominant Internet service providers utilising their existing market positions, economic muscle power, and technological expertise to roll out extensive broadband networks across the region.

While global Big Tech companies dominate vast parts of the remaining ecology (especially app and website provision and data collection and processing, as outlined later in the chapter), legacy providers continue to gatekeep this last mile of the Internet in the Nordic region. However, it is also important to note that the positions of national telcos in the broader communication system have changed, despite their persistent dominance in the access network market. While they continue to run the access networks, their former position as key providers of communication services (telephony, SMS, and television distribution) is diminishing as a result of over-the-top services (supplied by global platforms) offering the same functions at the price of just one broadband connection.

Backends

Moving on from the well-known and regulated sphere of access networks, we now turn to what is often described in vague and obfuscating terms such as “the cloud”. The Internet’s backbone is made up of extensive networks, exchange hubs, and data centres located beyond the last mile of access network provision, making the *Internet* what it essentially is – a network of networks. For this chapter, we focus on two components of the backbone – submarine fibre-optic cables that connect terrestrial networks (e.g., linking the Nordic region and the US) and Internet exchange points that enable the exchange of data between local access networks.

In exploring the evolution of digital backbone infrastructures and political economies, the geographic differences between the four largest Nordic countries are key background variables: Their positions, either in the centre or the periphery of Northern Europe, as well as their varying terrains, sizes, and population densities serve as backdrops for explaining each country’s role in the global Internet infrastructure. For instance, Denmark and Norway’s western coastlines make them ideal hubs for data traffic crossing the Atlantic, while Sweden and Finland are home to important terrestrial exchange points enabling data to travel between the northern and southern parts of Europe – and not least between the east and west of the continent.

A significant number of the submarine cables that land in the Nordics were established in the 1990s as a precondition for the growing use of global digital applications and services (see TeleGeography, n.d.-b). That is, in order for users to connect to servers located in, for instance, San Francisco,

connections must be made between the Nordic access network suppliers and their American counterparts. While the earliest cross-Atlantic Internet routes were based on satellite – one of the first with a node in the Norwegian town, Kjeller (NORSAR, 2020) – the introduction and success of killer applications such as e-mail and the world wide web called for increasing capacity in the form of submarine fibre-optic cables. The growing data traffic and expansion of local access networks and distribution systems, in turn, created a need to ease the exchange of data between network operators.

The early phases of backbone development were generally led by welfare state institutions with legacy telcos collaborating in large consortia on submarine cable projects, and the Nordic universities hosting the earliest Internet exchange points. However, recent years have seen a significant growth in both the number of submarine cables and Internet exchange points initiated and funded by other types of market actors. In Norway, the national real estate and infrastructure company Bulk has, for instance, made extensive investments in submarine cables, such as the planned Leif Eriksson that is to connect the shores of Norway with Canada in 2024 (see TeleGeography, n.d.-b). GlobalConnect is another example of a large Nordic company establishing national and regional routes, while the cross-Atlantic Havfrue [Mermaid] cable connecting Denmark and Norway to the US is funded by Google's and Facebook's parent companies, Alphabet and Meta, Bulk Infrastructure, and Aqua Comms (TeleGeography, n.d.-b). The Internet exchange points in the Nordic region are also owned by a mix of national stakeholders and international market actors operating from, for instance, Russia, the Netherlands, and the US (see TeleGeography, n.d.-a).

While backbone infrastructures constitute the essential and critical components of the global Internet, this part of the digital ecology is highly unmonitored and, thus, unregulated (the above is based on information harvested from commercial databases). Official policies and legislation are generally inconclusive in terms of describing the conditions and requirements that submarine cable projects, Internet exchange point providers, and other backbone operators and hosting facilities are subject to. Submarine cables landing in the Nordic region, for instance, follow a total of eight European Union directives and conventions, all of which relate to environment issues including protection of the seabed, wildlife, and reduction of waste (Raha & Raju, 2021). However, no regulations target submarine cable *markets*, concentration, ownership structures, and so forth, making submarine cables an “orphan” of international law (Matley, 2019). Recent suggestions calling for national submarine cable agencies and official state registries to monitor submarine cable developments (Raha & Raju, 2021) have, to the best of our knowledge, not been heeded in the Nordic region.

