The idles mattered. The early Italian telephone and its users[1]

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Abstract: Although politicians and private companies were the driving forces of the early Italian telephone, this paper aims to understand why and how between nineteenth and twentieth century users influenced the evolution of this new medium. First of all they set up a continuous dialogue with other social groups. In telephone books private companies gave suggestions to subscribers and, indirectly, they showed the allowed (and not allowed) uses and, finally, which were the users' wishes. Subscribers pressed also politicians for obtaining a more efficient and geographically diffused telephone service: they organized themselves in cooperatives, they created associations and, in general, they set up influential lobbies. Secondly subscribers imposed many way of use that forced changes in telephonic administration. For example, for long time Italian telephones were managed with flat rates: the amount of use didn't influence the final billing and subscribers often lend their telephone. This social practice, called "parasitism" by politicians and companies, forced major changes in rate's politics. Finally, subscribers tried to "metabolize" this new medium using it in "unexpected ways": the telephone was used as an alarm clock, as a tool for knowing the time, for fishing, for surgery, even for knowing the quality of wines. All these aspects will be researched using a corpus of sources like technical journal, newspapers, parliamentary debates, literature of fiction, telephone books.

Keywords: History of the Telephone; Italian subscribers; alternative uses; media co-construction

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Il desiderio di fare nuove invenzioni lo portava a secondare le usanze di questi hidalghi anche quando non andavano d'accordo con le idee dei suoi autori preferiti: così, vedendo il desiderio di quelle pie persone di confessarsi regolarmente, scavò dentro un tronco un confessionale, dentro il quale poteva entrare il magro Don Sulpicio e da una finestrella con tendina e grata ascoltare i loro peccati. La pura passione delle innovazioni tecniche, insomma, non bastava a salvarlo dall'ossequio alle norme vigenti; ci volevano le idee.

Italo Calvino, Il barone rampante

A Methodological Introduction

The aim of this article is to analyze if and how early telephone users and subscribers (1880-1915) participated in the process of co-construction of this new medium. Although, especially in these early years of development, investment policies of government and private companies may seem more relevant in guiding the development of the system, an analysis of the practices of appropriation and "metabolization" of new medium by users is significant for several reasons. First, because subscribers maintained a constant dialogue with other social groups and were able to make requests and pressures. Second, early users were able to modify and direct some of the nascent character of telephony and, more generally, of the Italian telecommunications system: at a time when the "interpretative flexibility" of the object-phone was still open, subscribers could impose their needs, often far from that of other social groups. A third reason of the subscribers relevance in this period was the attention of service providers to their clients. The telephone was one of the first technologies of communication placed at home and, for this domestic character, it was subject to a daily assessment by the subscribers (Aurini, 1915: 112): when the automatic switching was introduced, for example, the Italian government believed that the users' satisfaction was the most important parameter, «since the plant would be technically perfect, did not satisfy the subscribers, and in this case would not be appropriate to insist» (Commissione di sorveglianza, 1915: 21). Finally,

this study aims to fill a gap in the Italian scientific research that, until now, has given little attention to the role that had (and have) users to negotiate and configure communication technologies and telecommunications in particular characters that have marked the Italian telecommunications system throughout the twentieth century.[3]

The methodology used in this work wants to bring together, on the one hand, the French School of Annales d'histoire économique et social (Aries, 1980) tradition and, on the other, two approaches that have contributed to investigate the relationship between technology and society: SCOT (Social Construction of Technology) and ANT (Actor-Network Theory). From the SCOT approach we took two fundamental concepts. The first one is that of "relevant social group". When a new technology emerges, a range of social groups confront and fight to impose their own vision to the new medium (Pinch and Bijker, 1984: 414). Even in the case of telephony, as well as all telecommunications technologies (Summerton, 1994: 15), in the first decades several social groups fought to impose logic and uses the new medium: in Italy, the protagonists were in particular the political class, private telephone companies, electrical engineers as "experts" and indeed subscribers. Each of these groups helped to co-construct the new medium and meet-the clash of different ideas, born of a shared meaning of telephony, which to some extent permeated the entire Italian technological imaginary of the twentieth century in the field of telecommunications. The second SCOT concept was that of "interpretative flexibility" (ibid: 419-424): it wants to indicate how, during the confrontation between the relevant social groups, different interpretations and practices of the same object coexist. In the first moments of development of the telephone, for example, coexisted multiple meanings and uses of this medium, due to the fact that it was "flexible" and "interpreted" by

