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Alternative Communications Networks Throughout History

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Executive Summary

This exploration of the history of alternative communication technologies and networks (“alternets”) aims at informing the action of contemporary community-based networking and communication services by drawing lessons from past successes and failures of attempts to counter monopolies and concentration in akin communication systems. The fast-paced technological development, the so-called Internet “revolution,” and the popular and academic discourses about “new media” and “emerging media” have obliterated the fact that the Internet is not the first information technology whose inception has profoundly changed human societies. Throughout the 19th and 20th century, the telegraph, telephone, radio, and television were also disruptive technologies that were framed as such during their times. To some extent, contemporary debates over the control of the Internet, issues of access, privacy, and freedom of expression, are reminiscent of the discourse produced on these older technologies. Our hope is that through the lens of history, contemporary issues and challenges surrounding community networks may benefit from new insights and appear in clearer terms, and so do the adequate course of actions to deal with some pressing issues faced by today's alternets.

Approached from a multidisciplinary perspective, the series of eight case studies (three from the community telephone networks of the late 19th and early 20th century, three from the Free Radio movement of the 1960s and 1970s, and two among the first generation of community networks providing Internet access in the 1990s) benefited from different literature and fields of research. More specifically, our contribution takes place at the intersection of five different fields of inquiry and proposes a specific contribution to each of these fields. First, our approach inherits from the historical sociology of social movements. Conceptualizing alternative networks as social movements, we seek to study the mutations over time of these movements and their complex co-shaping by technologies, law, politics, and culture. Second, this report makes an original contribution to the field of media history. To this end, we explore the history, still largely to be written, of the struggles over new media technologies and of forgotten media practices. Third, this report informs the political history of the Internet. Often, when we turn to history to inform contemporary debates and mobilizations around Internet politics, we find single-sided narratives that have achieved iconic status, studies focusing on a handful of over-quoted contentious episodes and generally over-representing North America, or scattered accounts that have so far escaped the notice of Internet researchers. Fourth, our perspective inherits from the history and the governance of the commons. Looking at the enclosure of past similar communication technologies, we seek to draw lessons for contemporary alternets. Fifth, our approach inherits from works coming from the field of science and technology studies (STS). We are specifically interested in exploring the so-called “phases of interpretive flexibility” during which different groups are adopting competing technological designs and practices.



The History of Alternative Telephone Networks in the United States, Sweden, and France (Chapter 2) revisits the early development of the telephone industry. The three case studies focuses on less-known actors that shaped the early development of telephone networks: independent companies in the American Midwest, cooperatives in Sweden, and local governments and local business communities in France. Our analysis focuses on issues central to netCommons such as the control, management, and organization of alternative networks, the regulation of telecommunications, and the relationship between mainstream and alternative networks. As a conclusion, we discuss some the more striking similarities and differences in the early development of the telephone in the U.S., Sweden, and France. First, it is important to insist on the successes of non-state actors in the development of the telephone, as they significantly contributed to shape the industry. Second, we reflect on the role played by patent and patent law over the development of the telephone industry. In places where Bell didn't file for patent – and Sweden is a telling example – many different actors contributed to develop the industry and to appropriate the new technology. Third, we turn to the central dilemma faced by U.S. independents and Swedish coops: Should they interconnect their networks with other? Under which conditions? Our cases studies show that the tension between the advantage of interconnection and the “localness” of governance is an enduring one. Fourth, we locate the different models employed to develop the telephone industry within the national histories of the telegraph. We argue that new technologies such as the telephone tend to be implemented by using existing models of technological implementation and governance.

Chapter 3 on the History of Alternative Radio Networks revisits three different articulations of alternative radio: American community radios, British pirate radios, and French free radios. As a conclusion, we discuss some of transversal logics and some of the more striking differences in the development of alternative radio networks in the U.S., Great Britain, and France. First, it is important to insist on the diversity of the alternative phenomenon. If our mapping remains partial, it shows, among other things some interesting core trends concerning the repressive strategies employed by authorities. State monopolies over radio, in France and Great Britain, reacted to pirate radios in similar ways. In both cases, episodes of repression and quick legal actions alternated with tolerance and less assertive actions were observed. Public opinion, in all three cases, seems to have shaped the course of actions for public policy. Second, we focus on the managing of radio airwaves as commons. While the airwaves are often said to be commons by international and national regulatory agencies, they are often poorly managed as commons. Notwithstanding all discourses about broadcast as commons, the principle that those affected by rules should be able to modify the rules had not been enforced.

The last series of case studies (Chapter 4) gets even closer to the actual topic of netCommons by looking at the first generation of community networks which appeared in the 1990s. Highlighting the change of technical paradigm brought about by the Internet and revolutionary tones that it entailed, we first consider the case of the French Data Network (FDN). Founded in 1992, the French community network was the first Internet access provider opened to the general public. The



case study describes how FDN navigated the regulatory and technical changes in the Internet governance at the EU and French levels. These changes led FDN to increasingly intervene on political issues and to create a network of CNs, *Fédération FDN*. We then turn to Consume.net, a British movement tied to the London countercultural scene which appeared in 1999 and took advantage of the apparition of WiFi protocols as a way to subvert incumbent telecom operators' hold on last-mile networks and promote a grassroots and locally-grounded approach of building and managing networks. We address what by now should be recurring themes, namely the diversity of motivations and pricing models, the issue of geographic scope with the challenge of scaling from the local to the global, and finally the importance of political advocacy as a core component of the sustainability of CNs.

As a general conclusion to this report, we propose to develop general insights that can inform contemporary debates on alternets by drawing parallels between our eight historical case studies and the issues faced by today's CNs. The main challenges that alternets face are the articulation of local community needs with global connectivity, the development of capacities aimed at influencing the law and technology, the creation of appropriate resources in order to resist co-optation. All of these lead to the single most important lesson, that is the need to build collective cohesion and develop shared capacities for political organization and mobilization. Our case studies show that law and technology are the "master regulators" of alternets. Consequently, CNs should organize to establish reflexive strategies than can help them influence technological and legal developments.



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List of Acronyms

ALO: *Association pour la Libération des Ondes*

AUI: *Association des Utilisateurs d'Internet*

BBC: British Broadcasting Company/British Broadcasting Corporation

BT: British Telecom

CCCS: Center for Contemporary Cultural Studies

CN: Community Network

CUT: Campaign for Unmetered Telecommunications

FCC: Federal Communications Commission

FDN: French Data Network

FFDN: *Fédération FDN*

GAIA: Global Access to the Internet for All

ITU: International Telegraphy Union/International Telecommunications Union

LPFM: Low Power FM stations

LQDN: *La Quadrature du Net*

ORTF: *Office de Radiodiffusion-Télévision Française*

PPA: PicoPeering Agreement

PTT: *Postes, Télégraphes et Téléphones*

RPC: *Réseaux Populaires de Communication*

SCOT: Social Construction of Technology

SGT: *Société Générale des Téléphones*

STS: Science and Technology Studies

TDF: *TéléDiffusion de France*

WAN: Wide Area Network

WLAN: Wireless Local Access Network

1 Introduction

1.1 Contribution

This exploration of the history of alternative communication technologies and networks (“alternets”) aims at informing the action of contemporary community-based networking and communication services by drawing lessons from past successes and failures. The fast-paced technological development, the so-called Internet “revolution,” and the popular and academic discourses about “new media” and “emerging media” have obliterated the fact that the Internet is not the first information technology whose inception has profoundly changed human societies. Throughout the 19th and 20th century, the telegraph, telephone, radio, and television were also disruptive technologies that were framed as such during their times. To some extent, contemporary debates over the control of the Internet, issues of access, privacy and freedom of expression, are reminiscent of the discourse produced on these older technologies. Our hope is that through the lens of history, contemporary issues and challenges surrounding community networks may benefit from new insights and appear in clearer terms, and so do the adequate course of actions to deal with some pressing issues faced by today's alternets.

Approached from a multidisciplinary perspective, the case studies benefited from different literature and fields of research. More specifically, our contribution takes place at the intersection of five different fields of inquiry and proposes a specific contribution to each of these fields.

First, our approach inherits from the historical sociology of social movements. We conceptualize contemporary community networks as forms of social movements to the extent that these collectives are made up of actors characterized by a “set of opinions and beliefs in a population which represents preferences for changing some elements of the social structure and/or reward distribution of a society” (McCarthy & Zald, 1977, p. 1217-1218). In a slightly different way, Tilly and Tarrow (2015, p. 8) emphasizes the collective political action and practices undertaken by social movements, defined as “a sustained campaign of claim-making, using repeated performances that advertise the claim, based on organizations, networks, traditions, and solidarities that sustain these activities.” Drawing from these definitions, we seek to study the mutations over time of these movements in constantly-shifting contexts. As Deflem and Lee Dove (2013, p. 293) remarks, “historical sociology is not a mere study of the past, but an intrinsic part of a sociology of the present: in order to explain the structures of contemporary societies, one must investigate their historical origins and development.” For this report, we are specifically concerned by the complex co-shaping of alternets movements, communications technologies, and communications law. Historical comparative analysis is especially suited to our goals since it “is defined by a concern with causal analysis, an emphasis on processes over time, and the use of systematic and contextualized comparison” (Mahoney & Rueschemeyer, 2003, p. 6).



Second, this report aims to make an original contribution to the field of media history. Like most fields of historical inquiry, media history is mostly the history of the winners, dominant actors and mainstream uses. Conversely, there is a history of the struggles over new technologies and of forgotten uses of technologies that is still largely to be written. In recent years, various historiographical streams took similar directions. In the late 1980s and early 1990s, social history of media began to describe the complex co-shaping of technologies, politics and culture (Thibault & Trudel, 2015). More recently, based on Raymond Williams' conception of culture as the permanent interplay between dominant, emergent, and residual forms, Acland's (2007) inquiry into "residual media" has sought to uncover experiences, meanings and values which are latent in contemporary media cultures and that can potentially be reactivated by means of history. By recovering latent past and complex co-shaping processes, this report aims to further develop such historical perspectives showing that even prior to the Internet, communications infrastructure already operated as "sites of cultural contestation" (McKenzie, 2005).

Third, this report informs the political history of the Internet. Often, when we turn to history to inform contemporary debates and mobilizations around Internet politics, what we often find are single-sided narratives that have achieved iconic status, studies focusing on a handful of over-quoted contentious episodes and generally over-representing North America, or scattered accounts that have so far escaped the notice of Internet researchers. Here, following the invitation of leading U.S. legal scholars like Tim Wu (2010) who have pointed to the relevance of past struggles around communications technologies to inform contemporary debates and break away from the persisting myth of the Internet's radical "newness," we aim to expand the focus and move away from a very US-centric scholarship to make both cross-temporal and cross-national comparisons.

Fourth, our perspective inherits from the history and the governance of the commons. In *Das Kapital*, Karl Marx described with great attention the enclosures of the commons in England and Scotland. Marx's works inaugurated a stream of historiography that was further developed by British Marxist historians such as E. P. Thompson and Christopher Hill and, more recently, by Derek Wall (2014). These historians rejected the narrative of the "tragedy of the commons" according to which commons are necessarily to fail because of so-called free riders (Hardin, 1968). On the contrary, the destruction of the commons was "a key stage in the creation of a market-based social system" (2014, p. 13). The British Marxists look back at the history of the commons in order to criticize our contemporary social system and to redefine a new social project. Our contribution the history of the commons is to pay attention to the history of communication technologies and information commons which had been the objects of privatizations and controls that are in some ways similar to the enclosures of British grazing lands. As Wall (2014, p. 99) argues, "the World Wide Web is essentially a commons." Looking at the enclosure of past similar communication technologies, we seek to draw lessons for contemporary alternets. We are interested in a wide range of communication technologies, which can be qualified of infrastructure and information commons,



and in the governance models they adopt in the different conceptions of commons, defined as alternative to the public or private dichotomy in political economy. Some of them are privately owned and operated for-profit, considered as commons according to Ostrom’s (1990) definition of commons as a legal regime developed within an Institutional Design Framework following a set of governance rules. Others are public resources operating as non-profit organizations, closer to Benkler’s (2006) conception of commons as a collective mode of production.

Fifth, our approach inherits from works coming from the field of science and technology studies (STS). In this field, the social construction of technology (“SCOT”) developed as a central method of inquiry to understand how technologies and media are shaped by numerous actors and their practices (Bijker, Hughes & Pinch, 1987). Adopting such a perspective, our cases studies gives equal attention to technical, social, political, economic, and legal factors that are shaping emerging communication technologies. We are specifically interested in exploring the so-called “phases of interpretive flexibility” during which different groups are adopting competing technological designs and practices.

1.2 Preliminary Definition: Alternative Media and Networks as Emancipatory Commons

First published in 1970, Hans Magnus Enzensberger’s classic *Constituents of a Theory of the Media*, provides a useful starting point for one of the main proposition of netCommons: conceptualizing community networks and alternative media as “commons” (De Filippi & Tréguer, 2015). Enzensberger’s (2003, p. 269) contrasting chart strikingly echoes contemporary discourse about the emancipatory potential of community networks and provides a useful typology to identify emancipatory uses of media throughout history.

Centrally controlled program	Decentralized program
One transmitter, many receivers	Each receiver a potential transmitter
Immobilization of isolated individuals	Mobilization of the masses
Passive consumer behavior	Interaction of those involved, feedback
Depoliticization	A political learning process
Production by specialists	Collective production
Control by property owners or bureaucracy	Social control by self-organization

Table 1: *Enzensberger's Repressive and Emancipatory Uses of Media*



Enzensberger's typology also raises interesting problems. The opposition between repressive and emancipatory uses may be too sharp to grasp the multiplicity of uses and their political dimensions. For example, all media are characterized by minimal forms of specialized work and by political learning process. Enzensberger's typology also implies that all broadcasting media (one-to-many transmission) such as radio and television are inherently repressive. Conversely, many emancipatory uses mentioned by Enzensberger (decentralized program, collective production) are general characteristics of the Internet, which is also partially controlled by powerful state and private actors.

While useful, Enzensberger's typology must be considered with great care in order to grasp the dialectical relations between repressive and emancipatory uses of media. In other words, rather than identifying predetermined characteristics of alternative and mainstream media, we should fully embrace the complex dimensions of "alternativeness" throughout history in order to reconstruct different iterations of alternative media and networks as commons.

Recently, scholars in critical Internet and media studies have discussed the concept and theories of alternativeness. Paschal Preston (2001) for instance notes that alternative Internets were found in online applications that "manage to challenge and resist domination by commercial and other sectional interests," in particular those "operating as alternative and/or minority media for the exchanges of news and commentary on political and social developments which are marginalized in mainstream media and debates." In similar ways, Christian Fuchs (2010) argues that alternative media are "critical media" that questions domination and expresses the standpoint of oppressed groups or individuals. For Sandoval and Fuchs (2009), the defining characteristic of alternative media is to contribute to emancipatory societal transformation. In a different manner, Chris Atton (2003) writes that alternative online media are "produced outside the forces of market economics and the state." In these rather conventional definitions, "alternativeness is often measured in distance from the centres of state and capital" (Tréguer, Antoniadis & Söderberg, 2016).

More broadly, Bailey, Cammaerts and Carpentier situate alternative media within a plurality of theories of media, politics and society: "in relation to mainstream media; as embedded in the citizenship politics of civil society; as a means for self-representation by communities, and as a hybrid form of independent media challenging established relations of authority and control" (2007, p. x). Nick Couldry has been defining the concept of alternative media with regards to voice, understood as "the expression of opinion, or, more broadly, the expression of a distinctive perspective on the world that a political system could acknowledge [...] voice being the value that motivates the production of alternative media [...] the possibility to be listened to" (2015, p. 44).

These competing definitions of alternative media may be complemented by Cardon and Granjon's (2013) distinction between "expressive criticism" and "anti-hegemonic criticism." While some alternative media are defined by their mission of giving voices to dominated and marginalized



groups (expressive criticism), other are characterized by their critique of mainstream capitalist media (anti-hegemonic criticism).

Moving past the couple of “useful others” (the state, the market), we posit that alternativeness is best understood as a spectrum made up of many different dimensions, such as the funding and economic models, the governance schemes for taking decisions, and the underlying content and, most crucially, the political values that it circulates, enabled or that are embedded within it. In this sense, there are no strict boundaries between alternative and non-alternative media. For example, at least some of the so-called mainstream media tend to criticize (at least some aspects of) neoliberal politics, or give voice to oppressed or under-represented groups. But are they alternative media, even if they are controlled by capitalist corporations and can arguably be counted as guardians of political orthodoxies and of the existing power balance? Of course not.

The same can be said of alternative media which, to varying degrees, are articulating dialectical contradictions. Even Sandoval and Fuchs have argued for “politically effective alternative media that in order to advance transformative political can include certain elements of capitalist mass media” (2009, p. 147). According to the authors, subscription fees or even advertising might be necessary to reach a broader audience and gain political efficacy. In other words, “alternative” is not a substantial quality of a given media or network but a useful starting point to identify a wide range of heterodox discourses and practices aimed at (re)constructing communication technologies as a vehicle for emancipatory politics.

A final theoretical distinction to be made is that between “alternative media” and “alternative networks.” While both terms largely depict the same reality, “networks” refers to the physical and distributed infrastructure of communication, whereas “media” inevitably evokes centralized “mass media,” that is a specific socio-technical assemblage making use (running over) that infrastructure. Speaking of alternative networks is thus about expanding political thinking and critical reflection about alternative media to communication infrastructures and their political economy. It is also an attempt to connect our own work to the emerging literature on “infrastructure as a commons” (Frischmann, 2012), while remain attached to the rich tradition of alternative media scholarship and to its focus on the critical function of alternative media.

1.3 Choice of Case Studies

Following these rather loose definitions of alternative media and networks as well as of commons we adopted a wide frame in choosing our case studies, expecting to embrace a wide spectrum of media and network alternativeness. We decided to focus on three different communication technologies and models of communication: the telephone (point-to-point communication), the radio (one-to-many communication), and the early citizen networks providing Internet access



(many-to-many communication). For each of them, we survey historical episodes during which actors tried to challenge the stronghold of state or market actors at moments when the future of the technology still seemed open.

More precisely, our case studies focus on:

- The early history of the telephone, in the late 19th and early 20th century, when state or commercial actors were less prominent than local actors;
- On the free radio movement of the 1960s and 1970s, which marked a turning point in the history of radio;
- On early citizen Internet providers in the 1990s, before the Internet became a marketplace.

For each of these movements, we focus on three different national contexts in North American and Western Europe in order to give a sense of the diversity and singularity of local experiences. One may ask why studying the telephone, radio, and citizen Internet networks instead of other media technologies, such as the telegraph and the newspaper? Why focusing on a country or a case rather than another? These are important questions to answer.

The telephone industry is probably the paradigm of the development of communication networks during the 20th century. In the U.S., the cinema, radio and television industries all modeled themselves on Bell and AT&T. Following that model, they became centralized industries with monopolistic tendencies and they were helped by the state all along this process. Tim Wu is very clear about this when he writes that: “AT&T would define American broadcasting and entertainment in its inception [...] To a degree few understand, the mighty broadcast networks, CBS, ABC, and NBC, that would dominate American domestic life in the twentieth century were all ideological descendants of the Bell system” (2010, p. 76). Consequently, the struggles between, on the one hand, AT&T and Bell, and on the other hand, the numerous independent and community networks, is also representative of the struggles that were fought throughout the 20th century by other forms of alternative media and networks. Another reason to study the telephone is the profound similitude between telephone networks and today’s Internet. Both are communication technologies that enables interpersonal communications, allowing “co-presence.” In this sense, they are much more alike than broadcasting technologies such as radio and television.

The Free Radio movement is a quite different affair. Unlike the struggles over the telephone, the Free Radio movement was a global struggle. In Europe, pirate radios were broadcasting simultaneously to various national audiences. They influenced one another and collaborated on several occasions. Consequently, they were repressed with new transnational legal instruments such as the *European Agreement for the Prevention of Broadcasts Transmitted from Stations Outside National Territories* of 1965. As a global social movement, the Free Radio movement is interesting because it echoes today’s global networked struggles over issues such as Net neutrality, and the fact that the movement of community networks is happening across the world and is loosely coordinated



through transnational groups and institutions like the Internet Research Task Force (with its research group on “Global Access to the Internet for All,” or GAIA). Also interesting is the fact that the Free Radio movement was connected to larger movements of media criticism and media activism. The Free Radio movement cannot be separated from new forms of discourse and knowledge, including forms of advocacy, activism and media criticism that were fueled by academic research in the fields of sociology, communication studies, legal studies, etc. This parallel contemporary struggles and actual or potential cross-fertilization between community networks and advocacy groups focused on defending digital rights and/or the commons. Looking back at the Free Radio movement can therefore help to understand the social and epistemological contexts in which these processes are taking place.

Finally, the early community networks providing Internet access that developed in the 1990s and early 2000s are the historical matrix and the first experiments leading to today’s contemporary community networks studied by netCommons. But most of them didn’t survive (or were radically challenged and transformed) by the rise of the commercial Internet in the mid-1990s. Their story may prove crucial for the survival and development of contemporary community networks which can learn from these early initiatives to better define their own agendas. Unlike the cases studies on the early telephone and Free Radio networks where a sufficiently developed historiography was a factor to consider in choosing appropriate cases, our analysis of French Data Network and Consume.net are mostly based on interviews and primary sources. It therefore contributes to the historiography of the Internet which has so far overlooked these actors, one important exception being Armin Medosch’s unpublished history of early wireless CNs, *The Rise of the Network Commons* (2014).

Another guiding principle consisted in select cases that differed from each other, in order to better account for the diversity of alternets. For example, as many historians pointed out to the similarities between the French and Italian Free Radio movements, we decide to study only one of them. A further criterion is the historical significance of the case. Does this episode had enduring effects, has inspired other actions or marked a turning point? A last concern is the heuristic and pedagogical value of the case study to reflect on issues met by contemporary community networks and for a broader reflection on the managing of commons.

1.4 Research Questions & Methodology

Based on these criteria, working with important time and resource constraints, we approached each case study with four sets of intertwined research questions:

- What strategic action repertoire and cultural-ideological frames are employed by the movement? What are the motivations, political values and resources (including time, money, infrastructures, etc.) of these alternets?



- What are the reciprocal influence, or co-shaping, of the cultural, political and legal environment on the one hand, and the technological designs as well as organizational strategies used to promote them on the other? Did these alternets achieve to transform their cultural, political and legal environment?
- What are the structural constraints or opportunities in the interactions of these alternet groups with the state and market actors (e.g. repression or institutional support, business demand for an alternative communications technology, co-optation by market actors, etc.) ?
- Is there a conception or a concern – implicit or explicit – for the commons? How does this echo contemporary issues? Does the story of these alternets/movements fit Tim Wu's assertion that the initial subversion brought about by new/alternative communications always fades away as the state or the market eventually coopt this alternative initiatives?