Questions about the degree of direct and official state involvement in backbone developments and market structures are, thus, in one respect relatively

straightforward to answer: It is more or less non-existent. In another sense, it is also important to note that backbone regulation – as a result of the global nature of the Internet – cannot be reduced to questions of nation-state legislation and national government policy. International bodies as well as global Big Tech companies also govern the Internet’s backbone in both formalised and less formalised manners: The Internet Corporation for Assigned Names and Numbers has established policies for coordinating the Internet’s naming system, and the regional Internet registries maintain registers monitoring the development of autonomous systems. Yet, state involvement in the form of official policies is difficult to come by.

Rounding up the backbone layer, the heritage of analogue media welfare states is seen in the central, albeit decreasing, position of legacy telcos that continue to control large parts of the Nordic Internet backbone (also when we look at terrestrial cable routes; see, e.g., NORDUnet, n.d.; Weissberger, 2020). As argued in broader global analyses, “U.S. internet companies are important but subordinate players within consortia that are dominated by a mix of private- and state-owned national carriers as well as some relatively new competitors” (Winseck, 2019: 112). However, we do see signs of a tilting power balance in the Nordic region where the more recent waves of backbone build-out are funded by commercial and global enterprises and, in part, by fortunes made on supplying digital services, harvesting user data, and selling ads.

The massive digitisation and datafication of the Nordic communication systems has created a need for strengthened network connections to transport high-capacity content to the end-user or ever-growing amounts of metadata in the opposite direction, feeding large algorithms, extensive ad networks, and so forth. They also serve as preparations for high-capacity innovations of, for instance, the Internet of Things, blockchain technology, virtual reality, and artificial intelligence. Strategically positioned countries such as Denmark and Finland are currently experiencing a heightened interest from global Big Tech, while the degree of welfare state involvement is generally higher in contexts where legacy actors have a strong position in the national (and international) market, like in Norway and Sweden.

Over-the-top services

Moving from the backend to the frontend of the digital infrastructure, we now shift our gaze to the multitude of digital services that send and receive information over the Internet. Over the last decades, the Nordic region has experienced an extensive digitalisation of a wide range of sectors and societal functions grounded on the evolution of the web architecture and later the introduction of smartphones and mobile app technologies. As a result, a wide range of over-the-top services have come to substitute former, dedicated, and

specialised communication technologies (think of online voice calls replacing telephony, online message services replacing SMS, streaming replacing broadcasting, etc.). If we are to understand contemporary digital ecosystems, we, in other words, need move beyond analyses of the digitalisation of legacy media outlets (e.g., online newspapers or digital public service media) and study the websites and apps that are central to Nordic Internet users' mundane media repertoires (Hasebrink & Domeyer, 2012).

Even though activities at the applications layer, such as logging into Facebook, launching the Netflix app, or sending an e-mail through Microsoft Outlook, are what most people associate with “being online”, our knowledge about what websites and apps are used in the Nordic region is surprisingly limited. Aside from ratings of Internet traffic on selected *national* websites and apps (e.g., national news media outlets), there are no official top-lists gauging actual user patterns in and across the Nordic countries and beyond national applications. That is, official monitoring and regulation suffer from the same bias towards national, legacy media that established media system studies do, making it difficult to empirically assess the actual competition structures on the web and app market.

When approaching these questions, we therefore rely on notoriously unreliable commercial web and app measurements (Dieter et al., 2019; Taneja, 2016) that pop up, shut down, and change their terms and conditions in unpredictable ways (Venturini & Rogers, 2019). For this chapter, we use top-lists of the 50 most used websites and mobile apps in the four countries as reported by Similar Web's public statistics (see Lai & Flensburg, 2023). These are by no means perfect data sources, as their actual construction process is opaque, and they also provide a very limited view of the longtail of websites and apps used in the Nordic countries. They are, however, at least for now, *as good as it gets*, especially if we want to make comparisons between countries.

The websites and apps featured on the top lists are owned by a wide range of market actors, cutting across the hyped “tech giants” and national legacy actors originating in the welfare systems of the twentieth century. For instance, the top-50 websites are almost evenly distributed between national and international market actors, with legacy media holding relatively strong positions, especially in Norway, and national actors being less represented in Denmark. The Norwegian media mastodon Schibsted is the second largest supplier of websites across the Nordic region, while Microsoft comes out as the largest web actor due to its array of popular software packages and online resources. Public service media, along with public authorities supplying e-government services, also appear in all top-50 web lists, and legacy actors (as opposed to digitally born companies) generally dominate the nationally supplied sites.