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3. Especially in the telecommunications sector, the initial stages of developing a new technology are crucial in shaping the future and in addressing the technical system: this is the concept of "constitutive choice well expressed by Paul Starr (2004). Even at the beginnings of telephone history, attitude and the decisions taken on were of "long term" and, indeed, influenced the political, economic and technological Italian telecommunications throughout the twentieth century: to name a few think the uncertainty policy management between state and private service, the law that penalizes historically incentive to telephone companies and, finally, interweaving between innovation and backwardness that characterized the Italian telephone system throughout its history (Balbi, 2011; Balbi and Fari, 2012).

each relevant social group in different ways. The ANT approach has provided two additional concepts. The first is that of symmetry: on the one hand, this term indicates that technology and society must be studied as a "seamless web" of human and non-human, social and technical (Hughes, 1986; Callon, 1994); on the other hand, especially during the advent and spread of a new technology, it is required an approach that puts at a same level «those cases that could serve as the winner to the won, how the success to failure» (Latour, 1995: 116). A second useful ANT concept is that of "script" or "program". According to Latour and Akrich, technical objects contain specific programs on how to use them assigned by manufacturers, engineers and service providers; this script, however, is often modified by users, which re-write and re-use instruments with different purposes and goals than those expected (Akrich, 1993, 2006, Latour, 1992, 1999).

A last but not least preliminary topic is related to the historical sources. It should be noted that, except in very rare cases, subscribers did not leave written record or "direct" sources in which they clarified how they used the new medium or which psycho-social function it had for them. The study of the early users of the service is then assigned to some sources that might be called "indirect"[4] and, in particular, two categories of documents have proved extremely fruitful for this analysis: on the one hand, telephone books and minutes of private companies boards of directors represented the privileged place to analyze the latent conflict between service providers and subscribers in terms of practical use; on the other hand, technical journals let us understand the "technological horizon" of the period and to identify a conflict between technicians and subscriber the mentalities (see for example the so-called "telephone parasitism" controversy).

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4. As written by Jacques Le Goff, «Everything is a source for an historian of mentalities» (Le Goff, 1974: 249). Historians must therefore go beyond the classic records, introduce new sources, with their sensitivity to interpret clues and documents left by men in their existential journey and that, coincidentally or not, are preserved over time and arrive on the table of the scholar, then also consider evidence that does not deal directly with the object of research, but unless submit definition, an unexpected mode of use, but which seems natural in this document involuntary.

Paper dialogues: telephone books between private companies and subscribers

During the first decades, telephone books had specific sections in which private companies provided users instructions on how to use the medium, in which they showed the correct attitude to take during conversations and, finally, in which they complained of the users' mistakes.

Telephone companies regularly highlighted "bad behaviors" of their customers. They reminded users to keep a proper distance from the microphone and also to maintain a «natural voice», avoiding to shout (Società Telefonica Ligure, 1894: 52; Unione Telefonica Lombarda, 1904: 5): as remembered by a technical journal, sometimes subscribers «talked to the telephone as if they speak to a deaf. The phone, however, can be compared to a man with a very keen hear» (*L'Elettricista*, 1892: 24). Moreover, telephone companies and the State administration invited their customers to contribute to the "sound education" of other subscribers: «When the voice of correspondent arrives too weak must invite him to approach the apparatus. If it is strong and vibrant must turn away a bit more or speak more softly» (Telefoni dello Stato. Direzione Compartimentale di Napoli, 1908: 9). All these recommendations and complaints about the tone of voice to be observed during conversations implicitly signaled the fact that subscribers were used to scream or talk away from the receiver: with these and other "improper" conduct, ultimately, users did show an incomplete understanding of how to use the new tool.

Subscribers were often charged to violent attitudes, most often dictated by impatience. For example, it was common practice to «Turn the handle[5], thinking thereby to draw the attention of the person with whom you speak. On the contrary, doing so, you notice the central office that you have completed the conversation and communication will be immediately removed (Società Telefonica per l'Italia Centrale, 1894: 7).

