

## The commercialization of the Internet in Spain and its impact on communication between 1980 and 2000

La comercialización de internet en España y su impacto en la comunicación entre 1980 y 2000

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### Abstract

Although the first Internet experiences in Spain are related to e-mail and the use of some functionalities, such as file exchange or access to institutional directories, the popularization of the Internet coincides in time with the arrival of the Web in the second half of the last century. The media professionals and technology companies that lived through this historical moment witnessed the transformation of communication and of the citizens' model for relating to their environment and the world as a

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whole. This paper analyzes the arrival of the Internet in Spain and its evolution until it became a marketable product, turning it into a global and omnipresent means of communication, as it is today.

## Keywords

Internet, Arrakis, RedIRIS, Infovia, Servicom, Mass media.

## Resumen

Aunque las primeras experiencias de internet en España están relacionadas con el correo electrónico y el uso de algunas funcionalidades, como el intercambio de ficheros o el acceso a directorios de instituciones, la popularización de internet coincide en el tiempo con la llegada de la Web a partir de la segunda mitad del siglo pasado. Los profesionales de los medios y las empresas tecnológicas que vivieron este momento histórico asistieron a la transformación de la comunicación y del modelo de los ciudadanos para relacionarse con su entorno y el mundo en su conjunto. En este trabajo se analiza la llegada de internet a España y su evolución hasta convertirse en un producto comercializable y que lo convierte en un medio de comunicación global y omnipresente como lo es hoy día.

## Palabras clave

Internet, Arrakis, RedIRIS, Infovia, Servicom, Medios de Comunicación.

# 1. Introduction

During the 1960s, a group of scientists from various universities in the United States had been conducting research on the creation of a decentralized, globally interconnected computer network. This network was composed of several networks, the first of which was Arpanet (Leiner *et al.*, 1997). It was not until the early 1970s that the most widely used application of the internet today emerged: email. Ray Tomlinson, a computer engineer, was its inventor. He developed a program that allowed for the sending of emails between computers connected to Arpanet (Aranda, 2004). Initially, internet usage was limited to the academic world and was only available to researchers in the field of computer science and some companies associated with the United States Department of Defense, such as the Rand Corporation (Sobieszczanski, 2011).

In the late 1980s, Tim Berners-Lee, from the European Organization for Nuclear Research (CERN), recognized the possibilities that the internet was offering to researchers at American universities. However, there was something missing for Berners-Lee. The Internet allowed for communication between people, but there was no space where information could be stored for anyone to use and expand upon for the benefit of the community. This idea could be realized through a global hypertext system based on the internet, which is what we now call the Web (Berners-Lee, 2000). Prior to the implementation of the Web at the end of the last century, internet evolved from a network that connected universities into a global communication system that required payment for its use. This led some companies to try to profit by commercializing internet access for business purposes.

The Internet arrived late in Spain compared to other European countries. The efforts to computerize businesses and institutions were challenging during the 1980s, and the results were rather limited (Norris, 2000). The price of equipment and the difficulty of operation kept small and medium-sized enterprises away from the anticipated changes. In households, the cheapest computer was considered a luxury, or a tool reserved for computer engineers. The world of computing was still full of secrets, the opposite of what happened in the 1990s when computers became popular in all areas. In this process of change, the modem, the device that allowed the connection of a computer to the internet, and the interconnection capability of computers played an important role.

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Other factors that made it possible to introduce at least one computer in every household were multimedia, the Windows 95 operating system, and the decrease in computer prices. The possibility of transforming a computer into a household appliance, making it a useful tool for viewing photos and videos, listening to music, or consulting encyclopedias, along with the simplicity of graphical user interfaces, allowed anyone without computer knowledge to make use of a computer in domestic and office environments. Furthermore, the widespread decrease in prices and the increased capabilities of basic computer systems made it possible for even budget-conscious families to afford a computer.

In 1988, personal computers were still scarce, with few in businesses and even fewer in homes. However, echoes of what was happening in the United States and other European countries were reaching Spain. It was crucial to start planning the mass computerization of the country's major economic and educational centers in order not to fall behind (Loane *et al.*, 2004). At that time, there were no internet connections anywhere in Spain.

The last decade of the 20th century witnessed an increasing number of users joining the Web, including companies that created their digital pages. The emergence of affordable access providers led to internet entering homes and resulted in the development of e-commerce (Timmers, 1998).