The national variations are nearly a washout when we look at mobile apps, where Alphabet, Meta, and Microsoft by far outnumber national actors,

including Bonnier, Alma Media, and Schibsted, in all four countries. While the share of nationally owned websites on the top-lists is pushed upwards by the strong presence of national legacy news outlets (especially in Norway), news apps are nearly non-existent on the countries' app top-lists. Zooming in on streaming services, we see a similar pattern, where one-fourth of the *websites* are nationally owned by legacy media companies, like the public service broadcasters or before mentioned Schibsted, while only one in eight streaming *apps* is offered by national actors – among which, companies that have obtained a regional or global presence, including Nordic Entertainment Group (Viaplay) and Spotify, dominate.

Legacy media are, in other words, struggling to compete with global Big Tech companies, especially when people turn to their smartphones and other mobile devices. When launching mobile apps, national media companies furthermore depend on – and often pay for – being available in app stores owned by, most prominently, Apple and Alphabet, who provide the dominant mobile operating systems (iOS and Android). With the Nordic app market being significantly more concentrated than the web market, the rise of mobile apps as a dominant applications infrastructure seems to embody a shift from Nordic companies having a larger presence in their national contexts as well as across the region to a more globalised market, where international corporations increasingly dominate and outnumber classic welfare institutions. The Nordic welfare states do, however, continue to have a significant presence in the applications sphere, just not in the sense of a *media* welfare state. Instead, their presence lives on in the many public digitalisation strategies, bringing with them an array of digital public services such as apps for communicating with authorities, healthcare, transportation, and digitalised identification systems.

The declining impact of legacy media is interesting, since regulatory initiatives have generally focused on adapting existing media policies to include digital news outlets and broadcasting services. Various initiatives have been taken to sustain the view of media as sociocultural institutions that are to be protected against, for instance, the economic threats of the platform economy (Knudsen et al., 2017; Sirkkunen et al., 2021), while fewer actions have been taken towards regulating the platform economy itself. The rise of digital communication services that cannot be comprised within the scope of traditional “media” but hold increasingly powerful positions as key gatekeepers for digital communication has, thus, created a wide range of responsibility gaps exemplified in recent discussions about information curation and censorship on Facebook and YouTube or the national content responsibilities of Netflix. The rise of over-the-top applications thus constitutes a still largely unresolved regulatory crisis, where existing policies and regulatory frameworks – developed in and for the analogue media system – influence a shrinking part of the political economy of the actual digital communication system.

In recent years, a growing demand for the regulation of otherwise highly unregulated aspects of communication and everyday life has appeared, and disparate initiatives have been taken to encourage Big Tech to take on local responsibilities in terms of content production and curation (Meyer, 2020), union rights (Heikkilä, 2020), and so forth, but without much effect. Despite the fact that most of these companies gained their positions in the digital market by supplying web services such as search engines, social media, streaming platforms, online stores, and so on, the applications layer remains largely unmonitored and, in effect, unregulated (Flensburg, 2021).

Summing up, we find that the web ecology, more than that of apps, to some degree mirrors the “old” media systems of the Nordic countries, where national news and public service media share the top-lists with online shopping outlets, e-government services, porn sites, social media platforms, and various types of e-mail and work-related services. The rise of mobile and app-based communication, however, means that the towers of control have been relocated. Apps largely reside inside walled gardens, where a duopoly consisting of Alphabet and Apple currently dominate all parts of the mobile value chain – from operating systems, over app stores and app provision, to the third-party services that facilitate various commercial aspects of apps. This dominance of digital newcomers in the app ecosystem creates an unequal power balance that challenges the corporatist dynamics otherwise associated with media welfare states.

Follow the data!

With data being one of the most valuable assets in the contemporary digital economy, the organisation and control of the infrastructures that collect, store, and process data provide important insights into the digital power structures and dynamics in the Nordic region. As with the applications layer, digital data collection and distribution is notoriously black-boxed, complicating research interventions as well as attempts to regulate the data market. To analyse the Nordic data infrastructures, we here rephrase the classic economic strategy “follow the money” (DeFleur, 1971; Ettema & Whitney, 1994) to “follow the data”, and investigate how data are continuously being harvested and exchanged – and by whom (Flensburg & Lai, 2023).

To identify third-party services operating in the Nordic countries, we again focus on the top-50 websites and apps in each country using the open access tool WebXray (2022) for the websites and the non-profit open access database Exodus Privacy (Exodus, n.d.) for the (Android) apps (there is currently no publicly available data on the use of third-party services in iOS apps). As with the top-lists, neither of the methods are unflawed, and to use them, we must accept a wide range of methodological uncertainties, meaning that the results presented are indicative rather than exact accounts of Nordic

data infrastructures and markets. For this chapter, we focus on identifying the *presence* of different third-party services and market actors, rather than calculating their exact market shares.