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5. With the local battery telephone systems, the subscriber was put in communication with the switchboard by turning a handle that was placed next to the phone. This handle sent an electrical pulse from home to the central switchboard and it was the only way the user could notify his intention to start a conversation.

Similarly, subscribers were used to «knock over the microphone» (Società Telefonica Ligure, 1894: 52), in order to improve the reception quality of the instrument and, in general, they used all the equipments recklessly and «vehemently» (Società Telefonica per l'Alta Italia, 1906: 8).

A third "incorrect" stance adopted by subscribers and that telephone companies sought to prohibit was to «remove or repair the equipment» (Società Telefonica per l'Italia Centrale, 1894: 6) and «open or remove [...] as also to call for outside repairs» (Società Telefonica per l'Alta Italia, 1904: 6). Evidently, among the early telephone users, there were "experts" and bricoleurs, who knew very well the new medium functioning and who could put their hands inside the technical object: this practice conflicted with the guidelines provided by the service providers, who feared damage to the individual unit or even the entire network and, perhaps, also wanted to maintain a degree of confidentiality on the equipment.

Finally there were some subscribers behaviors considered improper, but that could hardly be controlled and punished: for example attempting to «violate the telegraphic privacy, using wires and telephone equipment» (Telefoni dello Stato. Compartimento di Palermo, 1909: 5), using the telephone «against morals and public order» (ivi: 6), borrowing home telephone as it was a public one (topic we shall return) and, finally, a curious notation in the Regulation for public telephones in Naples, where «communications are not granted to people in a state of alcoholic or mental disorders» (Telefoni dello Stato. Compartimento di Napoli, 1908: 11).

Telephone companies not only tried to suggest a sort of "phone etiquette" or to suppress common practices they believe to be incorrect, but also tried to engage its clients in improving the service. Subscribers were invited to report any «irregularities emerged in the management of the network» (Società Telefonica Ligure, 1894: 59): only in this way, in fact, telephone companies could really improve their systems and could make up for imperfections of its service (Telefoni dello Stato. Compartimento di Palermo, 1909: 11). In early twentieth century, perhaps because of the increasing malfunctions of the service, some telephone companies created specific "complaint offices", where subscribers could report problems encountered in using the new medium.

Through the pages of telephone books, it was realized an attempt of "dialogue" between service providers and users which can be considered of special interest for at least three reasons. First, the telephone companies attempted to impose their customers a kind of "action program": on the one hand, they wanted to promote literacy in the new instrument but, on the other, they aim at designing a predefined and ideal context of use to manage more effectively the telephone system. Secondly, the "action program" proposed by providers was significantly transformed by subscribers: they put in discussion private companies suggestions and, sometimes, they even adopted harmful practices for the good performance of the service. Finally, it should be noted that this dialogue between providers and users was not only characterized by conflicts but also by collaboration: the telephone companies tried to involve subscribers in the qualitative control and, even, in the education process on how to use the telephone.

The "telephone parasitism"

The best example of a subscribers' practice deemed "incorrect" by telephone companies was undoubtedly the "telephone parasitism". To fully understand the meaning of this expression should be remembered that, between the nineteenth and twentieth centuries, the Italian telephone rates were *a forfeit*, broadly similar to the current flat: in other words, subscribers paid a fixed tariff to the service providers and this amount of money was not dependent by the frequency of use of the medium. But, since the amount of calls not influence the final cost of the bill, sometimes for profit and sometimes without receiving any compensation, subscribers began to make available their own telephone to other people.

Since the late nineteenth century, technicians and politicians became aware that certain categories of subscribers were using the new medium excessively, causing substantial work to switchboard operators and, even, damaging the efficiency of the entire telephone system (Gattino, 1890). This debate became central only in the years following the nationalization of the telephone networks (realized in 1907), when the government began to devote increasing attention to the rate policies of other countries. Most other European countries, in fact, at

that time had already replaced or were replacing the flat tariffs with those based on consumption (*L'Elettricista*, 1909; *Rivista delle Comunicazioni*, 1910), while the Italian Government would have introduced this rate in the 7 most important urban networks (Turin, Milan, Genoa, Florence, Rome, Naples and Palermo) only in 1945 and in the entire telephone network even in 1972 (Abeille, 1999: 29; Bottiglieri, 1993: 418). Largely because of this delay in the implementation of tariff reform, phone use was much stronger in Italy than in other countries: in 1907, for example, telephone subscribers in the United States entertained an average of 10 conversations a day, while in Italy about 25 (*Telegrafia e Telefonia,* 1907: 71).