As already pointed out, our case studies on early telephone networks and the Free Radio movement rely on existing historiography in the fields of media history and alternative media history. Our two case studies on early community networks are based on interviews conducted with privileged witnesses and actors who were central to these initiatives.¹

Anchored in a rich tradition of historical and sociological inquiry, our case studies are heuristic attempts to understand the successes and failures of alternative communication technologies. Comparing different case studies allows us to identify singularities and patterns in the history of alternative communication technologies, and therefore, to develop the basis of a useful general theory of these technologies. As Blumer puts it “every object of our consideration – be it person, group, institution – has a distinctive and unique character and is embedded within a context of a similarly distinctive character. [We] have to accept, develop, and use the distinctive expression in order to detect and study the common” (cited in Vaughan, 1992, p. 181).

¹ We would like to warmly thank Benjamin Bayart, Laurent Chemla, Jean-Philippe Nicaise, Christian Paulus and James Stevens for their time and insights.



2 The History of Alternative Telephone Networks in the United States, Sweden, and France

This section revisits the early development of the telephone industry in the United States, Sweden, and France. Presented successively, the three case studies focus on less-known actors that shaped the early development of telephone networks: independent companies in the American Midwest, cooperatives in Sweden, and local governments and local business communities in France. Our analysis focuses on issues central to netCommons such as the control, management, and organization of alternative networks, the regulation of telecommunications, and the relationship between mainstream and alternative networks. Then, these case studies are mobilized to initiate a broader reflection on the development of alternative media and networks by drawing general conclusions.

2.1 Remembering the Great Challenge to the Bell System Monopoly: The History of Independent Telephony in the U.S.

In the U.S., the history of the telephone is inseparable from that of its inventor, Alexander Graham Bell. Bell's patent is possibly the most valuable patent of all-time as it allowed the Bell system to enjoy a quasi-monopoly over the industry from 1876 to 1893 and from the aftermath of the First World War until the early 1980s.

Apart from the Bell system, there's another history of the telephone to be recounted. It is the story, not so well known, of the independent companies that competed with the Bell system from 1893 to the early 1920s. In 1893-1894, Bell's patents over the telephone expired, and thousands of independent companies soon challenged Bell's monopoly. During the 1880s, Bell had practiced a policy of slow development and high prices, and focused almost exclusively on East Coast urban areas and wealthy business clients (MacDougall, 2014, p. 115). The so-called "competitive era" of the telephone industry was characterized by cheaper service and rapid development of the industry in new geographical areas, especially in the Midwest (Gabel, 1969).

The independents had a considerable impact over the telephone industry. Among other things, their struggle led AT&T to accept to submit to common carrier regulation – the regulatory move reminiscent of the contemporary struggle over net neutrality. Most profoundly, the independent telephony has given birth to a new telephone culture different from Bell's and to a social movement that had long-enduring influence.



In the first part of the case study, we describe Bell's strategies to impose his monopoly in the early days of the telephone. Then, in the second part, we detail the rise of independent telephony after the expiration of Bell's monopoly, in 1893. The third part chronicles the struggle opposing AT&T to the independents and the events that led, after the First World War, to the establishment of AT&T's monopoly over the telephone industry.

2.1.1 Bell's First Monopoly (1876-1893)

Following the invention of the telephone by Alexander Graham Bell in 1876, Bell Company maintained a 20 years quasi-monopoly over the American telephone industry. The establishment of Bell's monopoly was primarily the consequence to a long series of successful legal actions taken to protect and enforce Bell's patent (Beauchamp, 2015).

The crucial battle took place in 1878, when Bell sued Western Union for patent infringement. A few months after Bell Company had started its operations, Western Union began to operate its own telephone system based on Thomas Edison's and Elisha Gray's patents. At the time, Western Union was one the largest company in the world, a "communication empire" holding a monopoly over the telegraph industry (Carey, 1989, p. 155). Bell finally prevailed, and Western Union agreed to stay out of the telephone industry and to forfeit his claims to the patent in exchange of 20% of Bell's earning over the next fifteen years (MacDougall, 2014, p. 103). Western Union sold its telephone interests to Bell, and Bell sold its telegraph interests to Western Union.

In the coming years, as Bell – like Western Union before – sought to establish a new industrial monopoly, small telephone companies burgeoned in Midwest cities and in several rural areas where Bell networks remained underdeveloped. Most of these local companies used Bell's patent and leased Bell's equipment, although they remained locally owned. The non-Bell companies, whether they were small, amateur projects or larger-size businesses, were then systematically sued by Bell over patent infringement. Over 600 patent infringement lawsuits were filed by Bell between 1878 and the expiration of Bell's patents, in 1893-1894 (MacDougall, 2014, p. 30). This patent war had a chilling effect on the development of alternatives to the dominant Bell network.

2.1.2 The Rise of Independent Telephony (1893-1907)

With the spectacular rise of network industries like railroads, the telegraph, and the telephone, the late nineteenth century marked an era of national integration and monopolistic consolidation (Aronson, 1971). Between 1898 and 1902, over 2000 American businesses merged into 150 (MacDougall, 2014, p. 8). At its most general level, independent telephony is a political reaction against these processes. It was a struggle for the control of the economy by local actors against the monopolistic and integrative tendencies epitomized by Bell and AT&T.



The independents were of different shapes and sizes. They include some large commercial ventures, but it was mostly mutual companies that were non-profit oriented (Fischer, 1992, p. 43). As a general rule, smaller independent networks were bottom-up, non-profit organizations organized as mutual, while larger independents were local commercial companies. For example, Adolphus Busch, the millionaire brewer from St. Louis, headed the prosperous Kinloch Telephone Company of St. Louis. At the beginning of the century, the main exchange of the company was the largest of all independent companies. The company operated a long-distance line between the cities of Topeka, Kansas City, St. Louis, Indianapolis and Columbus, and interconnected with several other independents. In 1923, when Bell finally purchased the company, Kinloch had around 50,000 phones. On the other end of the spectrum, thousands of small farmers' mutual were organized across the Midwest. These non-profit organizations aimed at providing a service in areas where no other service was offered. In Mesa, New Mexico, a farmer named Edmund Burch started such a venture (Wu, 2010). In California, after repeated requests for service ignored by Bell, farmers and ranchmen installed barbed-wire over 18 miles and build their own primitive telephone network between the towns of Dixon and Winters (Latzke, 1906, p. 42).

Municipal governments were key actors in the independent movement. As MacDougall (2014, p. 93) remarks "independent telephony was a quasi-municipal movement, constructed by the franchise-granting power of local governments." Consequently, the independents were more successful in Midwestern states where local governments had been active in regulating the telephone industry long before the expiration of Bell's patent (p. 110).

The Midwestern states were also the home of the powerful late-19th century Granger movement of farmers (also referred to as the Patrons of Husbandry), which opposed the monopolistic grain transport practices and rates. In the 1870s, various state legislatures successfully passed bills fixing maximum rates for grain storage and transportation and in a 1877 landmark case (*Munn vs. Illinois*), the Supreme Court recognized the government's right to regulate private enterprise in order to protect public interest, stressing that the existence of a monopoly could justify such regulation (Sterling, Bernt & Weiss, 2014, p. 24-25). As Casson (1910, p. 90) suggests, the flourishing of the independent telephony in the Midwest was largely influenced by the Granger movement's fear of patents and monopolies and formed part of a larger movement aimed at reforming capitalism. In Paul Latzke's (1906, p. 9) words, the independent movement was "an uprising of the people" against "a smug coterie of Boston gentlemen of the immaculate type."

The rise of independent telephony was also bound to a popular movement in favor of local appropriation of technologies. In 1900, a story published in the *Scientific American*, "A Cheap Telephone System for Farmers" encouraged farmers to build simple and cheap local telephone networks. Sometimes, farmers simply used barbed-wire fences to carry calls between distant farmhouses (Johns, 2009, p. 406). These "DIY practices" deeply contrasted with Bell's conception of a unified system planned by professional engineers. While Bell construed the telephone as a tool



for business and promoted only corporate uses of the telephone, the independents the independents eventually invented a completely different telephone. According to Tim Wu (2010, p. 47) the independents were “innovators of a conceptual kind [...] They saw a different world in which the telephone was made cheaper and more common, a tool of mass communications and an aid in daily life.”

These diverging conceptions of the telephone, then, led to the development of different technologies and social practices. While Bell was preoccupied with the privacy of the lines – a preoccupation that echoed the concerns of Bell’s business clients – the independent telephone systems mostly used so-called “party lines” where voice signals could be heard by all the households along the line. Decades before radio became a staple of American houses, “telephone newspapers” were established in numerous Midwest communities. These telephone newspapers broadcasted news and provided a variety of entertaining contents, including concert and theatrical performances. In some rural areas where the independents prevailed, the system was two-way and the subscribers were able to publicly question the “stentor,” and discussions similar to those of today’s radio talk program often occurred (Aronson, 1971, p. 160). Telephone became not only a media for peer-to-peer communication, but also a civic media – what James Carey (1989, p. 147) called “an extended town meeting” – contributing to the social conversation in a world thought to be increasingly atomized.

Another crucial difference between Bell and the independents concerned the billing system. While Bell favored measured service plans, the independents mostly adopted flat rate pricing. Flat rates encouraged heavy use of the telephone by a wide range of people. Flat rate telephone systems were not only for serious business and businessmen, but also for women and kids, for pranking, gossiping, and courtship. Flat rates also encouraged non-subscribers to freely borrow subscribers’ phones (John, 2010, p. 230).

In the historiography of the telephone in the U.S., Atwood’s dissertation (1984) stands out as particularly interesting, as it focuses on the cultural meaning of the telephone in rural Iowa, where cooperatively run companies flourished. Atwood’s analysis explores the complex social context and “existential predicament” into which independent telephonies took a specific meaning. In the late nineteenth century, rural life was in profound crisis. According to a study of the Senate Commission on Country Life, “isolation” and “social sterility” were then the main sources of dissatisfaction among farmers family (p. 57). While media coverage of country life tended to be negative, migration to the cities was common and rural areas suffered an important demographic crisis. In reaction, rural life went into a unique “organization frenzy”: commercial clubs, temperance groups, historical societies, and various other organizations then flourished (p. 63). Telephone cooperatives were part of a larger movement of “redemption of rural life” (p. 59). But unlike other organizations, telephone cooperatives were both a means (the coop) and an end (the telephone connection) to fight social isolation and social sterility.



2.1.3 Towards a Second Monopoly (1907-1921)

Writing in 1906, Paul Latzke, a fierce supporter of independent telephony, was convinced that the independent movements were prevailing in their struggle with Bell. The Bell system, Latzke argued, had been a “giant octopus” that reached all across the country and influenced the courts, businessmen, and policymakers. Then, the independent movement was at his peak and counted around 6,000 operating companies owned by approximately 300,000 stakeholders (Latzke, 1906, p. 12). With 3 millions phones connected to independent networks and 2.5 millions to the Bell system, Latzke then asserted that “the people had beaten the octopus to a pulp” (1906, p. 11). But Latzke was eventually proved wrong: within a few years, Bell would re-establish a monopoly that would last for decades.

To counter the rise of the independent, Bell developed a multi-pronged strategy that had mixed results. If Bell’s propaganda efforts successfully prevented financiers and bankers to invest capital in larger independent companies, smaller independents were less dependent on big money and were less affected (Holcombe, 1911; Gabel, 1969, p. 350). In dual service areas, where Bell directly faced competition, Bell would undercut its rates to force the competition out of business – a tactic known as “predatory pricing” (Wu, 2010, p. 49). While Bell refused to connect the independents to their long-distance lines, the independents soon attempted to build a long-distance network to avoid confinement and isolation – a project which eventually failed (Gabel, 1969, p. 350). Finally, Bell’s refusal to sell equipment to the independents encouraged the establishment of new manufacturers, industrial innovation, and the patenting of non-Bell technologies (p. 351).

Bell’s policy towards the independents radically changed in 1907 after wealthy banker J. P. Morgan took control of Bell via AT&T and reinstalled Theodore Vail in command of the new entity. Vail had been Bell first general manager and the founder of Bell/AT&T. Sometimes dubbed as “the greatest monopolist in the history of the information industries” (Wu, 2010, p. 5), Vail had long projected to unite all existing wire communications – both telephone and telegraph – into one system. In 1879, following the settlement between Bell and Western Union, Vail had isolated himself, which eventually led to his resignation in 1887. Twenty years later, at the age of 62, Vail had a last opportunity to realize his dream of “one system, one policy, universal service.” In 1909, AT&T secretly acquired a controlling interest in its historical great rival, Western Union.

In addition to the Bell companies’ ongoing predatory pricing practices and propaganda campaign, Vail’s most important initiative concerned regulation. While AT&T opposed governmental regulation of the telephone industry for years, from 1907, they argued that Bell’s to-be monopoly was in the public interest and that such a monopoly should be under public control. The suggested trade-off was first presented to the stockholders in a 1907 report: “It is contended that if there is to be no competition, there should be public control” (cited in Gabel, 1969, p. 355). According to MacDougall (2014, p. 198), Vail’s new rhetoric aimed to substitute the new state regulatory commissions – “far friendlier to the Bell system” – to the active and aggressive regulation by



municipal governments linked to the independents.

The Mann-Elkins Act of 1910 eventually met Vail's twin objectives of substituting regulation to competition and state to municipal governments. The law classified the telephone as a "common carrier" and puts it under the jurisdiction of the Interstate Commerce Commission (ICC). As a common carrier AT&T was required "to provide service upon request at just and reasonable rates without unjust discrimination or undue preference" (Huber, Kellogg & Thorne, 1999, p. 340).

Vail soon tried to acquire numerous independent companies. In order to avoid public protestations or legal prosecutions under the Sherman Antitrust Act of 1890, AT&T sometimes used dummy corporations to buy independent companies, as it was the case with United States Telephone in 1909 (MacDougall, 2014, p. 203-204). By March 1912, the aggressive acquisition policy of AT&T was legally challenged by more than a thousand independent companies (p. 209). The Attorney General Wickersham eventually met with AT&T vice-president, N. C. Kingsbury, and settled the dispute with an agreement known as the "Kingsbury Commitment" of 1913: AT&T was not to acquire control of competing companies (non-competing companies were excluded from the agreement), was to sell off its 30 millions in Western Union stock, and agreed to connect the independents to its networks as long as they met the system's technical requirements (Gabel, 1969, p. 352).

The independent companies had long pressured Bell for interconnection, and the Kingsbury Commitment first seemed to be a small victory. But the agreement wasn't reciprocal, as traffic and money were only going in one direction. While the independents paid heavy surcharge to access AT&T long-distance lines, the Bell system did not authorize the use of the independent local lines. In fact, as MacDougall (2014, p. 214) notes, the agreement allowed AT&T "to turn independent exchanges into one-way feeder's for AT&T's long-distance network."

The Mann-Elkins Act of 1910 and the Kingsbury Commitment of 1913 were important steps towards the consolidation of AT&T's monopoly. But the process was brutally stopped by the outbreak of war, during which the control of the telephone was briefly transferred to the Post Office Department. The permanent "postalization" of the telephone, which means federal control over the telephone, was then promoted by many. But the Post Office Department wartime tenure proved inconclusive. After the war, AT&T quickly regained control of the Bell system.

In 1921, Congress passed the Willis-Graham Act, which exempted telephone from antitrust regulation. The new law partially reversed the Kingsbury Commitment provision against further consolidation and exempted telephone companies from portions of the Sherman Antitrust Act (Neuman, McKnight & Solomon, 1998, p. 204). The telephone was then largely considered a "natural monopoly" to be regulated by public control, exactly as Vail envisioned (MacDougall, 2014, p. 222). A majority of independents then supported the bill, which was "largely at the behest of the independents eager to sell to Bell" (John, 2010, p. 360). In the coming months and years,



most of the independents, including long-time competitors, sold to AT&T. Only a few independents continued the fight.

How can we explain such a surrender? Telephone users, and especially small businesses and small-town businessmen, were key actors in AT&T's path towards a second monopoly. The independent movement was built on the association between farmers and local businesses, but by 1910, businessmen from all around the country had come to believe that one Bell system would be better than the dual system (MacDougall, 2014, p. 195-196). This split resulted partly from numerous public relations campaigns aimed to business owners. Vail's campaigns had been specifically intended to associate the Bell system with civic ideals (John, 2010, p. 307). Contrary to AT&T, the independents were incapable of promoting their cause with such coherence and on a national level.

This split also reflected the diversity of the independent telephone movement, which included Republicans, Democrats, Grangers and "representatives of a dozen other political tribes" (MacDougall, 2014, p. 135). Consequently with the diversity of the movement and its rejection of centralization, the independents were never able to unite behind a leader or to form a strong united organization (p. 134). Formed in 1897, the Independent Telephone Association has experienced many quarrels, feuds, and splits. When AT&T launched its offensive and tried to divide the independents, these political dissensions and organizational flaws combined the diversity of sizes and needs of independent networks to fracture the movement. After some leading independents started to connect their network to the Bell system while other refused, the split was definitive: For many, yesterday's friend had turned into today's enemies.

It is commonly asserted that the failure of the independents to build long-distance lines ultimately led to the victory of the Bell system (Wu, 2010, p. 53). But as MacDougall (2014, p. 168) remarks, such claim is far from evident and finds its origin in AT&T's owned commissioned history. If the independents were not able to build a long-distance network similar to the Bell system, they successfully established regional networks by interconnecting their networks. But it is true however that, unlike the Bell system, these regional networks never formed a network of networks. Even after the Kingsbury Commitment of 1913, the interconnection with the Bell System remains unidirectional, as calls were not to transit from the Bell System to independent networks. Also, paradoxically, the access to AT&T long-distance lines had a chilling effect over the different long-distance lines projects that were planned by the independents. If the success of the independent resides in the local character of their networks, the "localness" of these networks didn't ease their interconnection. Furthermore, without a shared infrastructure, independents were not able to foster long-lasting solidarities. To put it differently, the importance of long-distance lines was not so much a commercial than political and cultural (MacDougall, 2006). The long-distances lines allowed AT&T to exert a centrifugal power over the local and not-so-autonomous Bell companies and were central to the publicity campaigns focusing on the "spectacle of long-distance" (p. 25). Inversely, the propaganda and organization of the independents suffered from the absence of such long-



distance lines and spectacle.

To sum up, Bell's monopoly was a by-product of patent law. It gave Bell the opportunity to develop a large market and to instill a peculiar telephone culture. The independents had a different conception of the telephone and its uses. They were interested in local control of the telephone and were highly critical of Bell and AT&T's monopolistic ambitions. The struggle of the independents was fierce, but AT&T prevailed as they were better organized, had more resources, made judicious concessions, and were able to convince governments and public opinion.

2.2 The History of the Telephone in Sweden: Cooperative Rule

The history of the Swedish telephone industry is no doubt the object of a national pride in Lars Magnus Ericsson's country. In 1888, a French historian of the telephone observed that of all European countries "Sweden has the best understanding of telephony and its benefit" (Brault, 1888, p. 231, our translation). The development of the telephone in Sweden was exceptionally good compared to other European countries. At the end of the nineteenth century, the Swedish telephone subscribers paid the lowest telephone charges in Europe and enjoyed the highest "teledensity" (Huurdeeman, 2003, p. 176)

Various factors contributed to such success. The long-sustained competition in Stockholm contributed to keep the rates low and thus to democratize the telephone. The marginal position of Bell in Sweden and the corresponding strong Swedish character of the industry are also noticeable. But most important is that the cooperative model was widely adopted all-across Sweden. To be sure, cooperative telephone societies were not unique to Sweden. As seen, some independent telephone companies in the U.S. were cooperatives. But contrary to the US, in Sweden, cooperative societies were not one way among many to connect telephones. In the late nineteenth century Swedish telephone industry, "as a rule, the basis was a cooperative" (Electrical Review, 1900, p. 62).

The state-controlled Telegraph Board eventually took control of the telephone industry and absorbed the cooperative societies in the early 1900's. Although the Swedish telephone cooperatives disappeared, it may be an interesting model for today's alternative media and networks. This is what Bennett believed back in 1895 when he prophesied that "in Sweden at the present day one may gain a glimpse of what telephony in the future will be everywhere" (p. 332).

The first part of the case study describes the quick development of the telephone industry in Stockholm and the early struggle between the Bell Company and the Swedish Allmänna Telefonaktiebolag. In the second part, we turn our attention to the development of local telephone networks by Swedish cooperatives. The third part of the case study addresses the takeover of the telephone by the Swedish State through the Telegraph Board.



2.2.1 The Battle of Stockholm (1877-1892)

The Swedish State had long showed very little interest in the telephone, which was considered a local service and a drawback from the state-controlled telegraph. When the Swedish Telegraph Board first reported to the government about the invention of the telephone, they famously quoted the Latin sentence “Verba volant, scripta manent” (“spoken words fly away, written words remain”) (Kaijser, 1987, p. 8). Consequently, the state didn’t consider exercising a monopoly over the telephone industry, which developed relatively freely during the initial stage. It is also important to note that Bell did not file for patents in Sweden, as he did in other countries like France. This allowed numerous manufacturers, including Ericsson, to build their own telephones and to innovate. In 1916, the Electrical Review rightfully observed that, “The principal reason for the rapid expansion of Sweden’s telephones must, no doubt, be looked for in the amount of liberty which has been accorded them” (p. 62).

Stockholm was the first city to experiment with telephone connections. In 1877, a young engineer named Henrik Tore Cedergren established the first connection between his father’s jewellery store and his apartment, both located on Drottninggatan Street in downtown Stockholm. Closely following Cedergren’s experience, several similar experiments allegedly took place in Stockholm and Gothenburg. The same year, the first telephones were offered for sale in the streets of Stockholm and several Swedish companies, including Ericsson, started to produce telephone equipment. Fixed telephone lines were erected all across Sweden in 1878 and 1879.

The first commercial telephone networks were established in 1880 or 1881 by the International Bell Telephone Company in the cities of Stockholm, Gothenburg, Malmö, and Sundsvall. During the first years, the Bell network developed slowly while subscriptions remained expensive. In 1883, only 1,554 telephones were connected across the country (Brault, 1888, p. 231).

In 1883, Henrik Tore Cedergren started the General Telephone Company (Allmänna Telefonaktiebolag) in Stockholm. Cedergren’s company used Swedish telephone sets made by Ericsson and offered better service and cheaper rates than Bell. While Bell offered a flat rate between 160 and 280 kronor, Allmänna proposed a flat rate as low as 100 kronor (Holcombe, 1911, p. 386). By the end of 1884, Allmänna connected almost three times more telephones than Bell and Bell number of subscribers began to dwindle (Bennett, 1895, p. 334; Holcombe, 1911, p. 383). The superior business management and technological innovation of the Swedish company soon proved to be no match for Bell. In 1887, Allmänna opened in Stockholm the world then-largest and most modern telephone exchange (Noam, 1992, p. 203; Brault, 1888, p. 233-234). Five years later, Allmänna acquired a controlling interest into the Stockholm Bell Company and transformed the Bell System into one of its branch (Holcombe, 1911, p. 383). Meanwhile, Cedergren was already contemplating the project of building long-distance lines and to expand his empire to other major cities.