The use of third-party services is closely related to the functionalities and underlying business models of the websites and apps in question. Across both websites and apps, news applications, for instance, connect to a high number of third parties, reflecting the fact that ads make up a significant part of the business model for news media – not least when the content is published free of monetary charge. Perhaps somewhat surprisingly, the large platform services (think of social media, search engines, etc., that are known for building their business on collecting and reselling user data) connect to very few third-party services. The reason for this is that while these companies are powerful *third* parties for other sites and apps, they are *first* parties when it comes to their own services – meaning that they have the tools to collect and process data in-house and thus do not need external service providers.

With the exception of a few Nordic and European actors, the data layer is by far the most globalised and commercial compared with the access network, backbone, and applications markets. Through its swarms of web services (e.g., Gstatic, Google Tag Manager, Google APIs, Google Analytics, and DoubleClick), Alphabet comes out as the number-one third-party provider across both websites and apps, having a presence on more than two-thirds of the top websites and apps. In Norway and Finland, established media companies such as Schibsted and Alma Media also appear as third-party service providers for websites, while this does not seem to be the case in Denmark and Sweden (at least not when we look at the top-50). As for the applications layer, however, the rise of the mobile data market seems to erode the national differences, creating a more homogeneous and globalised data ecosystem in the Nordic region, where national legacy actors are pushed to the periphery or bought up (Binns, Zhao, et al., 2018).

This points to the uneven power balance between Nordic and global (primarily American) companies, where the former depends on the latter for their technical and commercial functions. In other words, if, for instance, a Nordic media company wants to launch a streaming app to prevent their users from drifting to, say, YouTube, it will most likely use the services supplied by one of Alphabet's child companies to collect and process user data, thereby feeding their largest competitor. Mobile market giants such as Alphabet thus not only gain their powerful position in the digital ecosystem through the massive success of their own services, but also by continuously extending their activities and assets both horizontally and vertically, making other actors dependent on them *and* using this position to improve their own products and strengthen their market positions.

Turning to the political initiatives taken to regulate the booming data economy, Denmark, Finland, Norway, and Sweden are all in the global

top-five when it comes to protecting users' privacy online (BestVPN, 2023). As a recent pushback against commercial datafication and third-party data vendors, various legislative initiatives have been taken, most notably targeting the web cookie infrastructure, and all four countries have adapted their political frameworks to comply with the European Union's e-Privacy directive – in popular terms, the Cookie Directive (European Parliament & The Council, 2009) – and the General Data Protection Regulation (GDPR) (European Parliament & The Council, 2016).

Accompanying these legislative frameworks, Nordic data protection bodies have recently launched investigations into third-party data infrastructures (Datatilsynet, 2022a, 2022b; Ministry of Foreign Affairs of Denmark, 2021; Swedish Authority for Privacy Protection, 2020; Norwegian Consumer Council, 2020). These actions do not compare in scope to initiatives in other European countries – for example, the French data regulator fining Google, Facebook, and Amazon for violating the e-Privacy rules as well as the GDPR (Braun, 2022), or the German Bundeskartellamt (2019) prosecuting Facebook and Amazon for antitrust violations and breaches of privacy rules. Yet, they are testimonies to shifting political attitudes and an increased awareness of datafication as an essential policy concern.

Despite this increasing regulatory attention, enforcements of competition law on global data infrastructures and markets are limited, and individual consent declarations continue to legitimise data-based business models and monopolistic market structures. This regulatory vacuum is particularly evident when zooming in on the market for *mobile* datafication, where rules like those enforced by the cookie directive, as of this writing, do not apply to the use of third-party services in apps (Binns, Lyngs, et al., 2018). That is, while more and more forms of communication – interpersonal, networked, public, and private – move to mobile platforms, data harvesting moves back into the shadows, since established frameworks are designed for the web. In the current state of what seems to be a political momentum that could potentially alter the basic conditions for the digital ecology and economy as we know it, it is difficult to forecast the future. For instance, the recently passed Digital Services Act sets out to increase user protection and transparency around the collection of data and thus aims to follow up on the shortcomings of the GDPR (European Commission, 2022).