This situation was caused mainly by the tariff system and the most debated consequence of this politic was the so called "telephone parasitism". In an article published in the *Rivista delle Comunicazioni* in 1911, different "parasitic" practices were identified. First of all, as already mentioned, non-subscribers used the telephone at subscribers homes: so

> A person save to pay the subscription or to use a public phones and […] pray for a telephone subscriber to call or make calls, to report or refer to. It is the most common form and is more annoying to the subscriber, […] sometimes this occasional favor becomes an habit and is even common that a subscriber renounce to his phone subscription, since it reduces him to the service of bothers (Villa, 1911: 43).

A second form of "parasitism" is the free use of phones placed in public places: very often who ran a coffee bar or a shop «complete the attractiveness of mirrors and ladies at the bar counter with a telephone available to the public; in general dealers put the phone on display to entice the public to make calls, but these communications are as useful to the dealers, as onerous for service providers» (ibid.).

Another abuse was often committed by "major users", such as shipping and insurance companies and hotels: they often used to sign a limited number of subscriptions and then to connect them to hundreds of telephones, damaging either the service providers (since the switchboard office underwent to a

substantial increasing of work and the rates paid were the same of other users), or the subscribers, who often could not make the communications due to busy lines[6].

Another practice common among the subscribers and, at that time, included in "parasitic" behaviors was the so-called "correspondence vain". As happened in other countries (Fischer, 1994), also in Italy service providers took a long battle against people who, in their view, did use the telephone not for work or for political affairs, but only for private purposes: these subscribers were considered as «idles that exchange inconclusive chatters to confuse their boredom and killing time. Such abuse may no longer exist, once abolished the current *forfait* system» (Villa, 1911: 44).

Technicians, politicians and mostly private telephone companies lined up against the "telephone parasitism". Providers not only forbade their subscribers to make the equipment available to third parties for profit[7], but through a massive propaganda (Ortoleva et Pallavicini, 1996: 30), also condemned those who offered the telephone without demanding any payment of money: for example, see the following "Important Notice" appeared in a telephone book of 1904: «gentlemen subscribers, and especially Coffees, Restaurants, Bars, Pharmacies and shops in general, (are warned) that is forbidden to let the public makes telephone calls in any reason, even for simple favor» (Unione Telefonica Lombarda, 1904: 10).[8]

In essence, the so-called "telephone parasitism" consisted of some practices adopted by subscribers and mostly allowed by law, that however caused numerous management problems and threatened to undermine the overall efficiency of the

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6. Not by chance in several occasions major users attempted to delay the introduction of the tariff consumption (Rivista delle Comunicazioni, 1910: 54).

7. See two examples. The first, contained in a telephone book of Bologna in 1894, recalled subscribers that they had the right to «use the phone for their individual use of its employees and members of the family. The law prohibits any communication for profit» (Società Telefonica per l'Italia Centrale, 1894: 4). The second was even more categorical and said: «The Company is required to waive the phone to the offenders except the right to recoverable damages. [...] Members will be subject to infringement that allow phone use by paying a share of any, even if it is sought and supply by way of charity» (Società Telefonica per l'Alta Italia, 1904: 3).

8. However, this suggestion of "moral" nature could hardly get a tangible coercive effect since, as argued above, the phone was an additional element of attracting customers and to prohibit their use would help customers make less attractive the same also holds for operators of public places.

network. The "telephone parasitism" also helps to show the centrality of the early telephone subscribers in the process of co-construction of the new medium for two main reasons. First, the adoption of these practices indicates that users were able to negotiate and change the "action program" that service providers want to impose them. In other words, as often happens in the history of technology and media, the telephone was used by people in unexpected ways or, at least, in quite different ways by those imagined by the companies that launched and managed the service. Secondly, this "wrong" use of the telephone stimulated a close debate between the relevant social groups: politicians, for example, wondered about the technological efficiency and the rates adequacy of the entire Italian telephone system. In this sense, the example of "telephone parasitism" shows how uses and users can influence the decisions taken by the so called system builders (Hughes, 1987) or, in other words, by those who are often considered the *only* responsible for the construction of a new medium.