2.2.2 The Cooperation Telephone Societies

In 1883, while Cedergren was just starting his company, cooperative telephone societies – sometimes referred to as “mutuals” – were formed in numerous Swedish cities and villages. Cooperative telephone societies were part of a strong cooperative movement that became a powerful factor in the late-nineteenth century Swedish economic life. The emergence of the cooperative movement in Sweden was a reaction against the industrialization process and atomization of the social life. As traditional communities disappeared, social groups with similar economic interests formed and struggled over competing interests. While industrial entrepreneurs formed cartels in order to establish monopolistic price control, consumers formed opposing movements such as clothing, housing, and telephone coops (Bonow, 1938). In the early years of the Swedish telephone industry, most of the telephone networks – to the exception of Allmanna and the three Bell networks – were owned and operated by coops (Kaijser, 1987).

Usually, the coop members were building their own lines, using cheap iron wire and second-hand instruments (Webb, 1911, p. 74). Telegraph engineers, present all across Sweden, were of great help in the process, as they did not feel the new technology threatened the telegraph (Kaijser, 1987, p. 8). In order to remain independent from the Bell companies, coops usually used equipment manufactured by Ericsson or other Swedish companies (Hurdeman, 2003, p. 174). In this sense, the cooperatives were really a Swedish affair, based on local initiative, expertise, and technology. Coops were simultaneously a form of economic enterprise and a democratic, people’s movement (Bonow, 1938, p. 171). Coop members first had to pay the initial cost of their connection to the network, which also means that the founders were usually paying more than latecomers, as the initial costs were high. After, they simply had to pay an annual flat-rate fee to contribute to network maintenance and for the constitution of a reserve fund that will eventually allow the annual fee to decrease. The annual fee varied considerably and was usually higher in urban areas. According to a British historian, some members paid as much as 3 pounds and other as low as 25 schillings (Bennett, 1895, p. 338).

In the early days, the telephone subscribers were mostly businessmen and entrepreneurs (Kaijser, 1987, p. 8). But the coops soon enjoyed great success and contributed to the emergence of a new telephone culture of communication and nomadism (Briens, 2003, p. 10). According to Bennett’s observations: “The idea was found to work out well in practice, and Sweden was soon dotted with cooperative telephone exchanges, even villages with names undiscoverable in the best gazetteers indulging in what was at first looked upon partly as a scientific curiosity and partly as a luxury, but which soon proved to be a useful adjunct of everyday life” (1895, p. 333).

In Gothenburg, a cooperative soon challenged Bell’s monopoly over local telephony by attracting 600 members (Brault, 1888, p. 232). In 1892, there were 158 cooperative telephone exchanges across Sweden, of which 30 were in towns and 128 in villages or rural areas (Bennett, 1895, p. 337). A third of all telephone exchanges were then operated by coops (p. 337). Unlike the



independents in the U.S., the cooperative societies worked together in a true spirit of cooperation (Electrical Review, 1900, p. 62). Soon, they were spreading out their branches and interconnecting, successfully establishing interurban telephony in Sweden.

The Swedish cooperative telephone societies had a considerable international influence at the time. In the U.S., coops such as the Swedish American Telephone Company and Stromberg-Carlson were founded by Swedish immigrants who were inspired by the Swedish cooperative tradition and who have sought to promote it (Kline, 2000, p. 29).

2.2.3 The Awakening of The State and the End of the Cooperatives

In the mid 1880's, under the combined effect of Allmanna's ambitions and the interconnection of cooperative telephone networks, the telephone was evolving into an interurban communication system. This was a direct threat to the revenues that the telegraph afforded to the state. At first, in order to prevent the establishment of long-distance lines, the Telegraph Board convinced the government to adopt a decree stipulating that regional lines had to be sanctioned by the Board. The decree had little effect as the cooperatives and regional authorities generally ignored it (Kaijser, 1987, p. 9).

The turning point came in 1889, when Allmanna filed application for a concession to build and run long-distance lines between Stockholm and other large Swedish cities. The question was widely discussed in the Parliament and by special committees. Cedergren even pleaded his case in front of Oscar II of Sweden (Bennett, 1895, p. 334). Allmanna's application was eventually rejected, on the ground of the state monopoly over long-distance communications, but the company was nevertheless authorized to build lines within a radius of 70 kilometers around Stockholm.

Realizing that the telephone enables long-distance communication, the government decided that the Telegraph Board was to build the long-distance lines projected by Allmanna. This was the nationalization of the telephone industry. All the existing local networks, cooperatives or commercial, were soon to be connected to these long-distance lines.

It is interesting to note that this nationalization process was not achieved by means of legislation. The Telegraph Board used a calculated "technological ruse" to take control of the industry. While the cooperatives were mostly using single-wire systems, the Telegraph Board strategically decided to interconnect only the networks using a double-wire system, although the two systems were technically compatible. The Telegraph Board accepted to finance the transition of local networks to double-wire system on the condition that it was given the opportunity to buy the networks. Fearing isolation, the cooperative companies accepted the trade-off one after the other. According to Kaijser (1987, p. 12), "the subscriber's desire to be able to make interurban calls was stronger than their desire to own their telephone networks."



In 1907, there were only 17 surviving cooperative telephone companies – 14 of them located in rural areas – connecting only 971 telephones (Holcombe, 1911, p. 387). Three years later, the cooperatives had all been absorbed by the state telephone system or by its rival, Allmänna Telefonaktiebolag (Webb, 1911, p. 74). In 1918, the Telegraph Board finally bought Cedergrén's Allmänna and gained control of all Sweden's telecommunications.

Swedish telephone coops had a profound and long-lasting effect as they contributed to a DIY participatory culture which embraces creative uses of new technologies. Writing in 1935, a Polish journalist interestingly observed that “A telephone in Sweden is as indispensable a component of life as, let's say, a bicycle in Denmark or Holland or radio in Berlin. Rooms to let without a phone are not advertised—they do not exist [...] Each young Swede is a dedicated radio amateur. In Uppsala, Dalarna or Skåne I saw aerial and telephone wires over each settlement in the countryside. These are the marks of culture, the existence of which I could never imagine before” (cited in Musiał and Chacinska, 2013, p. 299).

In sum, the Swedish telephone system has developed rapidly, thanks to the intervention of several competing actors: the Allmänna Company, the International Bell Telephone Company, the coops, and the state-controlled Telegraph Board. When the Swedish network achieved maturity, the State managed to gain control of the network because of its monopoly over long-distance lines.

2.3 Building the French Telephone Network: The Initiative of Municipalities and Local Business Communities

Presented for the first time in France in 1877, just a year after Bell's patent registration in the U.S., the telephone profoundly destabilized the French government's long-held monopoly over communications networks (it had been the rule since 1681, with the imposition of a monopoly on postal services).

In France, there was no room for the emergence of an independent or cooperative movement. But in a difficult economical context, as the French government sought to reestablish its monopoly over telecommunications, it had to rely on an alternative model based on local initiatives that was successfully experimented and implemented. This model achieved an interesting balance between “top-down” and “bottom-up” approaches. The municipal governments, with the support of local business communities and telephone subscribers, were to finance the initial development of the telephone network according to local needs. Then, they would turn the network to the Ministry of Post and Telegraph.



We first describe the implementation of early telephone franchises by private companies and the construction of telephone exchanges by the French Ministry of Post and Telegraph. Then, we turn to the specifics of the “French model,” which consisted in local financing of the infrastructure and by the following takeover by the state authorities. Finally, we expose the limitations of such model, which, in the early 1900s, led to a telephone crisis.

2.3.1 Private Initiative at the Local Level

At first, few were those who understood the formidable potential of this new technology and its added value compared with the dominant communications network of the time, the telegraph.

Public administrations only considered local military uses, e.g. to transmit telegrams to the nearest telegraph office (Carré, 1991, p. 29). As for civilian use, the French government refused to commit to any deployment, considering that recent massive investments in the telegraph network had satisfied the French's communicational needs, and that these important investments needed to be covered, especially at a time of fiscal restraint caused by the 1871 war against Prussia. The risk-averse public authorities therefore let the private sector take the lead, but not without getting ready to step into the telephone market if the development of the telephone ever came to threaten the revenues of the telegraph.

In 1879, three U.S. corporations holding patents on telephone technologies arrived on the French market. Based on two laws of 1837 and 1851 which had opened the door to derogations to the public monopoly, the state granted five-year long concessions to exploit public telephone networks in Paris, Lyon, Marseille, Bordeaux, Lille, and Nantes. A 10% tax on profits and a rigorous model franchise (*cahier des charges*) was imposed to the operators (Holcombe, 1911, p. 270). The following year, rather than competing with one another, these companies decided to merge into a single corporation, the *Société Générale des Téléphones* (SGT). Soon, investments poured in cities like Paris, Lyon, Marseille or Bordeaux, that is to say significant economic centers where business customers could afford paying for the prohibitive fees these companies were charging. In 1881, the first exchanges opened in Paris.

2.3.2 The State Comes In

In 1882 however, the newly-created Ministry of Post and Telegraph came to argue forcefully that the telephone was so close in nature to the telegraph that it should be subsumed in the public monopoly. Its first step in that direction was to convince the Parliament to vote appropriations for the construction of a public telephone network. The funding model seemed promising: After having built exchanges in provincial towns such as Reims, Roubaix, Tourcoing, and Troyes, and long-distance lines (e.g. Paris-Lyon-Marseille and Paris-Brussels), the state would eventually reimburse itself by charging the private operators keen on using this infrastructure. But the initial revenues turned out to be disappointing and could not adequately fund the development of the public



network, as the Parliament refused to appropriate more funds to do so. In the meantime, not yet determined on the soundest policy path, the government had bought itself some time by prolonging the SGT concessions for another 5 years (1884-1889).

Being afraid that the telephone would undermine the revenues of the telegraph, the Ministry of Post and Telegraph convinced the Parliament to nationalize the SGT through a law voted on July 11th, 1889. As Véronique Leroux (1991, p. 23, our translation) writes, “after the procrastination of the early years, the Administration was convinced that the telephone was a profitable business; from then on, nothing precluded the extension of public ownership and management over this new technology.”

Holcombe (1911, p. 273) rightly notes that the *laissez faire* school of political autonomy was quite influential in France at the time. Although the issue of telephone networks attracted relatively little attention, state authorities had to cast good arguments in favour of the public monopoly. In these early years of the Third Republic, the notion of “*service public*” (a loose equivalent to the Anglo-Saxon notion of “public utility”) was gaining political traction, and with it the promise of a more balanced territorial development. This was a growing concern. The SGT as well as the telegraph authorities had completely ignored the needs of small and medium-sized cities. As Holcombe (p. 272) writes of the private operator, “this was just what might have been expected to be the result of restricting the franchise to so short a period as five years. The company simply skimmed the cream.” The public sector did not fare much better: The initial and underfunded foray of the Telegraph authorities into telephone networks has focused on a handful of smaller cities, and left countless of others helpless.

2.3.3 An Innovative Plan for Local Initiative

The establishment of a public monopoly therefore came with one lingering question: How best to fund the roll-out of local networks, in a context of fiscal austerity? Faced with this challenge, officials and lawmakers in Paris started to look for an alternative model proposed in 1888 by the city of Limoges. Municipal authorities offered to advance the cost of construction of the central office and of equipment, without interest. Working with local representatives of the business community (through the Chambers of Commerce), they had identified 50 interested subscribers. The total cost the central telephone office amounted to about 18,000 francs, or 350 francs for each (business) subscriber, plus 150 francs per kilometers of telephone line to reach the subscribers as well as operating and maintenance costs of 100 francs per year per kilometer. As Holcombe (1911, p. 287) explains, “by fixing the annual subscription at 200 francs and in addition assessing against each subscriber his share of the running expenses, as well as the cost of his own line and equipment [...], the portion of the initial expenses advanced by the municipal authorities would be recouped within two years, provided the subscribers were permitted to pay their assessments one third in advance and the balance in two annual installments.”



The Limoges plan meant that for the first two years, subscribers would pay a fee close to that then charged by the private SGT to its customers, and considerably less after that. After receiving back their advances, municipal authorities would turn the local network over to the telegraph authorities. The latter would receive a free network after two years without having to take the risk of the initial investment, while by the operation and maintenance of which they were tasked would be covered by subscription fees. Experimented from 1888 on in both Limoges and Grenoble, the plan was met with enthusiasm both at the national level (the French Treasury was more than happy to be relieved of the financial burden) and at the local level - 15 cities that had applied for permission to implement the same scheme. In July 1889, French Parliament authorized them to do so to establish local networks, and the number of local networks increased by tenfold over the next five years.

The following year, the same system was expanded to the construction of long-distance lines, and local businessmen acted through their municipal and departmental authorities to connect business centers in a given region. These regional networks were, in effect, inter-urban connections satisfying the needs of local commercial interests.

According to Holcombe (1911, p. 290-291), the French system of local initiatives, in certain respects, excelled the cooperative system of Scandinavian countries. In cooperative ventures, the founders are always taking risks and investing more than latecomers, a situation which may be considered unfair. This was not the case in France where the initial loan was contracted by the municipal government. This form of “public compulsory cooperation” avoided the inequity of classical private voluntary cooperation” (p. 391). In the same vein, Aulas (1999, p. 131) writes that this model was “extremely efficient” as it allowed cities to benefit from the expertise developed by the state administration to quickly build a cheap and efficient network. Within ten years, there were three times more cities with a local telephone network (p. 132).

Bertho and Carré (1994, p. 64) are proposing a different perspective. According to them, the model failed as it mirrored the development of the telephone with the existing administrative structures of the country (e.g. the municipal post office). While each municipality soon had their network, the interconnections and long-distance lines were scarce and complicated to finance. In other words, the French network developed without consideration to economic realities and flows. The city of Poitiers is a telling example. In 1889, when the local Chamber of Commerce consulted the Poitevins about their needs, they expressed the desire to be connected with the greater cities of Tours, Paris, and Bordeaux, and were not interested in a local network (p. 67). A few years later, the long-distance line was built and connected to Poitiers’ only telephone booth. The line and booth were soon overwhelmed. In 1896, when the municipal network was finally built, only 14 persons subscribed the first year, 27 the second year and 31 the third year (p. 68).



2.3.4 Lack of Investments: Towards a Telephone Crisis

The plan was innovative but not perfect. In the following years, state authorities failed to build on these early successes. The lack of investment in the maintenance and extension of the telephone networks (faced with an exponential traffic) led to resource depletion. Sometimes, business interests took the matter into their own hands, and decided to supply some of the funds needed by the government to add capacity to the line connecting two major cities (such as Le Havre and Paris).

As in other countries, it also became clear that the telephone did not only serve a local need, and that users in specific localities were interested in being connected to Paris so as to have access to a national or even international communications network. In 1899, the government ordered prefects to work with departmental authorities to connect local networks to chief towns and these departmental centers to Paris. This gave a new impetus for investment but it was too little, too late. Besides the huge capacity gap to deal with increased traffic, equipment was not adequately replaced and often failed, technicians working on the network lacked appropriate skills and were too few. The public network system was profitable but profits were not reinvested in the network for operational expenditures, much less for capital expenditure which the government preferred to keep at the discretion of local authorities.

To sum up, the French model combined local initiatives with a national plan of action. In spite of mixed results, it encouraged local (mostly business) actors to define their needs and to get involved in the implementation of the telephone. While they initially benefited to some extent from the expertise developed at the state level, national public authorities were also responsible for a lack of investments in long-distance networks and failed to properly maintain the infrastructure. By 1900, people in France began talking of a “telephone crisis.” As opposed to the U.S. where the telephone rapidly became a means of popular communications (1 telephone for 208 inhabitants in 1895), in France it is only accessible to the business elite and to the little and not-so-little bourgeoisie (1 telephone for 1216 persons, with 44% of telephones being in Paris) (Starr, 2004, p. 200). On the whole, it would remain so until the 1970s.

2.4 Conclusion: Reflecting on the History of Alternative Telephone Networks

As a conclusion, we discuss some of transversal logics and some of the more striking similarities and differences in the early development of the telephone in the U.S., Sweden, and France. First, it is important to insist on the successes of non-state actors in the development of the telephone, as they significantly contributed to shape the telephone industry. Second, we reflect on the role played by patent and patent law over the development of the telephone industry. In places where Bell didn't file for patent – and Sweden is a telling example – many different actors contributed to develop the



industry and to appropriate the new technology. Third, we turn to the central dilemma faced by U.S. independents and Swedish coops: Should they interconnect their networks with other? Under which conditions? Our cases studies show that the tension between the advantage of interconnection and the “localness” of governance is an enduring one. Fourth, we locate the different models employed to develop the telephone industry within the national histories of the telegraph. We argue that new technologies such as the telephone tend to be implemented by using existing models of technological implementation and governance.

2.4.1 The Relative Success of Alternative Models

As MacDougall (2014, p. 132) notes, it is not so much the failure but the “relative success” of the independents that cries out for explanation. The competition between Bell and the independents – especially in the Midwest – has been unparalleled anywhere else in the world. The independents broke the Bell system monopoly and rapidly developed thousands of networks that enabled millions of people to connect. Most importantly, their struggle profoundly shaped – and is still shaping – the telephone business and culture and today’s digital culture. The independents contributed to spread the idea that the telephone was for “the people” and should be accessible to all, including women and children.

The DIY approach to the telephone favored by the independents contributed to establish an enduring culture of participation and “bricolage” (Deuze, 2006) that can be traced back and forth to the telephone, radio and contemporary digital culture. The same can be said of Swedish coops which stimulate the creation of a unique and enduring culture of accessibility (enduring low cost tradition) and technological appropriation. Also, Sweden had one of the most developed telephone network for years and Swedish private manufacturers flourished. This shows that the choice between private capitalist development and cooperative development may be a false one and that the two paths may successfully be taken at the same time.

In the U.S. the independents forced Bell companies to adopt low prices in most competitive markets and encouraged technological innovation. The Bell companies eventually adopted several features of the independent networks, such as flat rate pricing and automatic switchboards. The independents were discussing “universal service” at least a decade before it became Vail’s motto (MacDougall, 2014, p. 232). The Mann-Elkins Act of 1910, which granted to AT&T the status of common carrier, resulted partly from the independents’ demands for interconnection.

The French model of local development had been less successful, despite its originality and own merits (relative regional equity, risk sharing, etc.). At the difference of the U.S. and Sweden, in the early years of its development, the French telephone industry developed as a monopoly, without competition for market shares. The slow and tortuous development of the French telephone network shows that, particularly in the early days of a new technology, it is crucial to open the market to a wide diversity of actors. In a sense, the French case proved the case made by the American



independents against the Bell System: Monopoly over the telephone, whether public or private, is not “natural” and would lead to a slower development of the network.

2.4.2 The Importance of Patents

The first Bell monopoly in the U.S. was the logical consequence of Alexander Graham Bell’s patents. But as Beauchamp (2015, p. 163) notes, the effects of Bell’s patents are far more reaching than it is usually conceived: “By closing off market entry to competitors, patents became the single most important influence on the early growth of the telephone: the nature of the service, and of the companies that provided it, were different than they would have been otherwise. Even after legal protection had expired, the legacy of patent monopoly lived on in the strategies and competitive positions of the industry’s powerful first movers”. AT&T’s early-twentieth century claim that the telephone was a “natural monopoly” would not have been so convincing without Bell’s first monopoly, based on Bell’s patents.

But patents are not “natural” things or unbiased reflections of historical events. On the contrary, patents are designed tools for business, and most importantly, are objects of legal disputes. As such, they are “highly malleable artifacts, capable of being constantly shaped and reshaped” (p. 47). Their fate depends on the actions of lawyers and most importantly on the courts’ understandings of the nature of invention (p. 60). After a decade of legal action, the Supreme Court recognized Bell’s patents in a 4 to 3 split decision. Numerous rumors of corruption surrounded the case (Latzke, 1906, p. 13; Beauchamp, 2015, p. 59). The decision was not so much about the factual invention of the telephone but about “unspoken normative questions” such as “Who should control the telephone service?” and “Whom should the patent law benefit?” (Beauchamp, 2015, p. 59). The decision also reflected the endorsement of “a unitary theory of telephone technology and its origin” (p. 84) that belongs to the late nineteenth century fascination with new technologies and inventors, while corporate R&D was still in its infancy.

Bell’s case shows how the law, especially patent law, can shape an industry and the course of history. More particularly, it shows that patents not only prevent competition but also have a long-term “constitutive effect” as they “linked things together” in many ways (Beauchamp, 2015, p. 182). In the nineteenth century, other industries, such as railways or later the radio, developed differently as the cross licensing of patents (patent pool) was more usual (p. 48-49).

The case of Sweden also proves the importance of patent laws over the development of telecommunications. As Esmailzadeh (2016, p. 3-5) remarks, it is interesting to ponder whether Ericsson would have become so successful had Bell managed to patent his telephone in Sweden. Considering the disastrous fate of Western Union, one of the most powerful companies of the era, challenging Bell’s patent was not an easy path to success. It is also interesting to remark that the other powerful European manufacturer of the era, the German Siemens, succeeded in another country where Bell did not file for patent. In fact, the whole Swedish telephone industry, including



the extraordinary role played by the cooperatives, was largely made possible by the absence of Bell's patents, which opened the field to unexpected technical choices and alternative players.

In France, patents seemed to have been less decisive over the course of events. On the one hand, patents are often attached to "great men" such as Bell, Gray, Cedergrén or Ericsson. In France, the history of the telephone cannot be confused with that of its great men. On the other hand, existing legislation and habits made it difficult to exploit a patent in the field of telecommunications. Since 1837, the French government had legally secured its monopoly over telecommunications and it was clear that any venture in telephony needed the authorization of the State. The strict and complicated *cahier des charges* imposed by the French government clearly stated that no monopoly was granted and that the State could buy the concession after five years, without compensation for patent rights (Holcombe, 1911, p. 270). The State was also very clever to grant the first three concessions to three different patent holders, Gower, Bell, and Edison, in order to prevent one patent to predominate.

2.4.3 The Paradoxical Effects of Interconnection and the Importance of "Localness"

It is usually asserted that large communication networks are more valuable to each user ("network effect"). Consequently, the independents interconnected their networks to form larger networks and one of the main demands of the independents was to interconnect their networks to the Bell system and long distance lines. On the one hand, the success of independent companies correlated with the frequency of interconnections with other independents (MacDougall, 2014, p. 141). On the other hand, the independent movement did not survive the interconnection with Bell after the Kingsbury Commitment of 1913. AT&T co-opted the independent networks and transformed them into one-way feeder for AT&T long-distance lines.

The same argument can be made concerning the Swedish coops. Interconnection with the long-distance lines held by the State meant the takeover of the coops by the State. As Tim Wu asserts, interconnection is a recurring "trap" for today's alternative media and networks: "Like AT&T, Microsoft invited its enemies to connect, to take advantage of an open platform, hoping they wouldn't notice or worry that the platform came with a spring trap. For as with Bell, once having made one's bargain with Microsoft, there was no going back" (2010, p. 54).

The independent telephone companies were local entities, they were linked to local governments, locally owned, and designed to meet local needs. So were the Swedish coops. "Localness" was their most defining feature and interconnection in fact means technological homogenization and less local control. The so-called network effect may have benefited to some customers in the short-term, but in the long-term, it also contributed to alienate them from the governance of the infrastructure. The dilemma of interconnection may best be approached from the standpoint of Ostrom's Institutional Analysis Design (1990) first principle for managing commons. If the management of a



common resource, as Ostrom argues, implies clear group and geographical boundaries, interconnection should allow local networks to maintain a certain “decoupling” from the larger interconnected network and to maintain a managerial autonomy based on their “localness.”