Before the possibility of internet connection for individuals existed, there were already a significant number of users of Fidonet, a network that was quite widespread in Europe and the United States. The origin of Fidonet can be traced back to a program called Fido, developed by Tom Jennings in 1984. This program allowed for the automation of file exchanges between two computers through the telephone line. In this way, the system was able to establish a telephone connection with a remote computer and carry out a series of programmed tasks. Thanks to this platform, Fidonet users were able to connect to the network, facilitating the sending of information between distant computers (Bates & Lansing, 1993).

Fidonet used local nodes, called bulletin boards or BBS (Bulletin Board Systems), usually located in users' homes, where some individuals acted as administrators or system operators upon whom other users accessing the network through the local node depended. These administrators were called points and had an application that allowed for the downloading of news areas, software programs, and email for later offline reading (Bush, 1993). The Spanish Fidonet community in the early 1990s played a decisive role in the introduction of the internet in Spain. These early users of distributed networks wrote in specialized magazines and had a significant influence, due to their technical expertise, on a large number of potential computer buyers and future internet users (Molist, 2014).

Internet connections from home or the office during the last decade of the 20th century were complex. Web connections are now independent of the telephone line, often using fiber optics to achieve high upload and download speeds, primarily through wireless networks or mobile phones. In the period studied, connecting to the internet required using the telephone line and a modem connected to the computer. Connection time was billed per minute, so an hour of connection cost almost two euros, in addition to a monthly fee paid to an Internet Service Provider (ISP). While the user was connected, the landline phone remained blocked and could not be used (Olivares-García, 2002).

## 2. Objectives and Methodology

This work is based on the hypothesis that, in less than ten years, the internet, which was once a tool used by a technological elite, became a popular channel of communication and entertainment due to several factors. On one hand, the emergence of paid access providers, and on the other hand, the socio-economic changes that were taking place in Spain. From this standpoint, the objectives of this research are derived.

Firstly, to establish the key dates of the arrival of the first paid internet access providers and the evolution of the commercialization of the Web until internet connection became accessible to everyone.

Secondly, to analyze how a computer network began to transform into a general and global communication medium, based on the experiences shared by a group of internet pioneers in Spain.

To answer these questions and achieve the proposed objectives, we employed a qualitative research methodology that began with a literature review of the relevant literature in this field. This review was complemented by analyzing the results of interviews with professionals who played a role as protagonists, professionals, and users in this evolution from various perspectives, such as media outlets, companies, and service platforms.

We present an exploratory and systematic literature review (Codina, 2020; Pérez-Seijo *et al.*, 2020) of the research findings published in recent years in renowned scientific communication journals and publishers. The selection of the theoretical framework considered not only publications by Spanish authors, although the study focuses on the internet environment in Spain, but also works by international authors that address the study and evolution of the internet and different communication platforms. The works were filtered first according to their relevance to this study's topic, and then a search was conducted based on their quality indicators (JCR and Scopus), citation count on Google Scholar and Elsevier, with the aim of creating an updated database in Mendeley Reference Manager. Additionally, a review of texts published in the 1980s and 1990s on this topic was conducted, following a keyword search pattern using the MyNews tool.

Regarding the interviews, the methodology used involved creating a semi-structured interview model (Folgueiras Bertomeu, 2016; Taguenca Belmonte & Vega Budar, 2012; Vargas-Jiménez, 2012) consisting of 10 open-ended questions to gather insights and contributions from the participants. The questions focused on four fundamental variables of analysis:

- Regarding the beginnings and arrival of the internet in Spain:
  - Knowledge and ease of access.
  - Tools used.
- Regarding the popularization and commercialization of the internet:
  - Expectations about its utility.
  - Work environment and uses.