The "unexpected uses" of the telephone

With the term "unexpected" or "alternative" use historians of technology generally want to indicate that, during the evolution of a technical instrument, users often apply the novelty for purposes builders and providers had not thought about (Mallard, 2005, Nye, 2006). Even the telephone was no exception, and its early years, it was often employed in some activity other than what it seemed to be the main use: the point-to-point communication.

First, the telephone was used as an indicator of correct operation of industrial engines: in some factories, to control the movement and the speed of a generator remotely, it was common practice to put in contact a telephone receiver with the point where the equipment was located and, according to «the height of the sound perceived, (the factory worker) can exercise its control exactly» (*L'Elettricità*, 1912: 301).

Secondly, the new medium found an unusual application in the medical field, especially in war surgery, to detect the presence of metal objects such as shrapnel and bullets in the body: «The slab is placed in communication with a telephone,

then it is passed over the skin in the point where is supposed to be the object, then a probe, even connected with the telephone, is introduced. As soon as the probe meets the metal object, a very strong noise in the telephone is listened» (*Telefono, Poste e Telegrafi*, 1903: 11).

A German inventor discovered and patented a way to implement a telephone receiver to fishing and this invention was reported in the only Italian magazine of the period devoted exclusively to the world of telephony (*Telefono, Poste e Telegrafi*). Placing a microphone in a watertight box and soaking in the sea, it's possible to «listen and hear what happens in the bottom of the water. As you hear perfectly the sound fishes make around the unit, so you can fish at sure shot. In the North Sea the application of this device has given good results when fishing for speeches» (*Telefono, Poste e Telegrafi*, 1905: 11).

At that time, deep-sea divers also made use of a telephone application that allowed them to keep in contact with the surface and then avoid those misunderstandings that, with earlier communication systems, sometimes caused the deaths of divers (*L'Elettricità popolare*, 1905).

Another "unexpected use" of the new instrument was made in the field of weather forecasting. Between XIX and XX century, American rural communities already used the phone to exchange long distance information about weather forecasts and to adjust the phases of planting and harvesting (Fisher, 1994: 127), but the new medium was also used as a technical system itself, able to report any climatic changes: after having scattered poles and telephone networks on a particular chemical substance, in fact,

> When a hurricane approaches, you hear a noise in the phone similar to that produced by the fall of hail on a roof of zinc; this noise becomes more intense as the storm approaches. [...] Depending on the intensity of perceived noise you can easily understand, after some practice, if the storm is more or less far-away. With this device it was possible to forecast hurricanes from three to ten hours before their arrival in the observation point (*L'Elettricista,* 1913: 304).

One of the most bizarre applications was described by the *Rivista delle Comunicazioni* in 1913: the Ministry of Posts publication reported the discovery of

> [...] a curious way to establish whether a wine is pure or adulterate, a method that finds its basis in the electrical conductivity of the liquid under examination. Simply place a telephone circuit in a tube filled with the wine to be analyzed, and then, if the wine is pure, the conductivity is good and there would be a clear transmission; if the wine is not pure, the transmission would be rather bad or impossible (*Giornale delle Comunicazioni*, 1913: 695-696).

The latest example of an "unexpected use" of the telephone was the use of this medium for transmitting entertainment and information programs. The phone, in fact, from the earliest years of its introduction, maintained an uncertain status between point-to-point and broadcasting media and the best known example of such flexibility was the so-called circular telephone. Between XIX and XX century in France, Hungary, England, US and Italy a few companies set up specific telephone networks or re-used normal networks to send music, news and any kind of programs from a central unit (the switchboard office) to their subscribers homes. In Italy the so-called Araldo Telefonico (Telephone Herald) began its telephone transmission in 1910 in Rome and, after the First World War, he was activated in Milan and Bologna too. A relevant aspect of the Italian circular telephone was its link with the 1920s radio broadcastings: the Araldo Telefonico could be considered a prodrome of radio broadcasting from a technical, economic and especially artistic point of view (Balbi, 2010).