All in all, the institutional arrangements and logics of the media welfare state have for the moment a very limited influence on this last infrastructural layer. The current organisation of data infrastructures is almost entirely commercial, and it is difficult to see any signs of data being organised as a public good. In fact, even the comprehensive datafication of key welfare services (public healthcare, education, social security, and so forth) feed the business models and power of Big Tech by relying on these companies' services and infrastructures (Andreassen et al., 2021). This leads to an indirect commer-

cialisation of the welfare state and “embeds social welfare within an ecosystem that endlessly perpetuates this reconfiguration” (Dencik, 2021: 160).

The dominance of Big Tech companies in the data layer also sparks developments in the three previous layers, as the access to user information can be used to advance the companies’ own applications, and the terms and conditions for using third-party services influence the conditions of other website and app suppliers. Furthermore, platform companies’ recent ventures into the global Internet service provider market (Nothias, 2020), as well as massive backbone investments, are all built on the fortunes made from, primarily, data.

The resilience of the Nordic model

The analysis presented above provides an alternative basis for assessing how digital communication is organised and controlled in the Nordic region and what role welfare state institutions and logics play in these institutionalisation processes. In this section, we discuss the four pillars of the media welfare state (Syvertsen et al., 2014) one by one, asking how the current configurations of Nordic Internet infrastructures and political economies match the characteristics found when focusing on legacy media.

Pillar 1: Communication services as public goods?

As for the first pillar, which points to traditions of universality and the institutionalisation of communication technologies as public goods, we find clear evidence of path dependencies at the level of access networks. The extensive use of high-capacity networks and the political prioritisation of various forms of broadband funding in many ways mirror Syvertsen and colleagues’ (2014: 131) argument about egalitarian and common media usage, universal service obligations for Internet service providers, and public ownership of broadcast media. Through public digitalisation strategies, the four welfare states of Denmark, Finland, Norway, and Sweden have played key roles in ensuring equal access in non-profitable areas and stimulating the development of publicly available digital services.

However, we also see that the broader Internet ecology, beyond the last mile of access networks, is subject to less public involvement and is largely reliant on commercial incentives and logics. It seems that the transition from analogue to digital distribution has entailed a fundamental shift, where Nordic welfare states no longer find it essential to control the underlying infrastructures (e.g., the distribution networks that public broadcasters depend on for their streaming services). Global Big Tech companies such as Alphabet, Amazon, and Apple have, in other words, become important gatekeepers who essentially govern Nordic communication environments by establishing

and dictating the conditions that most digital service operators must comply with – while themselves being subject to no formal monitoring or obligations.

Pillar 2: Institutionalised self-governance?

As for the second pillar, Syvertsen and colleagues (2014: 17, 131) pointed to a “range of measures used to institutionalize freedom from editorial interference and self-governance in day-to-day operations”, exemplified in the consideration of access to information as a basic right, well-functioning self-regulation of media institutions, and independence from the state. Focusing more broadly on how digital communication is governed, it is evident that the Internet, in some senses, has increased editorial freedom and independence from the state by decentralising information flows and making individual Internet users independent from former editorial gatekeepers. At the same time, this reconfiguration of the basic organisation of public communication has also destabilised the underlying logics – and efficiency – of existing forms of institutionalised freedom of expression.

As long as newspapers and broadcasters largely controlled the information gateways to the public, the (self- and co-)regulation of these institutions served as proxies for regulating public debate and information dissemination. With the rise of new platforms and services that do not fall within the historic definitions of *media* – nor wish to submit to the responsibilities that this entails – it is not entirely straightforward to declare self-regulation as “well-functioning”. The list of clashes between the cultural norms and values of the Nordic region and the US-based platforms that to a wide extent curate the public spheres is long: Alphabet banning the Danish public service broadcaster’s children’s app because of the use of candy in the shape of tobacco pipes in a television programme (Hilstrøm, 2020); Facebook censoring the Norwegian *Aftenposten* for its republication of the iconic image of a naked child from the Vietnam War (Larsen, 2016); and a wide range of controversies around the spread of information about Covid-19. As such, while measures are surely still taken to ensure free and thriving mediated communication environments and public spheres, the rise of digital communication systems has also entailed a significant and fundamental challenge to the ways these values can be – and are – ensured in practice.

Pillar 3: Cultural policies & regulation?