The interviews were conducted using an online form with open-ended questions addressed to different professionals, journalists, and experts who, through their involvement in media outlets and technology companies during the 1980s and 1990s, experienced firsthand all the changes and development processes that the internet was undergoing in Spain. These individuals have given their explicit consent to be cited, and their names are listed below:

- **Javier Fernández-Barrera Larzabal.** Editor at Ideal de Granada. Has been involved in several processes of digitizing traditional press. Expert in digital journalism.
- **Sonia Blanco Ruiz.** Professor at the Faculty of Communication of the University of Malaga, a pioneer in digital communication in Spain, particularly in the area of blogs and podcasts.
- **Juan Pablo Seijo Carretero.** Expert in digital marketing. Worked on the launch of Canal Plus's website in the late 1990s.
- **Mariló Ruiz de Elvira Zubizarreta.** Journalist, founder of El País Digital in 1996 and director of the Inicia portal of the Prisa Group in 2000.
- **Andrés Torbado Quiñones.** Expert in digital marketing and marketing director of the Inicia portal of the Prisa Group.
- **Darío Pescador Albiach.** Editor of Quo magazine, expert in digital communication and information architecture.
- **Pedro de Alzaga Fraguas.** Journalist and expert in digital communication. During these years, worked on digital economy information.
- **Karma Peiró Rubio.** Journalist and internet pioneer in Spain. In the 1990s, she wrote for specialized magazines on digital media and the arrival of the internet in Spain.

## 3. Results and Discussion

### 3.1. The beginnings of the Internet in Spain: Knowledge, access and tools used

Based on the responses from the interviewees and the consulted literature, it can be observed that while the internet is now a global platform for communication, culture, and entertainment, its early stages, at least in Spain, generated both confusion and excitement. The environment was divided between distrust and frustration due to access problems, and the excitement of participating in the birth of a new technology that, like the printing press in the 14th century, would revolutionize communication and the world in general.

We start from a very specific moment, the late 1980s and early 1990s. What was already a reality in North America was slowly making its way into Spain. In 1988, the National Plan for Research and Development launched a project for the Interconnection of Computer Resources of universities and research centers (IRIS), following the trend set by the United States and major European universities to interconnect the country's main research centers (Peiró, 1996). The management of this program was handled by Fundesco from 1988 to 1991 (Trejo Delarbre, 1996). The instructions for RedIRIS were not to bring the internet to Spain but to create a network compatible with the internet that would connect Spanish scientific centers, with a European focus.

Between 1991 and 1994, IP-based protocols gained ground over all previous ones, solidifying applications that use TCP/IP, such as Telnet, FTP, SMTP, etc. It was also during this period that an agreement was reached with NSFnet, managed by the National Science Foundation in the United States, to obtain the status of a connected network.

From 1994, with RedIRIS managed by the Spanish National Research Council (CSIC), the HTTP protocol began to be introduced, making it possible to connect to the Internet from anywhere with a telephone connection. This was the era when the first versions of the first web browser, Netscape, were successful, and Eudora was the favorite email program in the Windows environment.

According to Karma Peiró's account in the interview, at the end of 1990, there were four fully connected RedIRIS computers to the internet, 2,000 in 1991, 6,000 in 1992, and reaching 15,000 in 1993. This success should always be understood within the academic university environment and specifically within the computing centers of different universities.

During this time, there were no connections in Spain using the HTTP protocol, and the web was in its early stages. The possibilities for internet users were limited to email, connections to remote machines using Telnet, file downloads from dedicated servers, news groups, and the Gopher revolution of the moment. Gopher was a service created by Paul Linder and Mark P. McCahill from the University of Minnesota in 1991, which allowed linking documents available on the internet through a simple numerically ordered menu. The great novelty of the system was that it allowed easy navigation from one server to another (Hahn, 1994).

In the early 1990s, there were already enough documents on the internet to start worrying about bringing hidden information to light. Terms like cataloging, exploring, or indexing began to be used on the internet during this time. Utilities such as Whois, Verónica, or Archie appeared, which served to find resources online. From that point on, organizing the chaos that the web was starting to become became a priority.

The first contact with the internet for the interviewed professionals occurred in the early 1990s, in all cases related to their professional or academic activities. IRC channels (Internet Relay Chat) and BBS (Bulletin Board System), following the usage in the United States, were the first resources used, as was the case for Darío Pescador and Sonia Blanco. The launch of the digital edition of El País was the first contact with the internet for Ruiz de Elvira, who then became fully involved in managing and creating digital content with almost no previous experience.

The interviewees have been involved in the world of communication and marketing since their youth, placing them in privileged positions to firsthand witness the digital transformation of their companies and media outlets. In this way, access to the internet from the workplace paved the way for domestic use.

Although configuring internet on personal computers was not complicated, and providers provided CD-ROMs and telephone assistance to guide users through the process, as explained in their interviews by Javier Fernández-Barrera and Sonia Blanco, the biggest difficulty lay in the slowness of the connection. Ruiz de Elvira also mentioned in his responses that everything was extremely slow. The connection was made through a 56k modem connected to the conventional telephone line through a Telefónica company called Infovía, which will be referred to later.