Although some mentioned use and application may seem unlikely, the study of "alternative" or "unexpected" uses of a new technology is actually crucial for several reasons. First it witnesses the fact that the media evolve throughout their development. What a technology is depends largely on the use that users agree to it (Perriault, 1989): for this reason the unexpected uses of the telephone confirm, once again, the centrality of users in the process of co-construction of a new medium. Secondly, the phone applications that we have mentioned show that a new technology, especially in the initial phase of its history, maintaining a high

"interpretative flexibility", as remembered by the SCOT: even in these early years of spread of telephone service, in fact, different meanings and different ways of using the new medium were still alive and users had not yet fully made a choice. Moreover the analysis of "unexpected" practices is in line with the ANT suggestion of studying symmetrically the use who won and that who lost or, in other words, of analyzing dead and alive media at similar level (Braun, 1992, Lipartito, 2003). Finally, from the historiography standpoint, studying the losing uses means above all to reclaim the spirit of the past: a losing use of the telephone, which can bring a smile to the modern reader, is just one of the ways in which technology could develop and, the fact that this possibility was accepted by contemporaries, shows its full inclusion in the "horizon of possibilities" of the past society.

Conclusions

Early telephone users and subscribers took actively part in the process of co-construction of the new medium. They exchange and impose their opinions to the other relevant social groups: in the telephone books, for example, a kind of paper dialogue was realized between users and private companies. Subscribers and non subscribers were sometimes responsible for changes in the way the telephone was managed: for example the immoderate use of the telephone, allowed by the flat rates, imposed politicians and private companies to rethink the tariffs. Finally, in this period, the telephone was often used in "unexpected" ways: this is another example of how users may impose their view and mentality to a new technology and, at the same time, of the fact that a new medium is not what builders and managers think, but rather what users want.

In other words, a great contribution of telephone users and subscribers was that of adding layers of significance, of making the telephone something different and something flexible and something more complete than what managers believed. It's important to remember again that the telephone was one of the first media placed at home: telephone was in contact and used by woman and children and, for this reasons, it provoked also "moral panic" (Balbi, 2013). Maybe it's an

obvious result: metabolizing a new medium means also to play with it, to re-use it, to find significances and a place for and in everyday life. Studying this kind of media means, on the other side, placing at the "consumption junction" and assigning a certain priority for users (Cowan, 1987).

References

Abeille, R. (1999) *Storia delle telecomunicazioni italiane e della Sip 1964-1994*, Milano, Franco Angeli.

Agar, J. (2003) *Constant Touch: a Global History of the Mobile Phone*, Cambridge, Icon Books.

Akrich, M. (1992) *La de-scrizione degli oggetti tecnici*, trad. it. in A. Mattozzi (a cura di), *Il senso degli oggetti tecnici,* Roma, Meltemi, 2005.

Akrich, M. (1993) *Les objets techniques et leurs utilisateurs*, in «Raisons pratiques», 4, pp. 35-57.

Aurini, G. (1915) *Sulla fusione del servizio telegrafico col telefonico*, in «Rivista delle Comunicazioni», Anno VIII, Fascicolo II, Febbraio, pp. 106-112.

Balbi, G. (2007) *Squilli di carta. I primi 40 anni del telefono nelle pagine della letteratura italiana*, in «Memoria e ricerca», 2, pp. 127-152.

Balbi, G. (2010) *La radio prima della radio. L'Araldo Telefonico e l'origine del broadcasting in Italia*, Rome, Bulzoni.

Balbi, G. (2011) *Storia sociale del telefono in Italia 1877-1915,* Milan, Bruno Mondadori.

Balbi G. (2013) "'I Will Answer You, My Friend, but I am Afraid': Telephones and the Fear of a New Medium in Nineteenth and Early Twentieth-Century Italy," in S. Nicholas and T. O'Malley (eds.). *The Media, Social Fears and Moral Panics: Historical Perspectives.* London and New York: Routledge.

Balbi G., S. Fari. (2012). *History and Historiography of Telecommunications in Italy*. Workshop: The Italian Technology in a European and Global Context, 15th-20th Centuries, European University Institute, Florence, November.

Bottiglieri, B. (1993) *SIP: impresa, tecnologia e Stato nelle telecomunicazioni italiane*, Milano, Franco Angeli.