2.4.4 The Effect of the “Telegraph Paradigm”

According to Italian historians, telecommunications systems that developed after telegraphy tend to adopt organization and management models based on the telegraph – the first of all telecommunication technology (Fari, Balbi & Richeri, 2014, p. 238; Carey, 1989, p. 12). Thus, succeeding telecommunication technologies tend to develop according to a particular “telegraph paradigm.”

The development of the telephone in the U.S. definitely follows such pattern. After a competitive era, the telegraph was dominated by one of the first industrial monopoly, Western Union, which became both a business competitor and a model for the Bell system. The telegraph industry was profoundly shaped by patent litigation. In the U.S., the telegraph was considered primarily as a tool for commerce and a service, as the telephone later, and it was regulated as such.

The same is true for the Swedish Telephone. According to Kaijser’s history of the telephone in Sweden (1987, p. 13), “it is impossible to understand the history of telephony without regard to the telegraph system.” In Sweden, the telephone was at first considered a local service and as such, was under very light regulation. But when the telephone started to compete with the telegraph for long-distance communications, the state-controlled Telegraph Board took over control of the industry.

The “telegraph paradigm” is only marginally less powerful in France, where the telegraph has been associated with military uses since the early days of Claude Chappe’s optical telegraph, and was only opened to private communications in the 1860s with the development of the electric telegraph. The military weren’t involved in the development of the French telephone, as the state let private businesses be responsible for its inception as a public communications technology. Only after this short initial phase tied to the constrained budgetary context did public authorities become the most important actors shaping the development of the network, which strongly relied on the policies and infrastructures of the PTT. Also, as Holcombe (1911, p. 9) argues, the fact that the French telegraph system was among the most developed may have contributed to convince the government that they could afford to await further developments in telephony than other countries. In this sense, the French telegraph paradigm also shaped the development of the telephone.





3 The History of Alternative Radio Networks in the United States, Great Britain, and France

This section revisits the development of alternative radio networks in the United States, Great Britain, and France. Presented successively, the cases studies focuses on three different articulations of alternative radio: American community radios, British pirate radios, and French free radios. Our analysis focuses on issues central to netCommons such as the control, management, and organization of alternative networks, the regulation of telecommunications, and the relationship between mainstream and alternative networks. Then, these case studies are mobilized to initiate a broader reflection on the development of alternative media and networks by drawing general conclusions.

3.1 The Community Radio Movement in the United States and the Case Of Radio Pacifica

In the U.S., community radios blossomed in the 1960s and 1970s. If most of these community stations were licensed by the Federal Communications Commission (FCC), their history can be traced back to the early days of pirate wireless radio telegraphy, in the early 1900s, and to the long held struggle between conflicting worldviews about radio and its regulation. After the Second World War, the first community radios, closely intertwined with the social movements of their times, resumed the struggle.

In the early 1900s, thousands of amateur radio enthusiasts were receiving and transmitting signals with homemade radio devices. At the time, unlike European countries, which agreed to endorse international treaties regarding wireless communications (in 1903 and 1906), wireless communication remained unregulated in the U.S. – thanks to the intense lobbying by the amateurs (Douglas, 1987, p. 216).

The Radio Act of 1912 was the first piece of legislation dealing with wireless communication in the U.S. The law required that all radio operators be licensed by the Department of Commerce and that they stick to certain wave allocations. Under the new law, the amateurs were relegated to short waves of 200 meters and less (Douglas, 1987, p. 234). According to Susan Douglas, “The Radio Act of 1912 represents a watershed in wireless history, the point after which individual exploration of vast tracks of the ether would diminish and corporate management and exploitation, in close collaboration with the state, would increase. The American spectrum was partitioned: another frontier was partially closed. As a legislative artifact, the 1912 law reveals American society’s early struggle to come to terms with an invisible enigmatic, communally held resource whose potential



was still only partially appreciated (1987, p. 236).

The crucial event that led to this legislation was the sinking of the Titanic, in April 1912. Following the tragedy, the press described the poor radio equipment of the surrounding ships, which were unable to receive emergency signals, and the interferences on the airwaves. In this context, radio communication was construed in such a way that amateur radio seems useless and dangerous. At the time, the Marconi Company enjoyed a quasi-monopoly over commercial wireless communication and the bill, which they help to draft, reflected their corporate interest.

As Douglas (1987) suggests, it is possible to translate this story into the famous plotline of the “tragedy of the commons.” In this case free use of the resources “brings ruins to all” (p. 219). The Radio Act offered a way to regulate the access to the airwaves. The wireless communication business and military uses were then considered most important to the public interest than amateur radio. But amateur radio continued to develop, both licensed and unlicensed, as the law was not strictly enforced. There were 322 licensed amateurs in 1913, and 13,581 in 1917 (p. 292).

The first part of the case study chronicles the story of early radio experiments—from radio telegraphy to radio broadcast – and of the first legislative initiatives which frame them and defined rules for allocating the airwaves. The second part recounts the story of the first community radio in the U.S., Radio Pacifica. Among other things, our analysis focuses on the relation between the station and the authorities and on its governance and ideological foundations. The third part describes the legacy of Radio Pacifica, which inspired a community radio movement in the U.S. as well as pirate radio projects.

3.1.1 From Radio Telegraphy to Radio Broadcast: How to Allocate the Airwaves?

From 1907, following the experimental broadcast of music by Lee de Forest, wireless communication evolved from a point-to-point paradigm to a broadcast model. In the early 1910s, the amateurs were the first to experiment voice and music broadcasting. For example, in San Jose, California, Charles Doc Herrold started to broadcast music in 1914, illegally using the streetcar lines of the Santa Fe Railway (Douglas, 1987, p. 293). A few years later, in 1920 when the first commercial radio started to broadcast news program in Detroit (Radio 8MK), the airwaves were dominated by citizen broadcasters. Some of them were isolated amateurs, but others were community organizations, labor unions, churches, and, most commonly, high school and college radio clubs. In 1926, only 4.3 percent of U.S stations were commercial broadcasters (Drew, 2013, p. 11).

Following the “radio boom” of 1922, many organizations and private persons were applying for radio licenses. Under the Radio Act of 1912, the Department of Commerce was not allowed to deny radio licenses and the airwaves soon became saturated by interfering licensed and non-licensed



broadcasters. The same dilemma concerning the overuse of the common resource reappeared, in the new context of the fast-growing business of commercial radio broadcasting.

The Radio Act of 1927 aimed to better organize the somehow chaotic development of radio. It created a new independent commission, the Federal Radio Commission, which would be able to resolve the growing problem of interference. To solve the problem commission decided to allocate the airwaves to large commercial broadcaster, once again putting aside the amateurs. As Drew (2013, p. 11) remarks, “of the twenty-five frequencies set aside for powerful clear channel stations, twenty-three of them went to the newly formed NBC affiliates.” In the 1920s and 1930s, as radio broadcasting develops as a commercial venue with monopolistic tendencies, a coalition of non-commercial broadcasters (labor unions, churches, social clubs, etc.) fought against what they considered to be the privatization of the public domain. Comparing the radio spectrum to natural resources such as waterways and forests, they asserted that broadcasters could not own the airwaves, but only borrow them under certain conditions (Drew, 2013, p. 20).

The adoption of the Federal Communication Act of 1934 marks the loss of an important fight for radio activists (McChesney, 1993). The act replaced the Federal Radio Commission by the Federal Communications Commission (FCC) which first mandate was to conduct hearings regarding the use of the spectrum by commercial and non-commercial actors. To promote its interest in commercial radio, CBS hired public relations maverick Ivy Ledbetter Lee. Using a sophisticated rhetoric, Lee who was able to convince the FCC that commercial radio stations were of public interest and that setting aside frequencies for non-commercial radio would only promote conflict among non-commercial actors eager to gain access to a powerful propaganda machine (Balas, 2003, p. 51-54). The FCC report called for further cooperation between commercial and non-commercial actors and forced commercial stations to air public interest content. The public interest was very precisely defined by the Federal Radio Commission (renamed Federal Communications Commission in 1934), which stated that “station[s] must be operated as if owned by the public [...] It is as if people of a community should own a station and turn it over to the best man in sight with this injunction: Manage this station in our interest” (cited in Morris, 2013)

If the early struggles of the amateurs and community actors helped to shape the American radio culture, which considered the radio spectrum as a public good, the dominant actors favoured commercial radio over public interest radio. In the context of the “propaganda anxieties” (Gary, 1999) of the 1930s, radio was often described as an all-powerful media that would better serve commercial than political goals. The fight over radio would not resume until the end of the Second World War.

3.1.2 The Case of Radio Pacifica

Based in Berkeley, California, Radio Pacifica (KPFA) today owns a network of 5 stations, all located in the U.S., supplying programs to approximately 200 affiliate stations disseminated in



North America, Europe, and Africa. Among its famous programs, *Democracy Now!*, produced by Radio Pacifica until 2002, clearly stands out as the culmination of a long history of investigative journalism, progressive political analysis, and involvement in social movements. Radio Pacifica is one of the most successful alternative radio stations in U.S. history.

After Second World War, Radio Pacifica was among the first attempts to resume the struggle for non-commercial radio, which had been almost completely abandoned since 1934.² Radio Pacifica was founded in 1946 by two objectors of consciousness, Roy Finch and Lewis Hill. Finch and Lewis met in a camp for consciousness objectors and elaborated the project of a radio station dedicated to give a voice to the American pacifist movement. The ideological roots of the project were mostly drawn from Gandhian pacifism, anarchism, and cooperativism (Lasar, 1999, p. xi). The first prospectus defining the scope and purposes of the station insisted on the notion of “pacifist dialogue,” defined as the intercommunication of diverse groups, over mere pacifist propaganda. The idea was to convince of the viability of peace by “the experience of hearing people of different ideological backgrounds relate to one another” (p. 105). For example, the station would sponsor forums during which residents would discuss local issues such as racial tensions and the reintegration of war veterans in the community. The music would include live broadcast from local festivals and music venues and indigenous folk music. From its first program, KPFA “sounded like nothing else on the airwave” (Land, 1999, p. 3).

KPFA famously run a pro-gay rights documentary in the middle of the homophobic 1950s and questioned U.S. involvement in Vietnam before any other broadcast media (Lasar, 2015). According to KPFA’s development director during the mid-sixties, the counter-culture of the 1960s “was due in no small measurement to the ambience KPFA created in the Bay Area” (Land, 1999, p. 101). The other way around, Hill consciously decided to launch the station in Berkeley because the region was appealing to many non-conformists (p. 42).

This success came at a significant cost. Hill’s original plan of a radio for the peace movement never fully realized. In the early 1950s, a few years after the launch of the station, Hill tried to reconnect with pacifist circles after having been too busy launching Radio Pacifica. Only then he realized that the pacifist movement had almost completely vanished, plagued by McCarthyism (Lasar, 1999, p. 81). As Lasar puts it “The Pacifica movement had become a cadre organization without a revolutionary movement” (p. 82). Consequently, the station opened to a greater variety of progressive issues, including free speech. Pacifism became important only years later, in the context of the Vietnam War protests.

A first interesting feature of Radio Pacifica concerns its financing and governing. KPFA is the first station to successfully turn to its listeners for sponsorship (crowdfunding) – a model that has since

² In the U.S., public service radio (“public radio”) only began in 1970 with the creation of the National Public Radio network.



been copied many times. Hill thought that listener sponsorship would transform the way mass media operate by freeing them from advertising exigencies (Land, 1999, p. 3). Hill developed a thorough theory of listener sponsorship, “The Theory of Listener-Sponsored Radio,” which argue that 2% of the listeners (a number based on Hill’s own “pacifist arithmetic”) should subscribe to the station, 10\$ each (Lasar, 1999, p. 70).³ Hill hoped that subscribing would make the listener more than a passive, isolated consumer into an active member of a growing pacifist community (Walker, 2001, p. 50). As a result, community members were deeply involved in the station which had been known for its “inveterate amateurishness” on the air and the enduring involvement of community members in tasks such as remodeling the studios or editing the news bulletin (Roszak cited by Bekken, 1998, p. 41) At KPFA, all decisions on major matters were made collectively and everyone was paid the same wage (Land, 1999, p. 44)

Also interesting is KPFA’s relationship with the FCC. Contrary to genuine pirate stations, KPFA operated under a radio license and followed the rules. On most occasions, KPFA strived to benefit from the opportunities offered by the FCC and tried to “talk their language.”⁴ For example, KPFA took great care to present their editorial project in line with the provisions of the Mayflower Doctrine (adopted by the FCC in 1949), which ruled that a station should open to all different voices and sides over an issue and prohibited personal advocacy.⁵ KPFA’s insistence on “pacifist dialogue” over pacifism clearly echoed this position. Also, KPFA accepted the educational FM license proposed by the FCC while the original plan was to broadcast on the AM band, which was most popular by far. KPFA used to its best the new possibilities of the FM band, including the broadcast of live music and “call-in” shows.⁶ As they were mostly speaking the same language, Radio Pacifica and the FCC were often on the same side of issues. For example, when in 1971, two U.S. Senators crusaded against Radio Pacifica after a crude “poem” had been read over the air, the FCC, under great pressure, refused to suspend the license. However, on a few occasions, KPFA maintained a “combative stance” against the FCC. In 1965, KPFA’s program director illegally traveled to North Vietnam to record material for a series of shows that were quite friendly to the Viet Cong (Walker, 2001, p. 74), which led to an audience in front of the Senate Internal Security Subcommittee and to the delaying of KPFA’s license renewal by the FCC. The most famous clash happened in 1973 after WBAI (Radio Pacifica New York station) aired a monologue entitled “Seven Filthy Words.” After the FCC ruled that the broadcast was “offensive,” a legal battle build-up until the Supreme Court, five years later, ruled in favor of the FCC, limiting the application of the First Amendment.

3 In 1952, the Ford Foundation also contributed a 150,000\$ grant to Radio Pacifica.

4 In the late 1940s, the FCC insisted that radio should serve the public interest, a position rejected by commercial broadcasters who tarred the FCC as communist or fascist (Dunbar-Hester, 2014, p. 131). The licensing of KPFA should be interpreted in the larger context of the FCC’s preoccupation for the public interest and the correlated dissatisfaction of commercial broadcasters.

5 In the mid-1960s, the station changed its policy: they would no longer propose a dialogue between opposite standpoints as the station itself constituted an opposing voice to mainstream media (Lasar, 1999, p. 220).

6 Broadcast of a telephone conversation between one audience member and the radio host.



3.1.3 From Community Radio to Open Radio: The Legacy of Radio Pacifica

In the 1960s and 1970s, new radio stations appeared all-across the U.S. They valued irreverence, risk-taking, and, most important, volunteer-based programming (Walker, 2001, p. 69). These radios were soon to be called *community radios* and their model was Radio Pacifica, the first of all community radios.

In the 1990s however, Radio Pacifica became plagued with controversies over its programming and governance. Subscribers contended that the station was increasingly undemocratic and driven by corporate and foundation funding. Some were arguing that the station was indistinguishable from mainstream media outlets (Bekken, 1998, p. 37). In the San Francisco Bay Area, this led to the launching of several new pirate (unlicensed) stations by ex-Pacifica collaborators such as Kiilu Nyasha (San Francisco Liberation Radio) and Carol Denney (Free Radio Berkeley) (Nopper, 1998). Today, the Bay remains the hotbed of the Pirate Radio movement.

President Obama's signing of the Local Community Radio Act of 2010 has started a new era of radio activism. Under the new law, the FCC is allowed to grant licenses to new low-power FM Stations (LPFM). Radio Pacifica had been a long-time advocate of such initiatives and helped launch several LPFM that became affiliated with the network. This allows LPFM stations to exchange and broadcast programs within a network of more than 200 stations, whether being large community radios such as KPFA or small LPFM.

The future of Radio Pacifica's network is unclear. Plagued by financial problems the station is today regarded "as something akin to the late Ottoman Empire of public broadcasting" and is airing conspiracy theorists, HIV skeptics and health-cure infomercials (Lasar, 2015). Its legacy is to be found somewhere else, in the widespread development of community radios across the U.S., in the Pirate Radio movement of the San Francisco Bay, and in the relative openness of the authorities toward alternative radio.

To sum up, the U.S. legislation on radio appears highly paradoxical. On the one hand, it traditionally assumed that the airwaves are public good that should only be lent under certain conditions. On the other hand, commercial actors were able to benefit from this legislation by arguing that they were acting in the best public interest, which was arguably not the case. The case of Radio Pacifica illustrates how community radios, adopting a different conception of the public interest, nevertheless kept working within the existing legal framework.



3.2 British Pirates: From Pirate Listeners to Radio Caroline

In Great Britain, the history of the famous boat pirate radio of the 1960s can be traced back to the early 1920s, when a radio frenzy – similar to the one in the U.S. – marked the beginning of commercial broadcasting and radio piracy. Contrary to their American counterparts, the first generation of British pirates were not broadcasters but listeners. The British pirates were “members of the public who “listened in” to broadcasting without contributing what was reckoned to be their fair share of its costs. This was a radically new kind of piracy – “a receptive practice, not a productive one” (Johns, 2009, p. 358). These pirate listeners, although they were mostly listening to the British Broadcasting Company (BBC),⁷ refused to buy the necessary listening license and the authorized receiver. This protest movement against the monopoly of the BBC, deeply rooted in British culture and history, will be reactivated in the mid-1990s, when high-profile pirate broadcasters such as Radio Caroline would also challenged the BBC’s monopoly over radio.

In the early days of radio, the Post Office enjoyed jurisdiction over radio by virtue of its control over the telegraph. In the 1910’s the Post Office issued license for “experiments” in radio reception and transmission to a growing community of amateurs. Among them, the prevailing ethos was that of the “man of science” entitled to a high degree of liberty. For them, “Every Englishman is entitled to hear what is going on in his aether provided his listening apparatus does not annoy its neighbours” (Johns, 2009, p. 359). These British gentlemen scientists saw the ether as a “natural commons” across which “free researchers could roam in search of discoveries.” (p. 359) Consequently, the first struggle between the radio community and the Post Office concerned the “right to experiment.”

In the early 1920s, when radio broadcasting became increasingly popular, the Post Office faced an increase in license applications for experimentation and transmission. In 1921, only 4,000 licenses for experimentations were held in Great Britain. One year later there were 7,000 and 286 for transmission (Johns, 2009, p. 358). With many commercial broadcasters filling for licenses, the Post Office soon feared the situation would turn to chaos and the Post Office called a halt, declaring that “the ether was already full” (p. 360).

First, we provide an overview of the creation of the BBC and the debates surrounding it. Refusing to pay the BBC for a listener license or to buy a licensed receiving set, the first British pirates were BBC listeners. Second, we discuss in detail the case of Radio Caroline, a boat pirate radio stations which challenged the BBC’s monopoly from the mid-1960s. Third, we look at the legacy of Radio Caroline in the field of pirate radio stations but also in regard to the BBC’s monopoly.

⁷ In 1926, the British Broadcasting Company became the British Broadcasting Corporation.



3.2.1 The BBC's Monopoly, the Airwaves, and the Pirate Listeners

After discussions with industry leaders such as the Marconi Corporation, then operating the most powerful transmitters in Chelmsford and London, a new solution was found: the State would oversee all radio programming through a new public company, the BBC, who would also be responsible to commercialize radio sets. The service would be “free” but the BBC would finance its activities by selling a new category of “listeners” radio licenses. Also, the receiving sets would be sold as sealed boxes, pre-tuned to the BBC wavebands (Johns, 2009, p. 330). In other words, the listeners would finance the BBC by paying a license to cover the running of its operation and a royalty fee on their radio receiver to cover the initial investments necessary to build studios and transmitters.

Then, the concern was not only the funding of the BBC, but also that pirates using unauthorized sets will cause “oscillation interference” and would cripple the capacity of their neighbors to listen to the BBC.⁸ In order to locate unauthorized receivers, the Post Office somehow became able to locate the source of the interferences by conceiving two “detector vans” equipped with mobile antennas (Johns, 2011, p. 26-27).

The new listeners licenses, valid for a year, went on sale in 1922 for 10 shillings (approximately 150 Euros). The licenses were very restrictive as they only allowed listening to the BBC and to use BBC approved receivers. Post Office inspectors were allowed to enter homes to investigate infringements such as the use of non-authorized sets and unlicensed listening, (Johns, 2011, p. 20).

If infringements were passable of 12 months in prison, the rules were not enforced and proved to be impractical (Johns, 2011, p. 21). Soon, the British rebelled and the sale of listeners licenses dropped. By 1925, it was estimated that 2.5 million of British citizens were listening in without a proper license, and therefore, were pirates (p. 21). A lot of them simply claimed that they were “experimenters” and applied for such a license, which was cheaper and allowed listeners to build their own sets. In 1923, the loophole was already well-know as almost 50,000 self-proclaimed experimenters had filed applications for such a license (p. 23). If the original criteria to be considered an experimenter was to construct a receiver, as early as 1922 companies were selling parts and instructions that made this task easy (p. 24).

In the 1920s and early 1930s, have also appeared the first pirate broadcasters. The Daily Mail was among the first to challenge the BBC’s monopoly by broadcasting to Great Britain from a ship. Another radio station, “The Old Pirate” was broadcasting from mainland (Johns, 2011, p. 38-39). At the time, listeners with “pirate” receivers were able to tune into signals from Spain, France, and Yugoslavia. The most prominent stations of the era were Radio Normandy, Radio Luxembourg, and

⁸ According to Johns (2011 p. 26), this was a real problem. Oscillation interference occurred when “poorly rigged equipment underwent a form of electronic feedback, making the aerial into a transmitter [it] produced a distinctive “howl” in the ether.”



Radio Paris. These stations were often sponsored by British companies and newspapers which regularly published their schedules (p. 38-39).

In a sense, the struggle between the BBC and the “pirates” involved very different conceptions of the radio and opposing worldviews. On the one hand, the BBC considered that radio was of utter importance as it would improve public culture and civic life. Contrary to the commercialism of American radio, the BBC existed to “keep on the upper side of public taste,” as said its founder, John Reith (cited in Johns, 2011, p. 27). Reith considered the BBC as a “public utility” and considered the aether as a national monopoly (p. 32-37). On the other hand, from the perspective of a lot of British listeners, the BBC aimed at standardizing tastes and opinions. Against such a perspective, they relied on a tradition, dating back to the 17th century, associating civic virtue and independence of thought with experimental and autonomous practices (p. 35).

The BBC’s monopoly continued after the Second World War, but by this time the listeners had the choice between three stations. By the mid-1950s, despite its efforts to modernize and to diversify, the BBC stations were only allowed to broadcast five hours of recorded music per week. More in tune with the youth of the postwar years, a new wave of pirate radios would soon propose pop and rock music all-day long.