The third pillar, emphasising the tradition of cultural policies to extend “to the media in the form of content obligations and support schemes that aim to secure diversity and quality” (Syvertsen et al., 2014: 131) is, according to Syvertsen and colleagues, seen in a continuation and adaption of various types of media policies. For instance, they have pointed to reforms of press support schemes aimed at sustaining media diversity and the view on media

and communication as “vehicles to enhance democratic and cultural involvement and participation” (Syvertsen et al., 2014: 131).

The Nordic welfare states have without a doubt made great efforts to continue and adapt the policy schemes developed for legacy media to the digital age. As discussed above, the effects of these policies on the broader communication environment have, however, decreased considerably alongside the declining position of these institutions in peoples’ everyday lives. If we consider how the most used applications and services, as well as their underlying infrastructures, are influenced by existing content obligations, quotas, and so forth, the role of the welfare state is, to say the least, minor. It is fair to argue that the continued support for national news outlets and public service media do provide important *alternatives* to social media and other non-regulated content providers. Yet, the fact remains that people’s mundane information flows and communications are influenced less by democratically founded cultural policies than the Internet.

Pillar 4: Consensual and cooperative solutions?

Finally, the last of the pillars is related to the idea of Nordic media systems as clearcut examples of the democratic corporatist model (Hallin & Mancini, 2004), characterised by “[a] preference for consensual solutions that are durable and involve cooperation between main stakeholders: the state, media and communication industries and the public” (Syvertsen et al., 2014: 131). Again, the endurance of this characteristic is linked to the continuation of public–private partnerships around broadcasting and news distribution, and the continued state-ownership of access network providers, especially in Norway and Sweden, could also be seen as a sign of exactly that.

However, the massive position of global platforms also forces us to ask if communication environments really are consensual and cooperative when actors such as Meta can potentially close down Facebook in the Nordic region (as it did in Australia); when Alphabet at any time can close down any Nordic app (as it did with DR); and when Amazon can terminate the cloud services that host the majority of digital content (as it did under the US capitol riots of 2021). Small-language areas such as the Nordics are (and have always been) particularly sensitive to monopolisation and concentration of power as their markets, despite economic resourcefulness, are relatively small and hold minor positions in the global economy. This creates uneven power balances between the national institutions that rely on the external provision of services and infrastructures, and Big Tech companies that can move their business elsewhere if the conditions in particular contexts become too restrictive. These structural conditions were important justifications for the Nordic welfare states’ involvement in the supply of, for instance, broadcasting, and their economic support of newspapers. Digitalisation, however,

has complicated the material basis of the regulatory logics that (analogue) media welfare states were built upon.

Conclusions and perspectives

In this chapter, we have argued that the assessment of Nordic welfare states' role in the digital age depends on one's analytical perspective. By focusing solely on the sustainment of legacy media, welfare discourses, and attempts at reforming existing (media) policies, we may confirm existing notions of the Nordics as being prime examples of democratic corporatist systems or media welfare states. If we turn to consider the *efficacy* of existing political frameworks and the implications of relying on externally provided digital infrastructures, our assessment of the adaptability of the welfare regime is the opposite.

This turn of perspective raises critical questions about how the increasingly globalised and privatised infrastructures align with the notion of communication technologies as public goods; how effective institutionalised frameworks are for ensuring editorial freedom in a communication environment where public debates and information dissemination largely take place on platforms that are unaffected by national cultural policies; and how traditions for consensual and corporatist governance can live on in a world where global Big Tech can pull the plug on entire communication environments. Based on our analysis of the current organisation and control of the Internet infrastructure in the four largest Nordic countries, we argue that the media welfare state is more of a theoretical ideal than an empirical reality.

When making this argument, the national variations are important to take into consideration. While especially Denmark constitutes a highly globalised and disrupted context where Big Tech holds powerful positions across the digital value chain, Norway exemplifies a “land of legacies”, where national market actors such as Schibsted and Telenor have successfully transferred their historical business models into the digital age, and state agencies seem to be more actively involved in the data market.

Furthermore, a broader comparison of countries that would include other types of regimes might sensitise us to distinctive features of the Nordics that mirror former typologies and historical path dependencies. Ongoing public debates about the contemporary digital economy can potentially result in public infrastructure projects (Zuckerman, 2020), break-ups of anti-competitive market actors (Taplin, 2017), or bans against surveillance-based business models (Zuboff, 2019). Recalling that the Nordic countries, in the past, have been known for solutions that combine consumer needs and commercial interests (Castells & Himanen, 2002), these countries have the potential to be first movers in providing effective regulation and non-commercial alternatives to the highly commercial infrastructures of today.

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