Braun, H.-J. (1992) *Symposium of failed innovations: Introduction*, in «Social Studies of Science», 22/2, May.

Callon, M. (1994) *Society in the Making. The Study of Technology as a Tool for the Sociological Analyses*, in W.E. Bijker, T.P. Hughes e T.J. Pinch (a cura di), *The Social Construction of Technological Systems*, Cambridge, MIT Press.

Commissione di Sorveglianza (1915) *Relazione della Commissione di sorveglianza sugli impianti telefonici a sistema automatico in Roma*, Roma, Tipografia dell'Unione Editrice.

Cowan, R.S. (1987) *The Consumption Junction: A Proposal for Research Strategies in the Sociology of Technology*, in W.E. Bijker, T.P. Hughes e T.J. Pinch (a cura di), *The Social Construction of Technological Systems*, Cambridge MA, MIT Press.

Demaldè, S. (1910) *Le tariffe e lo sviluppo del servizio telefonico in Italia e all'estero*, Torino, Tip. Elzeviriana.

Fisher, C.S. (1992) *Storia sociale del telefono. America in linea 1876-1940*, trad. it. Torino, Utet-Telecom, 1994.

Gattino, G. (1890) *I telefoni*, in «Giornale delle Comunicazioni. Poste, telegrafi, telefoni, ecc.», Aprile, pp. 65-69.

Hughes, T.P. (1987) *The Evolution of Large Technical Systems*. in W.E. Bijker, T.P. Hughes e T.J. Pinch (a cura di), *The Social Construction of Technological Systems*, Cambridge, MIT Press.

Jackobsen, K. (2005) *Institutional Change and Path Dependence in Danish Telecom Development*, paper presentato alla conferenza *Cross-Connections: Communications, Society and change*, Science Museum, London, 11-13 Novembre.

Kasesniemi, E-L. (2003) *Mobile Messages: Young People and a New Communication Culture*, Tampere, Tampere University Press.

Kavoori, A. e Arceneaux N. (2006) *The Cell Phone Reader: Essays in Social Transformation,* New York, Peter Lang.

Latour, B. (1993) *La chiave di Berlino,* trad. it. in A. Semprini (a cura di), *Il senso delle cose. I significati sociali e culturali degli oggetti quotidiani*, Milano, Franco Angeli, 1999.

Latour, B. (1991) *Non siamo mai stati moderni. Saggio di antropologia simmetrica*, trad. it. Milano, Eleuthera, 1995.

Latour, B. (1992) *Aramis ou l'amour des techniques*, Paris, La Découverte.

Le Goff, J. (1974) *La mentalità: una storia ambigua*, trad it. in J. Le Goff e P. Nora (a cura di), *Fare storia. Temi e metodi della nuova storiografia*, Torino, Einaudi, 1981.

«L'elettricista. Rivista mensile di elettrotecnica» (1892) *Sul modo di servirsi del telefono*, p. 24.

«L'elettricista. Rivista mensile di elettrotecnica» (1909) *Le tasse telefoniche in Germania*, p. 142.

«L'elettricista. Rivista mensile di elettrotecnica» (1912) *Trasmettitore telefonico usato come indicatore di velocità*, p. 301.

«L'elettricista. Rivista mensile di elettrotecnica» (1913) *Il telefono e le previsioni atmosferiche*, p. 304.

«L'elettricità popolare» (1905) *Il telefono in fondo al mare*, Anno II, n. 29, 10 Maggio, pp. 4-5.

Lipartito, K. (2003) *Picturephone and the Information Age: The social meaning of failure*, in «Technology and Culture», 44.

Mallard, A. (2005) *Following the Emergence of Unpredictable Uses? New Stakes and Tasks for a Social Scientific Understanding of ICT Uses*, in L. Haddon, E. Mante, B. Sapio, K-H. Kommonen, L. Fortunati e A. Kant (a cura di), *Everyday Innovators: Researching the Role of Users in Shaping ICTs*, Dordrecht, Springer.

Nye, D.E. (1990) *Electrying America. Social Meanings of a New Technology*, Cambridge, MIT Press.

Nye, D.E. (2006) *Technology Matters. Questions to Live With*, Cambridge e London, MIT Press.