3.2.2 Radio Caroline

Founded by Ronan O’Rahilly in 1964, Radio Caroline aimed at broadcasting musicians that were not played by the BBC, which concentrated on musicians signed by one of the four major labels – Decca, Philips, RCA, and EMI – or their affiliates. At the time, half of European stations, some of them located on ships, were not broadcasting on official frequencies and where, therefore, pirate radios (Lesueur, 2011, p. 171). Backed by numerous rock stars, the station rapidly achieved fame and became one of the most popular stations of the era, especially among the youth. After three weeks, the station has an estimated audience of three millions (p. 178). In 1966, the station had an audience of eight millions (Robertson, 1982, p. 75).

The Station was located on the Caroline, a ship registered in Panama that O’Rahilly bought for £250,000. The Caroline was anchored in the English Channel, four kilometers off Harwich, in international waters. Its location was ideal for broadcasting over London. Radio Caroline soon acquired another ship, *Mi Amigo*, and sailed one of his ship North to eventually drop the anchor close to the Isle of Man, in a middle of a triangle formed by Dublin, Glasgow, and Liverpool.

Financed by private investors from Switzerland, Ireland, and England, Radio Caroline was a purely commercial venture. It relies on advertising revenues but also on the payola paid by record companies for the broadcast of their recordings. One of Radio Caroline’s innovative move was to make this practice open and to offer the record companies to buy broadcasting time for a fixed amount (Lesueur, 2011). Another source of revenues was the paid broadcast of religious shows.



According to Robert Chapman (1990), Radio Caroline was built on paradoxical ideological views. On the one hand, it was based on creativity and hedonism derived from the anarcho-capitalist views of the aristocratic elites of Chelsea, the social milieu of O’Rahilly. This ideology prevailed in the early days of the station, when jazz and rhythm n’ blues played, just like in the most sophisticated Chelsea nightclubs. On the other hand, the venture implied blank commercial interests. Pirate radio was considered a means to achieve these ends. If this tension never totally resolved, Chapman argued that 1966 marked a turning point towards the prevalence of commercial interests over more radical forms of politics.

The popularity of the station made the situation delicate for British authorities. While the British government received dozens of complaints of interference, the legal basis to act remained unclear. Another charge against Radio Caroline came from the British Copyright Council, which argued that pirate stations were avoiding to pay copyright royalties. As Johns (2011, p. 131) argues, such complaints were “largely disingenuous” as the record companies were providing the station with their releases and pushing for airtime. After three years, the “solution” to the radio pirate problem was to launch Radio One, the BBC pop station, and to recruit the star disc-jockey of pirate stations, such as Radio Caroline’s Tony Blackburn and Emperor Rosko.

In 1965 the *European Agreement for the Prevention of Broadcasts Transmitted from Stations Outside National Territories*, signed by the member states of the Council of Europe, entered into force. The target of the agreement, specifically, was “broadcasting stations which are installed or maintained on board ships, aircraft, or any floating or airborne objects and which, outside national territories, transmit broadcasts.” Transposing the aforementioned agreement on the British domestic scene, the Marine Broadcasting Offences Act of 1967, among other “acts of collaboration,” forbid the advertisers to conduct business with pirate radios and the provision of supplies and equipment.

On August 14, 1967, as the new law come into force, all the British pirate radio ceased their broadcast, except the two Radio Caroline ships. This was an important turning point: before the law, pirate stations were outlaw, operating in a loophole, now, they were illegal (De Filippi & Dulong de Rosnay, 2014). Under the new law, pirate radio hosts risked prison sentences. Anxious to respect the law, a lot of announcers and record companies ceased to do business with Radio Caroline which was soon plagued by debts. In 1968, creditors seized the two Radio Caroline ships and the station went of the air for two years. Then, Radio Caroline intermittently broadcasted from Netherland’s international waters.

3.2.3 Radio Caroline's Legacy

During the election of 1970, Radio Caroline strongly backed the Conservative Party led by Edward Heath, which had promised to free the airwaves. According to Lesueur (2011), this endorsement had a major impact on the election outcome, especially in the new context of the lowering of the voting



age to 18. Once elected the Conservative government decided to grant licenses to commercial radios, but only under very strict conditions that didn't suit the pirate radios. Launched in 1973, the new commercial stations didn't meet the public's expectancies and a new wave of pirate radios began (Lesueur, 2011, p. 279-280). In the 1970s and 1980s, pirate stations such as Radio Jackie, Radio Concord, and Radio Solent City will continue the traditions inaugurated by Radio Caroline.

In the 1970s, state authorities seemed increasingly exasperated by pirate radios and the repression intensifies all around Europe.⁹ Radio Caroline DJ's were arrested and sentenced on several occasions (Lesueur, 2011, p. 205-211). Radio Caroline's ship, the last boat radio remaining in Europe, sunk in the Spring 1980. Three years later, Radio Caroline was back on the air, using a new ship, the *Ross Revenge*. In the 1990s, Radio Caroline established a radio studio in Maidstone, Kent, and became a legal U.K. broadcaster. Today, Radio Caroline is an Internet radio.

Radio Caroline had an important impact on the British Radio scene. It contributed to transform the BBC's programming and practices in the late 1960s and early 1970s, when several new BBC stations began to broadcast a more diverse content. The end of the BBC's monopoly and the beginning of legal commercial radio, in the early 1970s, can easily be traced back to Radio Caroline's actions¹⁰.

To summarize, the monopoly of the BBC over radio broadcasting is at the origin of a long tradition of piracy in the U.K. Operating in legal loopholes, pirate radio listeners of the 1920s and 1930s and pirate radios such as Radio Caroline were the objects of intermittent repression from the State. Their actions contributed to shape the history of radio in the U.K. and had important political and legal repercussions. As we will see in the next case study, Radio Caroline also had an important impact on the broader European Free Radio movement, despite the different political goals and strategies employed in the movement.

9 For example, in 1978, a man was sentenced to 90 days of prison for having a Radio Caroline sticker on his own car (Lesueur, 2011, p. 2015).

10 According to Chapman (1990, p. 71), another British pirate, Radio London, had been more influential over these events. Contrary to Radio Caroline, London sought respect, prestige, and accommodation. Their goal was to "bring legal commercial radio, built upon the American model, to Great Britain."



3.3 The Free Radio Movement in France and the Case of Radio Verte

In France, the Free Radio Movement that took form in the second half of the 1970s was largely influenced by post-1968 political culture and by the British and Italian pirate stations, which served as models. In 1976-1977, the free radio movement burst on the political scene and swarmed through the country in a matter of months. Despite the repression of state authorities, what was in essence a very decentralized movement managed to quickly organize for technical and legal resistance, hastening the fall of the state monopoly over radio and television broadcast that had been the prevailing policy since the Second World War.

Prior to the Second World War, the radio landscape in France had been marked by the co-existence of both public and private networks, as well as by the existence of a lively community of radio hobbyists and *bricoleurs* (DIYers), the *sans-filistes* (“wirelessers”). The 1920s were the theater of a long struggle between actors defending a state monopoly and others in favour of an open market (Ulmann-Mauriat, 1999; Méadel, 1994). In 1928, a decree listed thirteen “official” private stations while approximately fifty private stations were in operations. The decree marks the beginning of a period of relative stability in the radio landscape and the beginning of a long ceasefire in the regulatory struggle over radio (Méadel, 1994, p. 12-13), but also the creation of new state administrations specifically charged with the political surveillance of radio amateurs.

If the decree of 1928 retrospectively legalized dozens of formerly illegal pirate radios, it also prohibited the creation of new stations. Therefore, all new stations were *de facto* pirate radios. In 1932, the Paris office of the *Postes, Télégraphes et Téléphones* (PTT), responsible of monitoring illegal broadcastings, was able to intercept 410 of them (Méadel, 1994, p. 190). Similar monitoring offices were operating in Lyon and Bordeaux. One of these early pirate stations was Radio Morue, a boat radio broadcasting religious programs to fishermen.

At the end of the Second World War, private radio stations were completely discredited for their collaboration or passivity towards the Vichy Regime, and the use of the radio as a megaphone for the government became official policy. “Among those who have authority to speak to the country and to the world, aren't the most suited those who represent our democratic institutions?” asked the future President of the Republic, and then a young minister, François Mitterrand to the members of Parliament in July 1949 (Eck, 1991).

In 1964, President Charles De Gaulle reorganized both radio and television broadcasting with the creation of the *Office de Radiodiffusion-Télévision Française* (ORTF), but the reform brought no progress for media pluralism. Besides the public network, the only significant players were the handful of radio stations broadcasting from beyond French borders – such as Radio Luxembourg, Europe n°1 or Radio Monte Carlo. Although they were primarily aimed at the French audience,



there were officially foreign entities and were therefore tolerated by the government. As commercial businesses, they were often criticized for their lowbrow content, their demagoguery and their deference to politicians.

The first part of this section describes the origins of the Free Radio movement in France and chronicles the creation and activities of one of its emblematic station, Radio Verte. The second part focuses on the repression faced by the free radios and the legal hurdles they encountered on their way. The third part describes how the free radios organized themselves to face this repression and their lobbying activities. The fourth part addresses the exhaustion and co-optation of the movement in the 1980s.

3.3.1 Radio Verte and the Burst of the Free Radio Movement in France

In reaction to this old-fashioned and depoliticized radio landscape, a Free Radio movement developed in the second half of the 1970s in the long aftermath of the May 1968 student movement. Its history is brilliantly analyzed in Thierry Lefebvre's *La Bataille des radios libres* (2011).

In late 1974, two PhD students, Antoine Lefebvre – just back from a stay in the United Kingdom where he had discovered pirate radios – and Jean-Luc Couron, launched *Interférences*, a journal meant to blend political theory and practice and draw on similar experiments in other countries, especially Italy, to develop “a criticism of the information and communication apparatus” and explore alternatives. In a prescient manifesto published in the first issue, Couron then called on the “establishment of Popular Communications Networks” (*Réseaux Populaires de Communication*, or RPC) and warned against the risk of commodification: “Tomorrow,” Couron wrote, “the ‘Giscardian’ [after the name of the sitting President] liberal state will be tempted, under the pressure of the lobbies, to decentralize its radio apparatus while surrounding itself with the maximum guarantees, in particular regarding news reporting [...] When that time comes, a major political struggle will be needed to explain that local radio must be more than a trash-advertising box, or the instrument of propaganda of power-holders” (Lefebvre 2011, p. 47, our translation).

After a few fruitless attempts, thanks to the collaboration between members of the *Interférences* team and environmental activists, a French free radio named Radio Verte aired its first broadcast in the Spring of 1977 in Paris. Soon, Radio Verte would launch a swarm of similar initiatives across France, thanks to the increasing affordability of radio transmitters and antennas (due to the surge of the movement in Italy, following their victory in a case before the Constitutional Court which, in July 1976, ruled to end the state monopoly).

The first *coup d'éclat* of Radio Verte took place on live television in March 1977. Brice Lalonde, then the leader *Paris Écologie*, a municipal party, brought a transistor on stage and showed to an audience of 15 millions that Radio Verte was broadcasting (Lefebvre, 2011, p. 65). The following morning, Radio Verte benefited from widespread media coverage. The broadcast was illegal and



Radio Verte soon made contact with the authorities to request an exception to the long-held state monopoly over radio communication. The firm rejection of these requests caused an important turmoil at Radio Verte. While the people from *Interférences* wished to continue broadcasting, the environmental activists, some of them involved in mainstream politics, were afraid to end up in jail, like the Italian pirates of Radio Alice (p. 70).

The compromise was to broadcast but to take strong security measures. Radio Verte broadcasted intermittently from various different locations. According to Brice Lalonde, this strategy also derived from a critical reflection about the generalized habit to listen to radio instead of talking to people, while Radio Verte aimed at initiating a new social conversation, which supposed that radio should be turned off from time to time (Lefebvre, 2011, p. 74). Radio Verte was equally critical of the state monopoly and of commercial radios such as Radio Luxembourg and tried to articulate its own version of a public service radio.

Other tensions soon appeared in the group. On the one hand, the people from *Interférences* valued professional well-made radio and led the operations. On the other hand, Radio Verte relied on poorly organized local groups that were responsible to record first-hand material and that valued the expressive and emancipatory dimensions of the medium. The two visions collided and the clash led the ecologists to leave Radio Verte and to publicly criticize the station (Lefebvre, 2011, p. 78-80). These tensions only increased as the problems were piling up. While *TéléDiffusion de France* (TDF) became able to jam the airwaves, Radio Verte ran out of money. After a few weeks, the station went off the air.

In the footsteps of Radio Verte, the Free Radio movement grew rapidly. In 1978, 80 free radio stations were operating in France (Bénetière & Soncin, 1989, p. 23). While Radio Libre 44, in Nantes, was involved in the anti-nuclear movement, Radio Ondes Rouges defended ultra-leftist positions. Unions were also involved in the movement, as they started stations to mobilize their members (p. 22). On the other side of the political spectrum, Radio Fil Bleu, in Montpellier, was controlled by the *républicains*.

3.3.2 Facing State Repression: Towards Technical and Legal Resistance

Soon however, the “liberal state” sought to crack down on this burst of free radio expression which contravened the government's exclusive right to public broadcasting. *TéléDiffusion de France* (TDF) sued several free radios in courts, and sought to jam their transmissions. And as is often the case in the history of communications and other emancipatory struggles, repression led to resistance, both at the technical and the legal levels.

In Fessenheim, Alsace, where local residents opposed the construction of a nuclear power plant, a local Radio Verte had been launched in June 1977. After having coped with several jamming attempts and successfully escaped a police arrest in the middle of a broadcast, its activists decided



that there was a need to further decentralize their infrastructure: “Our only possible reaction was to have a deeper penetration in all the layers of the population with a complete decentralization of production and broadcast of our shows. Against the jamming waged by TDF, [...] we only had one solution left: to multiply the number of transmission sites so as to be even more powerful than TDF. Our strategy was to oppose decentralization to the centralism of the monopoly” (Lefebvre, 2011, p. 139). In the following weeks, other stations were raided, such as Radio 93, in Seine-Saint-Denis, or Radio Roquette, in Paris (Bénétière & Soncin, 1989, p. 23).

Soon however, the government stepped up the repression. In May 1978, following a ruling that cancelled the administrative closure of Montpellier’s Radio Fil Bleu, a new Bill was announced. Introduced a few weeks later, it provided that “any person who, in violation of the statutory monopoly, will broadcast a radio or television program, will be punishable by imprisonment from one month to one year and a fine of 10,000 francs to 100,000 francs, or one of these penalties only.”

At the time, French politicians were divided on the issue of free radio, so were the French people. In 1979, a poll reported that 39% of the French were in favour of free radio, 28% opposed them, and 33% didn’t have an opinion (Bénétière & Soncin, 1989, p. 26).

3.3.3 Advocating for Legal Change on Behalf of a Diverse Movement

For the Free Radio militants, the debates in courts and in the Parliament represented a unique opportunity for legal activism. As early as September 1977, the leaders of the movement had created the *Association pour la Libération des Ondes* (Association for the Liberation of Airwaves, ALO). ALO – which benefited from the support of prominent intellectuals of the era, including philosophers Gilles Deleuze and Umberto Eco – was meant to coordinate the movement. Its technicians help manufacture cheap but powerful radio transmitters, while other volunteers organize the political and legal defense of the emerging movement while coordinating with their counterparts elsewhere in Europe. Against public officials who then called for the law to be respected “in all its rigor,” ALO replied with a manifesto released on the very day of its creation which proclaimed that “when no one wants it, the law is null and void.” In parallel to ALO – clearly the most influential one – several other similar organizations were launched to represent the spectrum of political sensitivities found in the movement, from the anarchist left to the liberal right.

In an attempt to thwart the Bill prepared by the Ministry of Culture and Communication, ALO launched a petition asking for a very different legislation, one that would end the monopoly and sort out the situation of the “local and independent” radio stations. The petition based this claim for an expanded right to free communication on article 11 of the 1789 Declaration of the Right of Man and of the Citizen, as well as on article 19 of the 1948 Universal Declaration of Human Rights. An alternative bill was even sketched, aligned on the self-proclaimed “pragmatist” side of the Free Radio movement. The draft bill opened the door to advertising, which alienated those who opposed commercialism and more generally represented an important cause of disagreement and



fragmentation within the movement (Félix Guattari, for one, left the ALO over its acceptance of advertising to create the *Fédération Nationale des Radios Libres* on a anti-commercial political line). But after a rushed debate in Parliament, the Government's bill was eventually made into law.¹¹ The leaders of the movement worked with their allies in the Socialist Party (in opposition) to refer the law to the Constitutional Council for *ex ante* (before implementation) review.

There was some hope. A few years earlier, in 1971, the Minister of the Interior Raymond Marcellin, a conservative politician, and the majority in Parliament had sought to curb down post-1968 groups by restoring administrative control over the creation of non-profits organizations (*associations*). In a historic decision, the Constitutional Council had struck down the law by referring to the Declaration of 1789 to protect the right to assembly. Thereby, it had turned itself into a true human rights court, quite against the original design of the Fifth Republic. In addition to this recent breakthrough for the rule of law in France, the Italian Free Radio movement had surged thanks to a decision of the constitutional court which all of a sudden ended the state monopoly over broadcasting.

But the hopes of French activists were short-lived. In its ruling of July 27th, 1978, the Constitutional Council ruled that the law complied with the Constitution. Repression kept intensifying until, quite ironically, the same François Mitterrand – who in 1981 became the first left-wing president of the Fifth Republic – kept its campaign pledge by passing an amnesty law in favor of prosecuted Free Radio activists and eventually ended the state monopoly with the adoption of a ground-breaking law in July 1982.

3.3.4 The 1980s: Towards Neoliberal Co-optation

The legacy of the French Free Radio movement is enduring. Not only did it take part in an international movement that pioneered new forms of “mediactivism” (Cardon & Granjon, 2013) in Western countries and help hasten the fall of state monopoly over radio and television broadcasting. It also contributed to significant changes in content and formats and to the apparition of local and independent/non-commercial radio stations, which to this day form an integral part of the French radio landscape.

However, as elsewhere in Europe, the various reforms of the audio-visual sector adopted in the 1980s launched a wave of commercialization and concentration. While the approach of the 1982 law was to foster a logic of “public service” to which public sector and private entities (both for-profit and non-profit) were to contribute, another reform in 1986 under a right-wing government promoted wholesale privatization. Under the rising neoliberal paradigm of market deregulation and internationalization, public policies was called upon to promote the development of strong national and European media corporations meant to become the pillars of the global “information society” – already a rising theme in political discourse. The state monopoly had fallen, but a new public-

11 *Loi n° 78-787 du 28 juillet 1978 complétant la loi n° 74-696 du 7 août 1974 relative à la radiodiffusion et à la télévision.*



private hybridization would succeed in making the subversive agenda pushed by many in the Free Radio movement a marginal though vocal component of the media landscape.

To sum up, the French Free Radio movement was in many ways unique. As it rapidly burst in the late 1970s, it intertwined with mainstream political life and raised fundamental legal issues such as the freedom of association. Although free radio is often described as a “movement,” the most contradictory ideologies coexisted. While stations such as Radio Verte proposed a political critique of radio, other “free stations” were mostly interested in promoting political ideas.

3.4 Conclusion: Reflecting on the History of Alternative Radio Networks

As a conclusion, we discuss some of transversal logics and some of the more striking similarities and differences in the development of alternative radio networks in the U.S., Great Britain, and France. First, it is important to insist on the diversity of the alternative phenomenon. If our mapping remains partial, it shows, among other things some interesting core trends concerning the repressive strategies employed by authorities. Second, we focus on the managing of radio airwaves as commons. While the airwaves are often said to be commons by international and national regulatory agencies, they are often poorly managed as commons.

3.4.1 Finding Trends in the History of Alternative Radio

One of the first striking features of alternative radio stations would be their diversity. While some of them are leaning towards the left of the political spectrum and others to the right, most of them are ideological patchworks that are more or less stable over time. Their organization and governance model also vary greatly: Radio Pacifica’s foundation and participatory culture, Radio Caroline’s half-legal business, and the anarchical disorganization of Radio Verte are highly difficult to compare. While alternative media are partly defined by their relation to “mainstream” media, our three cases study showcase different types of mainstream media: commercial radio stations in the U.S., BBC’s monopoly and licensed commercial stations in the U.K., and Radio France’s monopoly. Defining themselves in face of specific actors and contexts, alternative radios are singular objects. If labels such as “pirate radio,” “community radio,” “free radio,” and “campus radio” are employed loosely to characterize such different realities, these labels are often used in contradicting and shifting manners¹². Umberto Eco famously pointed out the problem with these competing labels and the definition of the object “alternative radio”: “When I use the term “free radio station,” do I mean only a left-wing station? Or a radio station built by a small group of people under semi-legal circumstances? Or a radio that is independent of the state monopoly, even if it happens to be well organized and has solely commercial purposes?” (2015, p. 36).

¹² For example, the French historiography used almost interchangeably the terms “pirate radio” and “free radio.”



In spite of this diversity, it is possible to point out certain core trends in the history of alternative radio networks. First, European and American alternative radio networks appear to be moving in opposite directions. In Europe, state monopolies over radio often implied that community and pirate radios started as unlicensed services that gained legal recognition over time (Bekken, 1998, p. 31). At least it was the case with Radio Caroline and Radio Verte. On the contrary, in the U.S., the policy is to incorporate community broadcasters into the public broadcasting model. In the U.S., pirate unlicensed radios that appeared from the 1980's on were small-scale phenomena of lesser cultural and political importance. In California, a lot of pirate radios defined themselves as radical version of community radios such as Radio Pacifica, but none of them attained the same reach or influence. In other words, while European alternative radios evolved towards legality, American alternative radios tend to go in an opposite direction.

Furthermore state monopolies over radio, in France and Great Britain, reacted to pirate radios in similar ways. In both cases, episodes of repression and quick legal actions alternated with tolerance and less assertive actions were observed. Public opinion, in all cases, seems to have shaped the course of actions for public policy. Between 1965 and 1967, the British solution to the pirate radio problem had been to simultaneously adopt new repressive laws and to create new BBC stations more akin to the taste of newer generations. Fifteen years later, it is exactly how the French government reacted. In addition to a new repressive legislation, Radio France created two new theme stations Radio 7 and Radio Bleue, and five regional stations in order to undermine the public of pirate radios.

In France and in the U.S., the debates over alternative radio stations drew the attention of high profile intellectuals. In France, William Burroughs, Serge Moscovici, Jean Baudrillard, Gilles Deleuze, and Félix Guattari intervened in the debates and lent their voices to the movement. In the U.S., S.I. Hayakawa was involved in the creation of the Friends of Free Radio association and Alexander Meikeljohn advised Lewis Hill during the process of incorporation of Radio Pacifica Foundation. In the U.K., perhaps because of the commercial nature of Radio Caroline, intellectuals tended to criticize pirate radios. For example, two major figures of the Center for Contemporary Cultural Studies (CCCS), Richard Hoggart and Stuart Hall, were highly critical of pirate radios ventures (Rudin, 2012, p. 37-41).