Pedro de Alzaga recalls that the Compuserve system was quite simple and provided good technical support. He adds that the UUCP system, Unix-to-Unix Copy developed in the 1970s and 1980s, was a bit more complicated, but all the difficulties were overcome due to the advances of the revolution they were experiencing.

Karma Peiró, who worked at Servicom during those years, remembers the early days of the internet as a time when everything was very complex. A significant part of her tasks at the company was explaining over the phone what the internet was, but the biggest challenge was getting users to connect with a 14,400 bps modem. To solve these problems, Servicom created a technical department to assist with these issues. In Spain, there were just over 200,000 devices connected to the internet in 1999, compared to nearly two million in 2003 (Soto *et al.*, 2003).

Pedro de Alzaga first encountered the internet in 1993 at a university in the United States. During those years, the internet was only used in computing centers and university laboratories. There, de Alzaga discovered that students used email to communicate and perform tasks such as requesting books from the library, and even initiating romantic relationships via email. These uses, especially the latter, which was unimaginable in our country at that time, shaped the development and future of the internet. Novelist Bruce Sterling describes a similar case in an article published in the same year about Arpanet, which, as mentioned earlier, had an academic and scientific nature and became a direct and personal messaging service (Sterling, 1993).

Juan Pablo Seijo and Pedro de Alzaga recall in their interviews the company Goya Servicios Telemáticos, the first paid internet service provider in Spain. In 1992, Goya Servicios Telemáticos started providing internet access to companies and individuals using a modem connected to the telephone line, with an expensive access that was paid per minute. Between 1992 and 1994, internet usage was predominantly business-oriented, with few academic environments involved, mainly focused on email, or downloading documents related to partners or US companies. During these years, thinking of using the internet as a tool to generate income was a utopia.

Among Goya's first clients were Telefónica and Martín Varsavsky, who would later become the founder of Jazztel (Caballero, 2016). The editorial staff of *El Mundo* managed to obtain one of these permanent internet connections to download documents from some institutions in the United States (Ramírez, 2022).

The importance of Goya in the history of internet introduction in Spain lies in being the first company to facilitate internet access to any company or individual. It should be noted that RedIRIS connections were only available to university centers, so a company had no way of obtaining an internet connection (Soto *et al.*, 2003).

Darío Pescador's first experiences with the internet date back to 1994, using the OS2 operating system by IBM, which allowed obtaining an email address with the domain *ibm.com* and using the Mosaic browser to access the Web. IBM's OS2 Warp 3.0 was the first operating system that allowed connecting to the internet. However, it took another year for internet access to become popular with the emergence of Windows 95, the evolution of the already widely used operating system. One of the main novelties included in Windows 95 was the connection to MSN, Microsoft Network, a kind of internet created by Microsoft with all kinds of content, which would compete with Servicom and the providers that were already emerging throughout Spain (García-Sicilia, 1995). The arrival of MSN in the United States was

seen as a major threat to providers such as America Online or Compuserve, as their dominance was challenged since the new operating system already included a preconfigured connection to MSN. In Spain, the price of accessing MSN was twice that of the United States, with a basic fee of over eight euros, to which the cost of browsing and the telephone call had to be added. As a result, it was never a competitor for Servicom, which also allowed access to the internet, something that Microsoft never intended to do (Olivares-García, 2002).

By the mid-1990s, the circumstances in Spain were already in place for the commercialization of the internet, and the Web ceased to be exclusive to university researchers. In one way or another, the secrets of the internet were within reach of anyone. What was lacking now was an interesting offer from access providers that offered affordable prices for users.

### 3.2. Internet for everyone

Karma Peiró witnessed the early steps of Servicom, which was founded in 1994 by Eudald Domenech, an internet visionary who later created Telépolis, one of the most important portals in Spain (Carpintier, 2000). In a few months, its exclusive services and brand image made it the reference point for a new emerging class: the Internet users. The difference between Servicom and Goya was that the latter knew that its services were targeted at a business minority, while Servicom aimed for a larger audience and aspired to become the preferred option for a significant number of users to connect to the internet.