Ortoleva, P. e Pallavicini P. (1996) *Une société en réseau: mode d'emploi. L'annuaire téléphonique et le client en Italie*, in «Les Cahiers» 4, pp. 30-60.

Oudshoorn, N. e Pinch T.J. (2003) *How Users matter: The Co-construction of Users and Technologies*, Cambridge, MIT Press.

Perriault, J. (1989) *La logique de l'usage. Essai sur les machines à communiquer*, Paris, Flammarion.

Pinch, T.J. e Bijker W.E. (1984) *The Social Construction of Facts and Artefacts: Or How the Sociology of Science and the Sociology of Technology Might Benefit Each Other*, in «Social Studies of Science» 14, pp. 399-441.

Richeri, G. (1996) *Tra comunicazione e servizio: le reti telematiche come mercato*, in F. Di Spirito, P. Ortoleva, C. Ottaviano (a cura di), *Lo strabismo telematico. Contraddizioni e tendenze della società dell'informazione*, Torino, Utet-Telecom.

«Rivista delle Comunicazioni» (1910) *La riforma delle tariffe telefoniche*, anno III, fascicolo I, gennaio, pp. 54-55.

«Rivista delle Comunicazioni» (1913) *Analisi dei vini mediante il telefono*, Anno VI, Fascicolo VII, Luglio, pp. 695-696.

Società Telefonica Ligure (1894) *Elenco degli abbonati del gruppo Genova, Sampierdarena, Cornigliano Ligure, Pegli, Prà, Voltri, Rivarolo, Bolzaneto, Quarto al Mare, Quinto e Nervi*, Genova, Stab. Pellas.

Società Telefonica per l'Alta Italia (1904) *Elenco Utenti delle reti telefoniche Alessandria, Biella, Como, Lecco, Legnano, Milano, Monza, Pinerolo e Torino*, Milano.

Società Telefonica per l'Alta Italia (1906) *Elenco degli Abbonati al telefono reti di Alessandria, Biella, Como, Lecco, Legnano, Milano, Monza, Rho, Pinerolo e Torino esercite dalla Società e principali reti collegate a dette agenzie*, Milano, Stabilimento Lito-Tipografico G. Abbiati.

Società Telefonica per l'Italia Centrale (1894) *Elenco degli abbonati della Agenzia di Bologna*, Bologna, Società Tipografica già Compositori.

Summerton, J. (1994) *Introductory Essay: The System Approach to Technological Change*, in J. Summerton (a cura di), *Changing Large Technical Systems*, Boulder, San Francisco e Oxford, Westview Press.

Taylor, A.S. e Vincent J. (2005) *A SMS History*, in L. Hamill e A. Lasen (a cura di), *Mobile World. Past, Present and Future*, London, Springer.

Telefoni dello Stato. Compartimento di Palermo. (1909). *Elenco degli abbonati. Reti di Caltanissetta, Catania, Messina, Palermo, Siracusa, Trapani*, Palermo, Stabilim. Tipo-Litografico G. Fiore & Figli.

Telefoni dello Stato. Direzione Compartimentale di Napoli (1908) *Elenco degli abbonati della rete urbana di Napoli*, Napoli, Libreria Detken & Rocholl.

«Telefono, Poste e Telegrafi» (1903) *Il telefono come ausiliario nella Chirurgia*, Anno I, n. 3, Maggio, p. 11.

«Telefono, Poste e Telegrafi» (1905) *Una nuova applicazione del telefono*, Anno III, n. 9, Settembre-Ottobre, p. 11.

«Telegrafia e Telefonia» (1907) *Sviluppo dell'industria telefonica*, Anno VII, N. 6, Giugno, pp. 70-71.

Unione Telefonica Lombarda (1904) *Elenco Abbonati delle reti telefoniche di Brescia, Busto, Gallarate, Laveno, Varese*, Milano.

Villa, O. (1911) *Il parassitismo telefonico*, in «Rivista delle Comunicazioni», Anno IV, Fascicolo I, Gennaio, pp. 41-44.

Vincent, J., Haddon, L. e Lynne H. (2005) *The Influence of Mobile Phone Users on the Design of 3G Products and Services,* in *«*The Journal of The Communications Network» 4 (4) pp. 69-73.