Lastly, the three case study show that alternative radio stations are difficult vehicles to be used by social movement and that alternative radio and social movements are likely to divorce. Founded by important members of the pacifist movement, Radio Pacifica soon became estranged from pacifist circles and embraced various social issues. If this may be explained by the political climate of the era and by the loss of momentum of pacifist movements, it is also a logical implication of the fairness doctrine, which prevented any "propagandist" use of radio. Also, as we have seen, the environmental activists involved in Radio Verte were quickly marginalized. Technical, organizational, and political matters were involved. As for Radio Caroline, it never was a social



movement but more of a commercial venture.

To use the distinction made by Cardon & Granjon (2013) between counter-hegemonic and expressivist forms of mediactivism, we could therefore say that Radio Pacifica espoused an expressivist approach by giving voice to various social movements while staying away from more counter-hegemonic claims tied to the media policy debates. Radio Caroline, despite its commercial motivations, was rooted in a counter-hegemonic critique of the state monopoly even though it would pioneer a form of counter-cultural commercial radio station even though it would later be itself subject to such a critique. Finally, Radio Verte and the most radical branch of the French Free Radio Movement operated on both fronts, promoting the singular expressions of topical social movements while countering the state monopoly and unsuccessfully trying to bar the way to the commodification of the radio.

3.4.2 On Broadcasting as a Commons

At the national and international level, there is a general agreement that the radio spectrum is a common heritage of mankind (Sooros, 1982, p. 677). The International Telegraphy Union (ITU, now the International Telecommunications Union), since 1906, considered it as its basic premise. The same can be said of the BBC, which considered radio a public utility, and of the early radio pirates in the U.S.

There are limits to the number of users that can be accommodated by radio, and in this sense, the radio spectrum is similar to other natural commons (Sooros, 1982, p. 665). But as the resource cannot be exhausted by overexploitation – it is renewable – radio is also different than other “natural” commons: the so-called “tragedy of the commons” is, strictly speaking, impossible. Without risk of permanent exhaustion, access to the resource is a strict matter of priority. Who can access first and how much time can he use the resource? Who is to decide on such questions?

Our case studies show that the most powerful actors prevailed and have monopolized the resource for a long time. Notwithstanding all discourses about broadcast as commons, Ostrom’s (1990) #3 principle about self-management – the idea that those affected by rules should be able to modify the rules – had not been enforced.

At the international level, the right to use the radio spectrum has in most cases been governed by the principle of “first-come, first-serve” (Sooros, 1982, p. 671). For many years in international forums, less-developed countries denounced this policy enabling technologically advanced countries to gain a permanent hold on the commons resource (p. 673).

In a sense, this is also the claim made by alternative radio networks, at the national level. They denounced the inertia and inequity of such a principle and the fact that the resource was confiscated by private interest, without possibility of access for new players. In the process, public interest and



self-management slowly became abstract ideals. The U.S. case is very telling. The Radio Act of 1927 made the radio spectrum a public resource. Radio stations were not paying for their license and received no proprietary rights to the frequency. The frequency was only lent to them and renewal was supposed to depend on whether the station served the public interest (Morris, 2013). Since the 1940s, it was assumed that the operative principle of “public interest” was the “fairness doctrine” according to which stations should present various standpoints over issues. These principles have not been applied strictly, despite some extreme cases in which the FCC has suspended licenses. In the 1980s, under Reagan’s administration, FCC changed its rules for license renewals. Public interest and fairness were not important anymore. As Morris (2013) remarks, the radio profoundly changed in the following years during which one-sided talk radio shows became increasingly popular and soon appeared to be “normal.” The notion of “public interest,” which was deeply connected to the idea that the radio spectrum was a public resource, is then understood as the free play of private interests. In short, broadcast progressively became an enclosure.

This may be explained by the national scale on which these governing practices occurred. As Ostrom (1990) reminds us (#2 principle), commons are local entities and should be governed as such, according to local needs and conditions. Alternative radio networks, and especially community radios such as Radio Pacifica, which valued participatory governance and strong connections with local communities, tried to implement the necessary managing principles for commons through ideas as listeners financing. To put it differently, while the airwaves were said to be commons by international and national regulatory agencies, only local initiatives could make it happen.

Policies adopted in the 1920s and 1930s had a profound and lasting effect over the development of telecommunications in general and radio in particular. They shaped the radio industry and caused inertia that had been challenged by alternative radio networks. Inertia implied that such moments are scarce. As Tim Wu (2010) argues, from time to time a closed industry can be opened anew. If the political history of technologies goes by Kondratieff’s waves, we may be in such a moment where possibilities are real. At least, it is the opinion of a LPFM radio activist who recently said “we are at a good point in telecommunications policy and technology... It hasn’t been this way since the 1920s [;now] we have an opportunity to secure spectrum for people beyond businesses. The window will close again within two or three years and be closed for at least another 70 years” (cited in Dunbar-Hester, 2014 p. 162).



4 The History of the First Generation of Alternative Internet Community Networks in France and Great Britain

This last series of case studies gets ever closer to present day community networks by looking at the first generation of community networks which appeared in the 1990s. Highlighting the change of technical paradigm brought about by the Internet and revolutionary tones that it entailed, we first consider the case of the French Data Network (FDN), a French community network. Founded in 1992, it was the first Internet access provider available to the general public. In this case-study, we look at how FDN navigated regulatory and technical changes in Internet governance at the EU and French levels. Second, we turn to Consume.net, a British movement tied to the London countercultural scene which appeared in 1999 and took advantage of the apparition of WiFi protocols to subvert incumbent telecom operators' hold on last-mile networks and promote a grassroots and locally-grounded approach of building and managing networks.

4.1 Birth, Downs and Ups of the French Data Network

At the end of the 1970s, personal computers were finally coming to France. Magazines specialized in computer cultures reported at the time that more than 100,000 machines had been sold in France (Thierry, 2012, p. 55). In 1985, an official report claimed that 860,000 households possessed a desktop device. And by the end of the decade, France would become the first European market for PCs. Over that period, the number of computer clubs also rose significantly.

This rise of computer penetration and its growing use was significantly facilitated by the government's voluntarist approach. In 1978, when France was still lagging behind, the Nora-Minc report called on the coming together of computers and telephone networks and would launch the unique experience of the Minitel (Gonzalez & Jouve, 2002). First intended as a way of granting to the public access to database, it would morph into a large-scale social experiment to turn it into a communication device, with the creation of France's earliest virtual communities. At the end of the 1980's, a quarter of French residents had access to the Minitel. Though less popular, other computer networks were also accessible through dial-up connections, such as Calvacom, launched by Apple, and the American College in Paris.

All of these early experiences of popular computer culture, with their novices and "enlightened amateurs", formed the background against which the Internet would sweep the country. In 1992, the Cold War officially came to an end at Camp David and, as Request for Comments 1366 underlined in October of that year (Gerich, 1992), the Internet was undergoing such a "growth and increasing



globalization” that it would soon result in a historical democratization of communications. But in December of 1992, the signing of the North American Free Trade Agreement formed part of a mounting wave of neoliberal commodification which would soon profoundly alter the Internet's political economy.

1992 was also the founding year of the first French citizen-owned Internet access provider, French Data Network (FDN). FDN was not only first French CN, but also the very first Internet access provider open to the general public – one that has survived to this day. Based on interviews with FDN's founders and leaders, this case-study retraces its success and failures in navigating an ever-changing techno-legal regulatory environment, and its increasing politicization. This case suggests the inscription of CNs in a wide advocacy movement – in this case the French Digital Rights movement – facilitates the political framing of a CN and leads to positive cross-fertilization between advocacy on the one hand and the development of alternative architecture on the other. It also shows the need for community networks to first and foremost respond to the basic connectivity needs of its members.

4.1.1 The Birth of a “Crazy Idea”: The Foundation of FDN

FDN was founded by Christian Paulus and a few of his friends, including Jean-Philippe Nicaise, whom he had met in the first French online communities and in the rising Parisian scene of computer enthusiasts. They had been exploring closed RTC networks like the Minitel, Calvacom, as well as the more open Usenet since the mid-1980s. In these “virtual communities,” a lot of educational material and knowledge-sharing could be found. To them, these networks looked like a fantastic alternative to schools, giving people access to information they wouldn't be able to access otherwise, especially on Usenet (Paulus, 2016). The difference with closed computer networks like the French Minitel was clear, and the diversity and richness of content far greater in these open spaces.

But “joining in” these RTC networks was still a great challenge. At the turn of the decade, retrieving information from Usenet newsgroups over the UUCP protocol and exchange emails was still terribly long and expensive. Accessing these proto-Internet was a privilege reserved to those working in research and academic institutions. Some early commercial Internet service providers existed but their pricing models made them only accessible to a few businesses and to the rich. Some had managed to “hack” the Minitel by creating gateway services to other computer networks, but these services remained very confidential.

In February 1992, Paulus and his friends decided to move forward with a bold plan they had been pondering with for a few weeks (Paulus, 2016; Nicaise, 2016). Tired of waiting for public institutions and the few private companies operating closed computer networks to change their model to become more accessible, they decided to bypass them altogether. Their “crazy idea”, as they called it at the time, was to create an access provider that would directly connect to North



American servers where most of Usenet traffic was originated to carry it to their members. On February 12th, the clique met in a bar. Wanting to “open this emerging worldwide library to everybody,” they decided to fund a non-profit under the 1901 French law on the freedom of association.

In May of that year, even before the organization was formally created, they contacted UUNET, the U.S. service provider, to join the UUCP and SMTP crowd. And the next month, the French Data Network was formally created, with Paulus acting as the non-profit's director, and Jean-Philippe Nicaise as its treasurer.

The response among the early crowd of French computer-savvy people was immediate. Within two years, the number of member-subscribers across the country rose to 400, including about thirty for-profit and non-profit organizations who acted as proxies for their members. To communicate on UUCP and exchange emails on SMTP, they needed to subscribe to the incumbent telephone operators *France Télécom*, own microcomputers equipped with a modem and loaded with a UUCP free software like FreeBSD or NetBSD. Each of them paid an annual membership fee of 100 francs (15 euros) and a monthly flat-rate subscription of 180 francs for their dial-up connection with a generous data allowance.

The hub of FDN was located in Paulus' living room in Paris, and was formed by three NEXT computers and their attached UUCP modems, through which members would connect to the worldwide (mostly North-American) UUCP network. providing users with their own IP addresses, configurable email services. FDN also ran a file-sharing server from which members could download free software to manage their modem and configure their connection. The FDN community contributed to that software by writing bits of code, and translated English technical documentation and tutorials to make them more accessible to a French audience. Paulus even got national visibility among French Internet pioneers by making a translation of the Netiquette. Overall, things were operating smoothly, revenues were much better than expected and did more than cover for the expenses.

Soon, another opportunity arose. RENATER, the public state-owned national network for academic and research institutions, started promoting the promising Internet among the French educational and research world (see Schafer & Tuy, 2013). In his professional capacity, Nicaise was invited to join, and realized that RENATER was offering to subsidized Internet connectivity. So FDN took the offer. It reached out to RENATER later that year, highlighting their educational focus and the fact that their special prices for students and job-seekers. Within a couple of month, RENATER happily gave, for a symbolic price, FDN a special line of 64 kilobits/second to their data center open on the worldwide Internet, a CISCO router, a first batch of public IP addresses to connect their servers to the Net, as well as its FDN.fr domain name. The team was ecstatic and, around March 1993 after some engineering work, the new infrastructure was up and running, still on UUCP. Later that year,



FDN moved from UUCP modem connection to IP connections and was able to offer real Internet access, allowing to connect directly to any IP server of the global Internet.

4.1.2 The Emergence of Digital Rights Activism in France

By 1995, FDN's cofounders had moved to other adventures and were busy developing their careers in the booming tech sector (today, one of them currently works at *France Télécom's* Orange, another moved to California soon after the launch of FDN is now director of engineering at Google). In late 1997, FDN members elected a new young president named Benjamin Bayart and open a new period in the history of the organization.

In the second half of the 1990s, EU policies forced incumbent network operators to open up their legacy infrastructure to small and innovative ISPs. In a context of rapid privatization, regulation promoted both the unbundling of last-mile as well as facility-based competition and new companies began laying down their own network infrastructure (Michalis & Ruhle, 2001). This, along with the explosion of mobile telephony and the democratization of Internet access, made liberalization look like a success story: innovation in telecom services was dynamic and fast-paced, prices were low, and the number of Internet users surged.

In this context, the mid-1990s as an era of “renaissance” for what Stefania Milan (2013) calls “emancipatory communication practices.” Echoing the pirate radio movement of the late 1970s and 1980s, the Internet sparked a political movement of tech activists whose aim was “to bypass the politics of enclosure and control enacted by states and corporations” on the public sphere. They wanted to achieve a “structural reform at the grassroots level through the creation of autonomous spaces of communication. By emancipating other social actors from commercial communication services, they aimed to empower them to articulate, voice and convey their own messages without filters” (p. 10).

In France, this crowd of early Internet activists worked to provide Workers Unions and organizations involved in the Global Justice Movement with secure e-mailing, free hosting services, as well as innovative web-publishing tools. This led to forms of cross-fertilization: these new links helped to politicize these techies, while they also educated these older citizen organizations about what they saw as the Internet's original ethos and governance model: a network of equal peers communicating freely on a decentralized, end-to-end architecture, exerting bottom-up control on the tools used for communicating, in particular through free software (Coleman, 2005).

But the democratization of Internet access also entailed less rosy consequences, such as the development of e-commerce and online advertising. What is more, still in 1996, the French government initiated its first regulatory crackdown to boost its censorship and surveillance capabilities, in a context where the media contributed to the demonization of this new online public sphere. These trends added to the widespread feeling among the crowd of online pioneers that



something nascent and beautiful was about to get dirtied by the old and corrupt world of money and politics, and which led to the creation in 1996 of the *Association des Utilisateurs d'Internet* (AUI) – the first French organization aimed at defending the civil rights of Internet users (Chemla & Bayart, 2016).

At first, FDN may have been one of the few ways by which it was possible to join the Internet. Within a few years however, partly thanks to FDN's new president, the non-profit became loosely connected to this emerging scene of Internet activists. For FDN's active volunteers, this citizen-owned and run Internet service provider seemed to be a natural avenue for resisting the trend towards commodification and political control over this communications architecture (Bayart, 2016). Through the leading members of the emerging digital rights scene did not necessarily perceived FDN's political potential, all shared the goal of equipping newcomers with the technical know-how and to cultivate an understanding of the Internet's political importance, allowing for the emergence of a “critical Internet user” (Paloque-Bergès, 2015).

4.1.3 Maintaining Technological Relevance: A Condition for Political Efficacy

But FDN had more pressing challenges than joining the fights for civil rights online. The more pressing question was how to maintain FDN's core activity, i.e. the provision of Internet access. To connect its network to the global Internet, it soon had to switch. Like fiscal authorities around the same time, RENATER decided that FDN was actually operating a commercial service and decline to continue dealing with the non-profit. FDN therefore switched from RENATER to Oléane, a business-to-business telecom operator who also provided batches of IP addresses.

But keeping pace with commercial providers proved challenging. And so with take-off of Internet access markets from 1996 on, a sizable portion of FDN members – around 10% of members in 1996 alone – left the group to join commercial alternatives that provided faster and cheaper Internet access, even though the later often replicated the walled-gardens and deprived users from the technical control over their communications (Rebillard, 2012). On the one hand, that meant that those who stayed were the most committed. On the other, FDN's user base was decreasing. Like it would later be the case for other Web-based services used by activists (Uldam & Askanius, 2011), community networks were among the first of many services and tools of the early Internet to face – and suffer from – a wave of commodification.

What is more, the new regulatory framework created a set of new hurdles for FDN. First the European directives that deregulated telecom markets led to a the imposition of a new legal definition for telecom operators, as well as new obligations. To be registered, FDN had to pay an annual registration fee of about 20 000 euros to the newly created national regulatory authority. The fee was designed for commercial players, and for FDN it was of the same order of magnitude as its revenues. To avoid this crushing financial burden, FDN declined to register and chose to remain



under the radar (Bayart, 2016). Other alternative networks could not, like some small and medium businesses providing Internet access and which were not able to survive under these conditions.

Around 2005, when speeds increased by orders of magnitudes thanks to the deployment of ADSL technologies, the situation worsens. By that time, FDN had only 40 member subscribers, all of which kept using their slow FDN access only for very simple and old applications. The bulk of their Internet use relied on mainstream access providers.

To remain relevant in this new technological paradigm, FDN had to upgrade its infrastructure and move to ADSL as well. In theory, EU directives forced *France Télécom*, the incumbent, to open its networks to competitors, but in practice its pricing model made it way too expensive for a player such as FDN which was expected to invest tens of thousands of euros in the last-mile portions of the networks where it had subscribers. Fortunately, Benjamin Bayart knew very well how ADSL worked. Since 2003, he had been working at a mainstream operator on this technology, setting up their ADSL system (Bayart, 2016). After 18 months of doing some internal lobbying, of finding and talking to the right people, he managed to find someone in the business department who was ready to lease parts of its network to FDN through what are called “bitstream offers”. Rather than having to deploy its own infrastructure in the last-mile networks, FDN could rely on that on this much bigger operator in exchange of a per-subscriber fee. So in 2005, FDN was back in the game at the technical level and was again recruiting new members.

Under these new conditions, time would soon be ripe for a revival of FDN. Understanding what drove this movement remains a question to be investigated. But to be sure, evolutions in Internet politics – namely the increasing concentration in telecom markets, the prominence of US-based online services and the vertical integration strategies of telecom firms moving into the media sector, the growing debate around online copyright – gave a new impulse around Internet policy issues, such as network neutrality, online censorship and surveillance.

In 2007, Bayart became more politically involved, addressing crowds of free software activists during public events. In one famous conference that gathered much viewership online, Bayart described the Internet’s enclosure and growing centralization as a move towards a “Minitel 2.0”. This conference stroke a chord in an activist milieu that was getting increasingly politicized. A year later, a new digital rights advocacy group, *La Quadrature du Net* (LQDN), was founded in France by Free Software activists to occupy the political space that had been left vacant by the end of the AUI and other similar groups around 2002, with Bayart originally acting as LQDN’s treasurer.

Soon, coupled with the growing ability of a better-resourced digital rights movement to frame these issues at the political level, Bayart's advocacy in favor of non-profit Internet access providers led to a revival of the burst of movement a community networks across France. In 2010-2011, many events impacting the digital rights debate and FDN leaders played a role in them. Such was the case



during WikiLeaks Cablegate, where FDN created a mirror site of WikiLeaks and helped channel donations to Julian Assange's organization to circumvent the banking blockade it was subjected to. During the Arab Spring, FDN set up modems and share numbers to allow Egyptian protesters to connect to the Internet through dial-up connections during the Internet shutdown, and partnered with Reporters Without Borders to provide VPN services to political dissidents. Echoing the glorious times of the Free Radio Movement, FDN formed part of a global crowd of activists resorting to decentralization and creative networking to help others circumvent the repressive policies of state authorities.

This was the moment when Bayart and other FDN active volunteers went on to motivate people across France to join and start building their own community networks. Rather than growing a single organization, or even the handful of other community networks already existing across France at the time, the choice was made to "swarm" in a decentralized mode by creating many local non-profit organizations, all under the French 1901 law on the freedom of association.

To coordinate these developments, share expertise and organize the legal and political representation of the movement, an umbrella non-profit organization was also created: The *Fédération FDN* (or FFDN). Today, FDN has 500 members, 300 of which are also ADSL subscribers. As for the Federation, it is now comprised of 29 local community networks across France operating in both rural and urban areas, using both wireless and leased landline networks, and whose combined number of subscribers is around 2500.

Today, important synergies are being developed between FFDN members, who enjoy a local foothold and have a real expertise in telecom matters, and advocacy groups like *La Quadrature du Net*. For French community networks, this cross-fertilization holds the promise of increasing their influence on regulatory matters at the French and European levels, better understand their legal environment and be able to engage in strategic litigation (FDN and FFDN have worked with *La Quadrature du Net* since 2015 to litigate against Internet censorship and surveillance, but has yet to litigate in matters more closely related to telecom policy). This in turn, will help create the regulatory conditions favoring the values of communicational autonomy that it holds dear (i.e. on issues such as data retention or Net neutrality).

4.2 Internet on the Airwaves: The History of Consume.net

In 1984, that is twelve years before France privatized its own legacy networks, the Thatcher government sold some of the Crown's jewels by passing the Telecommunications Act and privatizing British Telecom. Neoliberalism was sweeping the country, and would take with it another British legacy, the left-wing Labour Party. In the 1990s, as neoliberal policies spread to the whole world, Tony Blair joined the frenzy. Successfully, he offered voters a third way between



social-democratic and conservative politics. But in the U.K. as elsewhere, this foreclosure of the institutional political scene was contested by the new emerging and transnational Global Justice Movement, which pioneered many activist uses of the Internet.

In late summer 1999, two British artist-designers – James Stevens and Julian Priest, each in their early thirties – came up with their own “crazy idea” for a citizen network. The pair had met at Backspace, a hub for artists, designers and entrepreneurs that would likely be branded today as a hackerspace. Backspace had been founded in 1996 and for the three years of its existence acted as a cultural hub on Clink Street, on the banks of the Thames next to the London Bridge. Although its protagonists were not trained as engineers, nor did they identified as “techies.” But they had an understanding of the Internet's potential for alternativeness. As James Stevens recalls, at Backspace “the spirit of free networking and collaboration spawned by its passing lives on in the flow of activity and passion for [self-publishing platform] IndyMedia and peer-oriented exchange [...]” (Garrett, 2006).

At first, the project was about sharing a connection and laying out a fiber optic cable between a higher floor of Backspace and the building across the street. But they realized that old planning laws forbade the deployment of a telecom cable in a public space to entities that were not registered as “public telecom operators” (under the 1984 Telecom Act). Thankfully, around the same time, a new networking technology was appearing: Wireless Local Access Network (WLAN) and a protocol numbered 802.11b – the underlying technologies of WiFi.

Active between 1999 and 2003, Consume would soon confirm that technical and regulatory innovations – in this case the opening up of new frequency bands to unlicensed use for WiFi communications – can significantly alter the political economy of communications network and favor the development of alternative networks.

4.2.1 Building a Network and a Community on Thin Air

Now, Apple was advertising its new Airport device. Since the 1984 restrictions on public networks did not apply to radio transmissions, Stevens and Priest had found a way to circumvent the law to share Internet access. Soon, they realized that they could do much more than that. As James Stevens would tell CNN three years later, “anyone with a little techie knowledge can buy a simple base station for just few hundred pounds which acts as the co-coordinator for a wireless network.” He continued: “Then any user wanting to access this needs a card that links your laptop to the network which can be bought for as little as 100 euros” (Heikkila, 2002).

Because it was using the unlicensed 2,4Ghz band, WiFi “could be thought of as the networking equivalent of CB radio” claimed Consume's founders. It allowed for the building of an autonomous network where individuals, groups or organizations would relay Internet traffic to one another through their antennas. Functioning as a free, open local network, Consume could relay traffic to



the global Internet through its members who had their own connection at mainstream ISPs and were willing to share these gateways. In that way, the network would “re-distribute access” while “promoting common ownership” of the network (Priest, 2000).

WiFi had another advantage: Although it was certainly the easiest configuration to put in place, the network did not need any fixed routing table between the nodes of the networks (antennas and attached access points). The protocol theoretically allowed for ad hoc reconfiguration, based on the location of new nodes. Thanks to mesh, a longer term project was made possible: the possibility of a flexible, self-configuring and resilient network was on the horizon, one that would grow along with the number of people and device willing to join in. The technology was not mature enough at the time (it barely is today), but the idea of grassroots networks based on mesh was already there.

The framing of the political potential of Consume was also linked to the idea of local network, against the global gigantism of the Internet. According to a WiFi activist quoted in 2002 in a Guardian article, “the real power of these networks will be manifest when local nodes connect to one another, so rather than offering isolated local gateways to the Internet, they provide an alternative public network for local communities (Mortleman, 2002).

For Armin Medosch (2014), a protagonist and prescient analyst of wireless community networks, Stevens and Priest understood Consume.net as “a techno-social system from the very start”: “Their ideas combined aspects of social and technological self-organization. In tech-speak, the network they aimed at instigating was supposed to become a Wide Area Network (WAN). But while such large infrastructural projects are usually either built by the state or by large corporations, James and Julian thought that this could be achieved by bottom-up forms of organic growth [...] Individual node owners would set up wireless network nodes on rooftops, balconies and window sills. Each node would be owned and maintained by its owner, who would also define the rules of engagement with other nodes. The network would grow as a result of the combination of social and urban topologies.”

After a few weeks and months of trial and error with the help of skilled hackers, Stevens and Priest managed to create a local network involving dozens of participating organizations and individuals. In 2002, a Guardian journalist would describe his own experience in setting up his wireless node in these terms:

“Setting up a wireless access point for your street is less trouble than you might think. It requires an old PC (a 486 or better, so I mean “really” old), a couple of network cards – one wireless – and some patience. The Consume.net people can show you how, as can the many community wireless organizations around the world. I had some old equipment hanging around, and it’s great to put it to some use. All I then had to do was point the antenna out of the window in the direction of a comfortable spot, drop leaflets through the doors of my neighbors and register myself on the Consume database. It was from the Consume database



that I had my first visitor. Seeing a flickering light on my network hub, I knew someone was using it. It was Doc Searls, co-author of the Cluetrain Manifesto and top U.S. blogger, who is in Britain for a few days. "The Revolution is on, People!" he was to write later that day, "I haven't felt this jazzed and with-it since the Sixties." Since then, he and many others have used the spare bandwidth on my internet connection" (Hammersley, 2002).

Although there was no prior art or knowledge on which to rely, it was not the only such endeavor. Also in 1999, Adam Burns and others independently launched Free2Air to provide a radio backbone between different artistic hotspots across London. The idea of “free networks” was in the air, and Consume helped gave it the political framing that made it more salient. Soon, dozens of similar local initiatives spread across the United Kingdom and elsewhere in Europe. The know-how on how to create local radio networks was fast spreading, these groups' techies were busy refining methods for dynamic routing as well as free hardware-software tools. Meanwhile, the media attention devolved to the WiFi grassroots revolution was growing.

4.2.2 Advocating for Free Networks Against the Incumbent

Consume.net did not have nor need any bylaws, only a mailing-list. It was all about self-organization. Thanks to radio, the goal was to restore the fantasied original promise of a bottom-up communication platform. This was the time of the dotcom bubble, and telecom operators were rushing to reap these new markets, Consume aimed to go against the trend of the Internet commodification. It was entitled self financed by its users, and although one foundation approached the group with a very generous proposal to launch the project on a bigger scale, the fact that the group was not incorporated prevented the founders from even seriously considering the offer (incorporation, even as a nonprofit, was apparently out of the question).

Contrary to other early community networks, the motives of Consume.net and the other similar initiatives to which it was connected were political from the start. And there was at least one common adversary: the incumbent operator British Telecom (BT). Consume.net. For them, the Internet was democratizing access to communications in ways never seen before, but all these promises were being held back because of the market structure of the telecom markets where the monopoly of BT on last-mile networks stifled competition. There were alternative commercial Internet access providers, but there were dependent on BT's infrastructure. BT's pricing model was still based on per-minute billing, which meant that it had no incentive to invest in faster speeds, and in particular in the development of ADSL. Quite clearly, slower speeds meant more time loading web pages and sharing files, which meant more money for the incumbent.

Against this backdrop, Consume.net was about “defining a sustainable network development” by circumventing BT's last mile copper infrastructure. The state aims was therefore to build WiFi radio links to “optimize infrastructural expenditure” and “increase network speed.” Eventually, by recruiting enough participants, Consume.net would come to represent significant traffic and become



large enough to exchange traffic on fairer terms with other networks, therefore “reducing connectivity costs” for all participants.

Stevens explains that around that time, BT even lobbied to extend the 1984 rule regulating the deployment of wired infrastructure across the public realm to wireless transmission. This led Consume and other free networks activists to work with Campaign for Unmetered Telecommunications (CUT). Founded in 1998, this pressure group was advocating against the per-minute billing model which was still dominant in Europe at the end of the 1990s, and boasted 300 members as well as several corporate supporters like AOL, UK and Intel.

In June 1999, they had taken part in a EU-wide 24-hour-long boycott of the Web. The organizers called for the introduction of the flat-rate schemes for local calls – which was by then the dominant model in the U.S. and played a significant role in the take up on Internet connectivity and the development of online services. According to them, Internet users [should] dial up to Internet Service Providers using a telephone modem, without worrying about the clock ticking and charges ratcheting up.” Looking forward, they also asked for the “quicker introduction of modern access methods such as xDSL, cable modems and satellite access, which do not use the telephone modem and are a great improvement on it for users.” Their campaign had been effective in accelerating the spread of flat-rate schemes. Before CUT dissolved in 2001, one of their last stunt was to help Consume activists fight BT to reach out to policy-makers and telecom regulators to ensure that WiFi sharing would remain legal for citizens (Ziya, 1999).

These contacts were successful to the extent that wireless CNs were not outlawed or suffered new regulatory restrictions. It created a contact channel between Consume's activists and policy-makers. In rural areas where proper infrastructure was crucially lacking, local groups replicating the Consume model also negotiated with local city councils.

4.2.3 Consume.net's Legacy and Internationalization

The Consume.net experiments, and many other similar initiatives, slowly ended in the course of 2003, as the main organizers' changing interests pushed them to move on to other projects. Some launched commercial ventures around WiFi (looking back, Stevens speaks of the “self co-optation” of his fellow free networkers). Others joined other civil society groups keen on pushing the Blair government to deliver on its promise to bring broadband access to towns and villages across the U.K., and in 2003 started the Access to Broadband Campaign with people from CUT. Others started spin-offs like Community Wireless Network, a group of community organizations teaming up with small local access providers to resolve connectivity issues in rural areas.

Today, the British landscape for community networks has lost much of its vivacity. In part, it is due to the fact that it is the very idea of grassroots open WiFi that has been co-opted by big players, for instance with BT's Openzone network of WiFi hotspots, or more simply out-competed by the



development of triple-play offers and high-speed mobile connectivity with 3G and 4G, which have created the incentives for people to pay for individual subscriptions rather than cooperating to share their gateways to the Internet.

Interestingly, it is beyond British borders that Consume's legacy is the most enduring. Two of the most dynamic and large-scale community network in the world are Freifunk and Guifi, in Germany and Spain respectively. Their outbreak in the early and mid-2000s was directly influenced by Consume. In 2002, Consume people and their connections in Berlin organized the BerLon conference, bringing together people from Consume and local Berlin groups interested in WiFi technologies. “BerLon provided the contact zone between Berlin and London,” says Medosch (2014), who took part in the event. “This set into motion a process which would eventually lead to a large and successful community network movement.” BerLon marked the birth of Freifunk which today boasts around 45,000 open access points across Germany. Later still, this nascent transnational network of WiFi activists helped Guifi's founders put up their first wireless nodes in rural Catalonia.

4.3 Conclusion: Reflecting on the First Generation of Community Networks

In this conclusive section, we aim to draw lessons on the first generation of community networks by comparing FDN and Consume.net. We address what by now should be recurring themes, namely the diversity of motivations and pricing models, the issue of geographic scope with the challenge of scaling from the local to the global, and finally the importance of political advocacy as a core component of the sustainability of CNs.

4.3.1 Diversity of Motivations and Pricing Models

Like with other alternative networks across history, one of the first striking observation is the diversity of model in Internet community networks. In this respect, there is nothing new. On the one hand, we find FDN, founded by IT specialists and computer experts coming out of middle class families and – for some of them at least – educated in France's top elite engineering schools. During FDN's founding years, its core volunteers are all white and males, whose motivation was to run their own ISP when no other existed and reduce the price of joining this new online world. They would go on to pursue their careers in the booming tech sector, and for some of them at least, in some of its most infamous multinationals. Though it apparently did not boast great ethnic and cultural diversity, Consume.net had a much more alternative ethos: It was founded by counter-cultural artists whose understanding of decentralization and flat organizational structures matched the possibilities offered by new radio technologies at the turn of the second millennium.



The techno-legal governance of both organizations reflects these differences in motivations and ideologies. FDN had to rely on the leased landline infrastructures of major telecom operators and never developed an interest in WiFi technologies (to the difference of other, more recent French community networks), and would even pioneer flat-rate pricing models which would later be adopted by major market actors. It was incorporated as a non-profit under the French law on the freedom of association and, when doing so was possible, it favored the possibility of being legally recognized as a Internet access provider by regulatory authorities. The market and regulatory constraints drove its growing politicization. Consume.net on the other hand, was very political from the beginning and sought to use the spectrum commons to bypass almost entirely market actors. It had no bylaws and no pricing scheme: It was based on an almost anarchic ethos whereby people would freely contribute bandwidth and equipment. Here, it seems that market and regulatory constraints drew a lot of energy from the group, which seem to have play a role in what Stevens (2016) calls the “self co-optation” of its most active participants, rather than sharpening their collective political engagement. Thankfully, despite fundamental differences, both models have had enduring legacies.

4.3.2 The Stake of Networking Costs, From the Local to the Global

Another striking difference between these two early CNs is their difference of focus in scale and geographic reach. FDN essentially started as an effort of mutualization aimed at lowering the cost of accessing traffic originated in the US. From the beginning, relying on the national infrastructures of incumbent operators (at first the telephone network), it was – and still is – accessible on a national basis. In a way, it was a national effort aimed at bridging the gap between national legacy networks and the emerging global online world.

Consume.net, on the other hand, brought a major innovation to Internet politics by framing local Internet networks as the right level to organize a community, going against the globalizing tide. This move was in part a reaction to a context where global connectivity was increasingly affordable (thanks in part to the effort of groups like CUT), with the Internet being fast-molded into the macro-economic structures of global capitalism. At a time when the Global Justice movement was gaining traction in its opposition to neoliberal globalization, Consume.net reflected a similar criticism, seeking to embody a form of resistance to the growing commodification of the Internet by putting emphasis on locality. The irony was that such initiative was made possible by a technical innovation – WiFi – produced by regulatory decisions made by an international and corporate-friendly organization like the International Telecommunications Union, and first made available to the general public with the launch of Apple’s Airport device.

Of course, Consume.net was aware of the fact that the local community networks they were building needed to be connected to the global Internet to maintain relevance. Unlike the Independents of early telephone networks in the U.S., long-distance interconnection was a given, and that which needed to be counter-balanced. Like for FDN, taking part in the global Internet was



costly. Sharing costs was a way of making it more affordable, and both FDN and Consume.net understood that the more participants joined, the cheaper the community's bandwidth would be. In that respect, as noted by MacKenzie (2005), Consumet.net was also key in early attempts to “engineer the connection of local networks into extensive *ad hoc* informal meshes of wireless nodes across local and national boundaries” (p. 281). The joint effort took the form of the PicoPeering Agreement (PPA), a document first presented in 2003 which aimed to safeguard the values promoted by Consume.net and the growing movement around wireless CNs. The first version of the agreement opened on these lines:

“There are now many community networks, but they are separated geographically and socially and do not form a coherent network. This document is an attempt to connect those network islands by providing the minimum baseline template for a peering agreement between owners of individual network nodes – the PicoPeering Agreement.

The PPA is a way of formalizing the interaction between two peers. Owners of network nodes assert their right of ownership by declaring their willingness to donate the free exchange of data across their networks” (PicoPeering Agreement v.1, 2003).

The PPA held the potential of creating a network of community networks that would represent “a viable and competitive supplement to the internet, but one where the system of ownership is decentralized enough for it to remain a “common,” according to a volunteer involved in the project (MacKenzie, 2005). Again, though the move from theory to practice has since been somewhat disappointing, the original idea of a peering agreement that would allow local community networks to federate at the local, regional and global levels lives up to this day. As De Filippi and Tréguer write (2015), the PPA suggests “a new model for interconnection, one that blurs the distinction between the backbone and the last-mile and federates networks in a decentralized manner, extending in every direction and potentially spawning over whole countries and even across borders.” Freifunk has used the PPA as its model license for federating the nodes composing its network, both at the local and regional level, but also at the national scale. Another experiment of this kind was carried on in 2012, when community networks FunkFeuer from Austria, NEDWirelles from Croatia, and Wlan Slovenija established a wireless backbone spanning across geographical borders to create a direct link between them (Musti, 2012). These experiments, pioneered in the early 2000s, show that CNs can bring innovative techno-legal answers to the challenge of bridging the local and global scale in connectivity needs.

4.3.3 Regulation and the Importance of Advocacy for Alternets’ Sustainability

One last important lesson to draw from these short histories of FDN and Consume are their relationship to political institutions.

FDN approached partner public institutions like RENATER who was operating France’s network for academic and research institutions. Later, the deal was severed because RENATER decided that



FDN did not, in fact, qualify as an educational non-profit. The move coincided with the opening up of the country's telecom sector to market competition, which after a surge in the number of access providers led to a progressive and fast-paced recentralization of the market. FDN established loose connections with the emerging French digital rights scene in the second half of the nineties, which proved important to frame the political importance of the lone French CN and motivate some of its user to get involved in Free Software and Digital Rights advocacy efforts. However, at least until the late 2010's, FDN never really established a strong advocacy capabilities to influence increasingly hostile telecom policies to make room for alternative networks in the regulatory landscape. Although policy favoring the unbundling of last-mile networks allowed FDN to upgrade to ADSL technologies, the group played no role in pushing for such a policy and failed to organize to protect these "open access" policies in the era of fiber-to-the-home networks. It was only when a strong digital rights group emerged in France after 2009, and thanks to the launch of an actual CN movement in France from 2011 on, that FDN started getting more involved in policy discussions, both directly and indirectly (by sharing expertise with other groups), in particular around the issue of Net neutrality. Although FDN has become an important figure in the French debate on civil rights online (to the point of engaging in litigation against Internet surveillance policies, for instance), to this day it has yet to organize a sustained and coherent political effort aimed at influencing telecom regulation.

Consume.net was political from the start, but through a form of political engagement which did not naturally push it to talk to policy-makers. The anarchist, oppositional ethos of its founders did not predispose the group to reach out to the latter. However, it was able to rely early on consumer pressure groups, like the CUT campaign, to join advocacy efforts which had direct relevance to them. A few months later, when British Telecom launched a lobbying effort aimed at outlawing the broadcast of WiFi signals across the public realm, Consume.net's volunteers had the expertise, resources and connection that helped them preempt such regulation.

Each of these two early CNs have their paradox. On the one hand, FDN offers a model of a CN whose self-understanding has become rooted in civil rights discourse and a broad political agenda around "Internet freedom" while remaining at a distance of policymaking in telecom regulation. On the other, Consume.net rejected the human rights rhetorics (today, Stevens (2016) calls this line of discourse is "American bullshit"), but --with the help of other groups-- did not shy away from campaigning on delimited telecom policy items to achieve significant change in regulations (e.g. flat-rate pricing schemes). For contemporary CNs, there may be room for a third way, a middle ground where a pragmatic discourse on human rights online can be reconciled with effective campaigning and engagement with telecom policy-makers. Freifunk seems to be a good example of such middle ground, and FDN now seems to be moving in that direction as well. The history of CNs therefore points to the importance of alliance with advocacy and pressure groups as a way of anchoring CNs in a political movement and helping them develop resource for political mobilization.



Finally, both examples suggest that one of the CNs remain highly dependent to market regulatory and business developments. FDN's rises and falls are closely linked to the (in)ability of traditional business players in the telecom market to respond to connectivity needs, or to regulatory authorities' support (or lack of thereof) for meaningful competition and diversity in telecom markets. The same goes for Consume.net, who benefited from the opening up of WiFi frequencies and helped frame the potential of WiFi to subvert part of the political economy of telecommunications. However, within a few years, it would see the idea of free WiFi hotspots co-opted by restaurants, hotel chains and telecom operators (with BT's Openzone hotspots for instance) and the "self co-optation" of those of its participants who went to market their technical skills in the tech and telecom sectors. As De Filippi and Tréguer write, in a sector where innovation is fast-paced, "[political] motives are not in and of themselves sufficient for the network to scale up beyond a restrained community of highly engaged individuals with strong ideological values." In order to survive and grow, "these community networks must also provide a service that is considered at least as good and preferably better than that of mainstream ISPs" (2015, p. 4).



5 General Conclusion: Drawing Parallels and Lessons From the History of Alternative Communication Technologies

As a general conclusion to this report, we propose to develop general insights that can inform contemporary debates on alternets by drawing parallels between our eight historical case studies and the issues faced by today's CNs. Of course, such exercise is risky business. If communication technologies are shaped by their environment, it necessarily implies that all case studies are somehow unique as they belong to very specific contexts. In this sense, all parallels we can offer are nothing much than parallels as the past and the present never quite coincide. But the latter is eventually the starting point of endeavor. In that spirit, French historian Nicole Loraux advocate for a "reasoned used of anachronism" insisting that, when working in a regime of anachronism, there is much "to be learned from the process of returning to the present" (2005, p. 135). In that spirit, while remaining wary of the risk of overemphasizing historical continuity, we seek to enlighten present staked by drawing lessons from the past.

5.1 Local and Global Components in Alternets

A first lesson that can be drawn from our journey in the history of alternative networks is the tension between the local on the one hand, and the national and global dimension on the other. Today, different framings can be found in European CNs, and the tension between the local and the global unfolds in at least two distinct ways. First, in the role that the network plays for a local community. CNs like Santaporo.gr (analyzed by netCommons in deliverable 1.2) are built by a small rural community in Greek mountains, and is primarily used for local applications (knowledge and skill sharing within the village, for instance). Others like FDN think of themselves as a community and work as such, but the use of the network mimics that which can be made of the global Internet. In a way, these differences echo the way some Independent telephone companies in the late-19th century U.S. used this new technology, with the network serving to strengthen communities ties (for instance through part lines). On the other hand, many of them quickly felt ne need to provide long-distance connectivity, much in the same way as AT&T.

Second, there is tension found in the political economy of the global Internet. When CNs send out their traffic to transit operators connecting them to the rest of the world, they have to pass agreements with large-scale corporations that do not respect the values they hold dear. Even through global (or transit) telecom markets are much more competitive and diverse than last-mile networks (often run by small oligopolies) – and do not therefore represent an imminent threat –, history teaches us that scaling up is fundamental in ensuring the sustainability of these promising endeavors



(see, for instance, how the U.S. telephone independents' failure to cooperate to build long distance networks weakened their utility and enabled AT&T to frame itself as a legitimate hegemon to realize the full potential of the telephone; how the compromise made by local telephone networks in France with the central state eventually led the latter to recentralize the network around Paris rather than developing regional connectivity around regional urban centers; or conversely, the success of the Swedish cooperatives in scaling up at the inter-urban level by setting up appropriate coordination mechanisms between them).

These tensions between the local, national the global geographies of alternative networks begs important questions on how to articulate these various scales. At the organization level, CNs should seek to nurture and maintain strong communities ties, using the communications infrastructure to transform and improve community life, enable alternative urban or rural experiences that binds together local polities. On the other, they also need to spread and grow to satisfy their participant's desires for national and global connectivity through arrangements that preserve their values, or risk being outcompeted by traditional actors. Consume.net and other early wireless CNs succeeding in imagining a way to reconcile the best of both worlds, from the local and to the global, through the PicoPeering Agreement. As we have seen, the latter is now providing a model for the federation of local networks at the national scale, but also to the trans-nationalization of alternative networks. These endeavors should be encouraged, and existing local and national CNs interlinked at the European scale. Not only will these larger networks contribute to further contest the centralized political economy of communications networks. They will also spark increased dialogue between local and national CNs and contribute strengthen this emerging political movement.

5.2 Legal and Technical Codes' Effects on the Fate of Alternets

This history of alternative networks point to the importance of the process of co-shaping between the law and technology for the fate of alternative networks. These two different forms of code create and constrain the affordances for them.

Let us cite a few examples where the law and technology interpenetrated to open (or foreclose) a path for alternets. The case of early telephone networks show the importance of patents (or their absence) in hindering (or providing) small alternative players access to key technologies and shaping telecommunications markets. In the early 1970s, the end of the state monopoly over broadcasting in Italy let to a strong demand for radio broadcasting equipment, which in turn made such equipment available to activist groups in France and led to a movement that would eventually end the state monopoly there too. Later, the Free Radio movement would however become marginalized through legal reforms leading to licensing schemes that systematically favored commercial players over grassroots groups. In the 1990s, the ITU decision to open up WiFi frequencies to unlicensed use led to the introduction of new radio devices that allowed for



significant changes in the political economy of last-mile networks, sparking the so-called WiFi revolution that gave birth to the first Wireless Community Networks. Today, regulations like the 2014 European directive on radio equipment changes the liability regime for equipment providers and endangers the freedom of CNs to install new software on these device and serve their specific needs and values.

Sometimes, technology can be a substitute to the law or force changes to the law. In Sweden, where the absence of patents spurred the movement of Swedish cooperatives, it was a “technological ruse” of the Telegraph Board (rather than strict regulation that eventually put an end to the movement. In other cases, it allows to escape the law altogether. Pirate and free radios used radio to subvert the state monopoly from international waters or terrestrial hideouts. Consume.net could develop in the realm of legality because the U.K. 1984 Telecommunications Act did not foresee that radio links would soon be used for telecommunications networks and only banned the roll-out of landline networks on public land. In other words, technology might be use to exploit some of the cracks of the legal system or serve as a way to circumvent it altogether, either in favor or against the interests of alternets.

These general remarks point to the fact that law and technology are “master regulators” of alternets, with law being the most important because it can mandate technological change, but technology being the primary driver as it is out of technical feasibility and economic convenience that alternative communication means and strategies emerge. They suggest that CNs should organize to make, establish, and maintain reflexive strategies than can help them influence technological and legal developments. As a side note, the influence of alternatives on law and technology is warranted by the simple fact of introducing new communications practices. As Mattoni (2013) points out, communication technologies give social movements new possibilities of expression and organization, and as such are shaped and appropriated by social movements in innovative ways which sometimes anticipate future uses. The introduction of flat-rate pricing schemes by the U.S. independents or FDN, which were later appropriated by the market, is one illustration.

5.3 Avoiding the Co-optation of Alternets

This last point leads to another insight, namely the fact that alternets are likely to be co-opted by market actors or the State. Again and again, we have seen alternative networks or some of their key players being swallowed up by the very actors, structures or economic logics they were serving as an alternative for.

Co-optation can take many forms. The first U.S. independents that sold out to AT&T weakened the whole movement and provided further justifications for lawmakers to sanction what was becoming AT&T’s de facto monopoly. Local authorities in France were from the start ready to devolve their



telephone networks to the State, but they eventually found out that the later performed much poorly in maintaining and expanding these networks and that co-optation by central authorities came with important drawbacks. For Radio Caroline, as soon as the BBC launched new channels, they hired former star hosts of the pirate stations. For Radio Verte and was not co-opted by market actors, one could say that the movement is responsible for breaking the state monopoly over radio and for the creation of several private stations. The “self co-optation” of many of Consume.net and FDN’s founders also suggests that when volunteer-based, a network commons will find it difficult to sustain itself and grow.

For contemporary CNs, this shows the need to develop the adequate resources to ensure their resilience in the face of an often very hostile economic and political environment. Unfortunately, our case studies do not necessarily show the right way to tackle this challenge. But fortunately, existing CNs are proving innovating in their approach to these issues. Guifi has already proved very innovative in their partnership with both private and public entities, leveraging taxpayers support as well as business incentives as a way to grow the commons. Today’s CNs often rely on the generosity of some of their active participants, some of which are small-and-medium size businesses to have material and technical support. Others manage to extract significant resources for investing in the networks even as they provide very cheap service to their member-subscribers. But overtime, if these networks are to grow, they need to become more professionalized, at least at some levels of their multi-layered organizations. A forthcoming netCommons, *The Multiple Aspects of Politics and Sustainability in Cns: Definitions, Challenges, and Countermeasures (D2.2)* will delve further into the challenge of building sustainable commons-based governance framework for alternative networks.

The historic analysis confirms and highlights the severity of the co-optation challenge, and our case studies on the telephone system point to the pivotal role of local authorities: in the U.S. for instance, local governments were hostile to Bell’s monopoly and did use their powers to the independent’s advantage. The strategy only failed when AT&T successfully teamed up with the Federal government and was granted the right to buy its competitors. Now, in her study of *Île Sans Fil*, a Montreal-based community Internet provider, Alison Powell (2008) convincingly describes how the establishment of a partnership between the city and *Île Sans Fil* constituted a turning point as it provided “sustainable funding and a more conventional organizational structure” (p. 1069). Guifi’s partnerships with local authorities also confirms the point. Getting the support of public authorities may offer interesting assemblage between the public service logic that the latter are supposed to embody, and the citizen-owned and managed nature of the commons. Building such “public commons partnerships” between the commons and a “partner state” (Kostakis & Bauwens, 2014) point to the need to overcome the latent distrust of many alternets actors towards state authorities, and more generally begs the question of the relationship of alternets to institutional politics and to the law.



5.4 Building Collective Cohesion When Facing Policy-Makers and Hostile Market Actors

Though often operating at a macro-scale, some of our case studies point at the formidable ideological diversities of alternets, as well as to the various relationships and strategies of alternet participants with regards to the political sphere and the action repertoires developed to influence them (the French Free Radio movement being particularly telling in this regard). As we have just seen, they also show the importance of the regulatory environment in creating the conditions for the rise and fall of alternets.

Stefania Milan (2013) provides an interesting typology to understand these varying approaches to politics in her analysis of “emancipatory communication practices”:

- *Beyonders* acknowledge the failure of dominant institution to answer their needs, and prefer to remain beyond the political system by focusing on the building of self-organized, decentralized and citizen-owned communications networks, the setting up alternative socio-political and technical arrangements which are framed as substitutes for the traditional top-down power dynamics.
- Another solution is to fight the problem as *outsiders*, pressuring both regulators and incumbents from outside the political system, by means of protests, demonstrations and other campaigning tactics aimed at voicing dissent against the practices of commercial ISPs and against the lack of appropriate regulation for community networks.
- Lastly, against the oppositional approach of outsiders, alternets can be defended from within the political system, as *insiders*, formally interacting public officials in order to make them support the deployment of community networks. This approach calls for the development and use of capacities for advocacy and mobilization, and the willingness to enter into negotiations with power-holders.

As our case-studies suggest, alternets originally start as initiatives developing *beyonder* strategies, taking the matter into their own hands to meet their need for communications. When the context turns more hostile, for instance when market and state actors coalesce to hinder their development or repress them, they develop oppositional strategies aimed at resisting this trend (legally and technically) and, in such context, generally manage to overcome their political differences. The harder part is to maintain some degree of cohesion when alternets need to articulate a positive agenda to policymakers. In France for instance, the Free Radio movement fractured over the question of capitalism and advertising. It is unclear if similar disagreements would surface if today’s European CNs were asked to articulate common visions and policy proposals regarding the future of the telecom sector and the role of the network commons.

What is for sure, however, is that all of our “lessons” so far point to the need for building forms of



political organization that can turn CNs into an actual social movement, with some degree of coordination and a common agenda. The question of how to achieve this will be further explored in task 1.3. For now, let us simply say that the history of alternets is an invitation for today's CN to proactively tackle these challenges. Like the European Union, they are "united in diversity," and they too need to create ad hoc organization mechanisms to strategically articulate various actions repertoires and build a common vision of what they want to achieve. Ideally, both ends of traditional "mediactivism" should be reinterpreted for their specific context: the critique that aims to empower individuals and collectives to disseminate their own voices and find way to meet their specific needs by mastering the roll-out of alternative networks, and the counter-hegemonic critique that tackle big structural issues, using these alternets as a symbolic resource to ward off the forms of domination and collusion diverting telecommunications and media policies from the public interest.



Bibliography

- Acland, Charles R., ed. 2006. *Residual Media*. Minneapolis: University of Minnesota Press.
- Anonymous. 1900. "The Telephone in Sweden." *Electrical Review*.
- Aronson, Sidney H. 1971. "The Sociology of the Telephone." *International Journal of Comparative Sociology* 12 (3): 153–67.
- Atton, Chris. 2005. *An Alternative Internet: Radical Media, Politics and Creativity*. Edinburgh University Press.
- Atwood, Roy A. 1984. "Telephony and Its Cultural Meanings in Southeastern Iowa, 1900-1917." USA: University of Iowa.
- Aulas, Pierre. 1999. *Les Origines Du Téléphone En France (1876-1914)*. Paris: Association pour le développement de l'histoire économique.
- Balas, Glenda R. 2003. *Recovering a Public Vision for Public Television*. Oxford: Rowman & Littlefield.
- Bailey, Olga G., Bart Cammaerts, and Nico Carpentier. 2007. "Series Editor's Foreword." In *Understanding Alternative Media*, ix – x. Maidenhead: Open University Press/McGraw-Hill.
- Bayart, Benjamin. 2016. FDN History. Face-to-face.
- Beauchamp, Christopher. 2015. *Invented by Law: Alexander Graham Bell and the Patent That Changed America*. Cambridge: Harvard University Press.
- Bekken, Jon. 1998. "Community Radio at the Crossroads: Federal Policy and the Professionalization of a Grassroots Medium." In *Seizing the Airwaves: A Free Radio Handbook*, edited by Ron Sakolsky and Stephen Dunifer, 29–46. San Francisco: AK Press.
- Benkler, Yochai. 2006. *The Wealth of Networks*. Yale University Press.
- Bennett, A. R. 1895. *The Telephone Systems of the Continent of Europe*. London. Longmans, Green.
- Bijker, Wiebe E., Thomas P. Hughes, and Trevor Pinch, eds. 1987. *The Social Construction of Technological Systems*. Cambridge: MIT Press.
- Bonow, Moritz. 1938. "The Consumer Cooperative Movement in Sweden." *The Annals of the American Academy of Political and Social Science* 197: 171–84.



- Brault, Julien. 1888. *Le Téléphone En 1888: Histoire de La Téléphonie et Exploitation Des Téléphones En France et à L'étranger*. Paris: G. Masson.
- Briens, Sylvain. 2003. *Technique et Littérature: Train, Téléphone et Génie Littéraire Suédois*. Paris: L'Harmattan.
- Cardon, Dominique, and Fabien Granjon. 2013. *Médiactivismes*. Paris: Presses de Sciences Po.
- Carey, James. 1989. *Communication as Culture*. Boston: Unwin Hyman.
- Carré, Patrice A. 1991. "Un développement incertain : la diffusion du téléphone en France avant 1914." *Réseaux* 9 (49): 27–44. doi:[10.3406/reso.1991.1869](https://doi.org/10.3406/reso.1991.1869).
- Casson, Herbert N. 1910. *History of the Telephone*. Chicago: McClurg.
- Chapman, Robert. 1990. "The 1960s Pirates: A Comparative Analysis of Radio London and Radio Caroline." *Popular Music* 9 (2): 165–78.
- Chemla, Laurent, and Benjamin Bayart. 2016. Internet activism in France in the 1990's Face-to-face.
- Coleman, Gabriela. 2005. "Indymedia's Independence: From Activist Media to Free Software." *Multitudes* 21 (2): 41–48.
- De Filippi, Primavera, and Mélanie Dulong de Rosnay. 2014. "Le Pirate Informatique, Un Explorateur Des Courants Juridiques Du Réseau." *Tracés : Revue de Sciences Humaines* 14 (26): 43–65.
- De Filippi, Primavera, and Félix Tréguer. 2015. "Wireless Community Networks: Towards a Public Policy for the Network Commons?" In *Net Neutrality Compendium: Human Rights, Free Competition and the Future of the Internet*, edited by Luca Belli and Primavera De Filippi, 261–75. Springer.
- Deflem, Mathieu, and April Lee Dove. 2016. "Historical Research and Social Movements." In *The Wiley-Blackwell Encyclopedia of Social and Political Movements*, edited by David A. Snow, Donatella Della Porta, and Bert Klandermans and Doug McAdam.
- Deuze, Mark. 2006. "Participation, Remediation, Bricolage: Considering Principal Components of a Digital Culture." *The Information Society* 22 (2): 63–75.
- Douglas, Susan J. 1987. *Inventing American Broadcasting 1899-1922*. Baltimore: John Hopkins University Press.
- Drew, Jesse. 2013. *A Social History of Contemporary Democratic Media*. New York: Routledge.
- Dunbar-Hester, Christina. 2014. *Low Power to the People: Pirates, Protest, and Politics in FM*



Radio Activism. Cambridge: MIT Press.

Eck, H el ene. 1991. "Radio, Culture et D emocratie En France : Une Ambition Mort-N ee (1944-1949)." *Vingti eme Si ecle, Revue D'histoire* 30 (1): 55–67.

Eco, Umberto. 2015. *How to Write a Thesis*. Cambridge: MIT Press.

Enzensberger, Hans Magnus. 2013. "Constituents of a Theory of the Media." In *The New Media Reader*, edited by Noah Wardrip-Fruin, 261–75. MIT Press.

Esmailzadeh, Riaz. 2016. *Broadband Telecommunications Technologies and Management*. Hoboken: Wiley.

Fari, Simone, Gabriele Balbi, and Giuseppe Richeri. 2014. "Telecommunications Italian Style: The Shaping of the Constitutive Choices (1850-1914)." In *Italian Technology from the Renaissance to the Twentieth Century*, 235–58. London and New Delhi: Bloomsbury.

Fischer, Claude S. 1992. *America Calling: A Social History of the Telephone to 1940*. Berkeley: University of California Press.

Frischmann, Brett M. 2012. *Infrastructure: The Social Value of Shared Resources*. Oxford University Press.

Frischmann, Brett M. 2012. *Infrastructure: The Social Value of Shared Resources*. Oxford University Press.

Fuchs, Christian. 2010. "Alternative Media as Critical Media." *European Journal of Social Theory* 13 (2): 173–92.

Gabel, Richard. 1969. "The Early Competitive Era in Telephone Communication, 1893-1920." *Law and Contemporary Problems* 34: 340–59.

Garrett, Marc. 2006. "Revisiting Backspace." *Frurtherfield.org*. March 3.
<http://www.furtherfield.org/reviews/revisiting-backspace>.

Gary, Brett J. 1999. *The Nervous Liberals: Propaganda Anxieties from World War I to the Cold War*. New York: Columbia University Press.

Gerich, E. 1992. "Guidelines for Management of IP Address Space." *Network Working Group. Request for Comments: 1366*. <https://www.rfc-editor.org/rfc/rfc1366.txt>.

Gonzalez, Antonio, and Emmanuelle Jouve. 2002. "Minitel : histoire du r eseau t el ematique fran ais." *Flux* n o 47 (1): 84–89.

Hammersley, Ben. 2002. "Start a Wi-Fi Revolution in Your Street." *The Guardian*, June 20, sec.



Technology. <https://www.theguardian.com/technology/2002/jun/20/news.onlinesupplement1>.

Hardin, Garrett. 1968. "The Tragedy of the Commons." *Science* 162 (3859): 1243–48.

Heikkila, Pia. 2002. "WiFi Activists on Free Web Crusade." *CNN*. November 29.

<http://edition.cnn.com/2002/TECH/11/21/yourtech.wifis/>.

Holcombe, Arthur Norman. 1911. *Public Ownership of Telephones on the Continent of Europe*. Cambridge: Harvard University Press.

Huber, Peter W., Michael K. Kellogg, and John Thorne. 1999. *Federal Telecommunications Law*. 2nd ed. New York: Aspen.

Huurdean, Anton A. 2003. *The Worldwide History of Telecommunications*. Wiley. Hoboken.

John, Richard R. 2010. *Network Nation: Inventing American Telecommunications*. Cambridge: Harvard University Press.

Johns, Adrian. 2009. *Piracy. The Intellectual Property Wars from Gutenberg to Gates*. Chicago: The University of Chicago Press.

———. 2011. *Death of a Pirate: British Radio and the Making of the Information Age*. New York: W.W. Norton & Company.

Kaijser, Arne. 1987. "From Local Networks to National Systems: A Comparison of the Emergence of Electricity and Telephony in Sweden." In *180-1980. Un Siècle D'électricité Dans Le Monde*, 7–22. Paris: Presses universitaires de France.

Kline, Ronald B. 2000. *Consumers in the Country: Technology and Social Change in America*. Baltimore: John Hopkins University Press.

Kostakis, Vasilis, and Michel Bauwens. 2014. *Network Society and Future Scenarios for a Collaborative Economy*. Palgrave Macmillan.

Land, Jeff. 1999. *Active Radio: Pacifica's Brash Experiment*. Minneapolis: University of Minnesota Press.

Lasar, Matthew. 1999. *Pacifica Radio: The Rise and Fall of an Alternative Network*. Philadelphia: Temple University Press.

———. 2015. "Is Pacifica Radio Worth Saving?" *The Nation*, February 11.

<https://www.thenation.com/article/pacifica-radio-worth-saving/>.

Latzke, Paul. 1906. *A Fight with an Octopus*. Chicago: The Telephony Publishing Company.



- Lefebvre, Thierry. 2011. *La bataille des radios libres : 1977-1981*. Paris: Nouveau Monde Editions.
- Lesueur, Daniel. 2011. *L'histoire Des Radios Pirates: De Radio Caroline à La Bande FM*. Rosières-en-Haye: Camion Blanc.
- Loraux, Nicole. 2005. *La Tragédie d'Athènes: La Politique Entre L'ombre et L'utopie*. Paris: Seuil.
- MacDougall, Robert. 2005. "Long Lines: AT&T, Long Distance Telephony, and Corporate Control." *Business and Economic History* 3: 1–27.
- . 2014. *The People's Network. The Political Economy of the Telephone in the Gilded Age*. Philadelphia: University of Pennsylvania Press.
- MacKenzie, Adrian. 2005. "Untangling the Unwired Wi-Fi and the Cultural Inversion of Infrastructure." *Space and Culture* 8 (3): 269–85. doi:[10.1177/1206331205277464](https://doi.org/10.1177/1206331205277464).
- Mahoney, James, and Dietrich Rueschemeyer. 2003. *Comparative Historical Analysis in the Social Sciences*. Cambridge University Press.
- Mattoni, Alice. 2014. "The Potentials of Grounded Theory in the Study of Social Movements." In *Methodological Practices in Social Movement Research*, edited by Donatella della Porta, 21–42. Oxford University Press.
- McCarthy, John D., and Mayer N. Zald. n.d. "Resource Mobilization and Social Movements: A Partial Theory." *American Journal of Sociology* 82 (6): 1212–41.
- McChesney, Robert W. 1993. *Telecommunications, Mass Media, & Democracy: The Battle for the Control of U.S. Broadcasting, 1928-1935*. Oxford: Oxford University Press.
- Méadel, Cécile. 1994. *Histoire de La Radio Des Années Trente*. Paris: Anthropos/INA.
- Medosch, Armin. 2014. *The Rise of the Network Commons*.
<http://www.thenextlayer.org/NetworkCommons>.
- Michalis, Maria, and E. O. Ruhle. 2001. "Local Access Competition and Local Loop Unbundling." *Multimedia Und Recht* 4 (1): 23–32. <http://westminsterresearch.wmin.ac.uk/13244/>.
- Milan, Stefania. 2013. *Social Movements and Their Technologies: Wiring Social Change*. Basingstoke: Palgrave Macmillan.
- Morris, David. 2013. "The Rise and Fall of Radio and TV as a Commons." *Guernica*.
<https://www.guernicamag.com/daily/david-morris-the-rise-and-fall-of-radio-and-tv-as-a-commons/>.
- Mortleman, James. 2002. "Hit the Open Node." *The Guardian*, April 18, sec. Technology.



<https://www.theguardian.com/technology/2002/apr/18/internetnews.onlinesupplement3>.

- Musial, Kazimierz, and Maja Chacinska. 2013. "Constructing a Nordic Community in the Polish Press - Past and Present." In *Communicatif the North. Media Structures and Images in the Making of the Nordic Region*, 289–318. London: Ashgate.
- Musti. 2012. "We Are Internationally Wireless!" *Wlan Slovenija*. October 10. <https://wlan-si.net/en/blog/2012/10/10/we-are-internationally-wireless/>.
- Neuman, W. Russell, Lee McKnight, and Richard Solomon. 1998. *The Gordian Knot: Political Gridlock on the Information Highway*. Cambridge: MIT Press.
- Nicaise, Jean-Philippe. 2016. FDN History. Telephone.
- Noam, Eli. 1992. *Telecommunications in Europe*. Oxford: Oxford University Press.
- Nopper, Sheila. 1998. "People Have No Idea How Powerful They Could Be: An Interview with Carol Denney (Free Radio Berkeley)." In *Seizing the Airwaves: A Free Radio Handbook*, edited by Jon Sakolsky and Stephen Dunifer, 157–64. San Francisco: AK Press.
- Ostrom, Elinor. 1990. *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge University Press.
- Paloque-Berges, Camille. 2015. "When Institutions Meet the Web: Advocating for a 'Critical Internet User' Figure in the 1990s."
- Paulus, Christian. 2016. FDN History. Telephone.
- Powell, Alison. 2008. "WiFi Publics: Producing Community and Technology." *Information, Communication & Society* 11 (8): 1068–88.
- Preston, Paschal. 2001. *Reshaping Communications: Technology, Information and Social Change*. London: Sage.
- Priest, Julian. 2016. "A Brief History of Consume." Accessed November 2. http://informal.org.uk/people/julian/resources/consume/history/slide_05-06.html.
- Rebillard, Franck. 2012. "La Genèse de L'offre Commerciale Grand Public En France (1995-1996) : Entre Fourniture D'accès à l'Internet et Services En Ligne « Propriétaires »." *Le Temps Des Médias* 18 (1): 65. doi:[10.3917/tdm.018.0065](https://doi.org/10.3917/tdm.018.0065).
- Robertson Jr., Horace B. 1982. "The Suppression of Pirate Radio Broadcasting: A Test Case for the International System for Control of Activities Outside National Territory." *Law and Contemporary Problems* 45 (1): 71–101.



- Rudin, Richard. 2012. “Not Over Here! How British Elites Used National Newspapers to Engage in Debates Over the Introduction of Licensed Commercial Radio Stations.” In *Radio and Society: New Thinking for an Old Medium*, edited by Matt Mollgaard, 51–64. Cambridge: Cambridge Scholars Publishing.
- Sandoval, Marisol, and Christian Fuchs. 2010. “Towards a Critical Theory of Alternative Media.” *Telematics and Informatics* 27 (2): 141–50.
- Schafer, Valérie, and Bernard Tuy. 2013. *Dans Les Coulisses de l’Internet. RENATER, 20 Ans de Technologie, D’enseignement et de Recherche*. Paris: Armand Colin.
- Soroos, Marvin S. 1982. “The Commons in the Sky: The Radio Spectrum and Geosynchronous Orbit as Global Policy.” *International Organization* 36 (3): 665–77.
- Starr, Paul. 2004. *The Creation of the Media: Political Origins of Modern Communications*. Basic Books.
- Sterling, Christopher H., Phyllis W. Bernt, and Martin B. H. Weiss. 2014. *Shaping American Telecommunications: A History of Technology, Policy, and Economics*. New York & London: Routledge.
- Stevens, James. 2016. Consume.net History. Face-to-face.
- Thibault, Ghislain, and Dominique Trudel. 2015. “Excaver, Tracer, Réécrire : Sur Les Nouveaux Historiques En Communication.” *Communiquer* 15: 5–23.
- Thierry, Benjamin. 2012. “« Révolution 0.1 ». Utilisateurs et communautés d’utilisateurs au premier âge de l’informatique personnelle et des réseaux grand public (1978-1990).” *Le Temps des médias* n° 18 (1): 54–64.
- Tilly, Charles, and Sidney Tarrow. 2015. *Contentious Politics*. Oxford: Oxford University Press.
- Tréguer, Félix, Panayotis Antoniadis, and Johan Söderberg. 2016. “Alt. vs. Ctrl.: Editorial Notes for the JoPP Issue on Alternative Internets.” *Journal of Peer Production*, no. 9. <http://peerproduction.net/issues/issue-9-alternative-internets/editorial-notes/>.
- Uldam, Julie, and Tina Askanius. n.d. “Online Social Media for Radical Politics: Climate Change Activism on YouTube.” *International Journal of Electronic Governance* 4: 69–84.
- Ulmann-Mauriat, Caroline. 2000. *Naissance d’un média: Histoire politique de la radio en France*. Paris: Editions L’Harmattan.
- Vaughan, Diane. 1992. “Theory Elaboration : The Heuristics of Case Analysis.” In *What Is a Case? Exploring the Foundations of Social Inquiry*, edited by Howard S. Becker and Charles C. Ragin,



173–202. Cambridge: Cambridge University Press.

Walker, Jesse. 2001. *Rebels on the Air: An Alternative History of Radio in America*. New York: New York University Press.

Wall, Derek. 2014. *The Commons in History: Culture, Conflict, and Ecology*. Cambridge: MIT Press.

Webb, Herbert Laws, and Harold Cox. 1911. *The Development of the Telephone in Europe*. London: Electrical Press.

Ziya, Erol. 1999. “Fifteen Countries Participate in Coordinated European Telecommunications Boycott.” *Campaign for Unmetered Telecommunications*. April 21.
<http://www.unmetered.org.uk/press/pr210499.txt>.







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