What was for Berners-Lee, in 1995 with the invention of the World Wide Web, a way to improve the academic internet, allowing researchers to share their projects in an easy and open environment using web pages, became the gateway that enabled the commercialization of the Web (Moreno Espinosa *et al.*, 2021). In 1995, the first Spanish newspapers arrived on the internet: *Avui*, *El Periódico de Catalunya*, and *La Vanguardia*, which served as an incentive for the use of the recently born World Wide Web (Peiró, 1996).

The Servicom model was very similar to what had been previously tested in the United States by Compuserve, Delphi, America Online, Spin, or Prodigy, access providers with many users that offered not only competitive prices but were part of a private network from which internet access was obtained. The difference was that this network provided services that could not be found on the internet of the late 20th century, such as access to news, weather information, pharmacies on duty, forums, chats, etc. (Vaughan-Nichols, 2015).

The commercial success of Servicom, which reached over 40,000 subscribers, put it, years later, in the sights of major companies in the sector, and it was acquired by Iberdrola, Grupo Zeta, and finally Retevisión in 1998. After the creation of Servicom, an endless number of access providers emerged. Among the most important were Redes TB, CTV, Interbook, Teleline, Ran, ICL, Sarnet, OffCampus, Abaforum, and countless other companies competing to increase the number of internet users in Spain.

The American model of AOL, exclusive services that complement internet connection, did not fully catch on in Europe, where users were more interested in directly experiencing the full potential of the Web rather than entering a closed space of exclusive services.

The providers were responsible for establishing local nodes, connected to telephone modems, so that subscribers could dial in to servers that provided internet access. If a company was in Madrid, a user in Málaga had to pay an interprovincial call to reach the node, while a user in Madrid could do so at the cost of a local call. To facilitate any user's ability to contract the company's services, many providers installed local nodes in other provinces.

In December 1995, Telefónica launched a service called *Infovía*, which aimed to regulate the relationships established between users, Telefónica, and access providers. *Infovía* provided providers with an access channel for their clients at the cost of a local call (Pedreira, 2015). *Infovía* was an IP network created by government initiative, leveraging the technical resources of the National Telefónica Company before its privatization in 1997. With the use of *Infovía*, all users could access the internet through a single number, 055, which was charged as a local call throughout Spain, democratizing access to some extent, as Pedro de Alzaga recalls. In this way, accessing internet providers was simplified since instead of having to make specific configurations for each of them, users could enter any provider through the same 055 access.

For three years, *Infovía* operated as the only IP network to which providers could link to offer their services throughout the national territory without physically placing modems in the main cities. This network accounted for 85% of the internet traffic generated in Spain and had up to 25,000 modems functioning simultaneously, albeit with connection issues and slowness, as pointed out by Juan Pablo Seijo.

One consequence of *Infovía*'s appearance was the decline of providers like *Servicom*, which, as Peiró (1996) highlights, had made a significant financial investment to place modems throughout Spain. Now any company, with minimal expenses, could become a nationally accessible access provider. The only way to compete among the hundreds of companies that emerged to provide internet access was to lower prices, and this system was not profitable for companies like *Servicom* that had already incurred significant costs. Large providers, such as *Servicom*, were only profitable if they had a large number of users, but *Infovía* had fragmented internet users into many small providers.

The user-friendly nature of *Infovía* greatly increased the number of access providers to the Web, considering the number of users accessing the internet in these last years of the 20th century. By 1998, Spain had more than 400 access providers, an excessive number compared to the providers in the same year in other European countries: 32 in France, 59 in Italy, 70 in Germany, and 82 in the United Kingdom (Pérez, 1998).

It will be precisely in this scenario where a tiny almost family-owned company will appear, which will start climbing positions in the jungle of providers from Seville. Just when it seemed that the entire market was divided, *Arrakis Servicios y Comunicaciones S.L.* emerged almost out of nowhere. Founded in January 1996, it managed to gather 15% of the internet connections made in Spain within three years, which caught the attention of the new players entering the internet connection market: *Retevisión*, *Uni2*, *British Telecom*, and even *Telefónica* itself (de Alzaga, 1999).

The success of *Arrakis* was in creating a high-quality internet access company at a low price. For six euros per month, people could browse the internet without any limits other than paying the local call to connect to *Infovía*. This offer provided internet access to thousands of people who had never considered connecting their computers to the network before (Bolaños, 1999). Initially, they only provided internet

access and an email address like the rest, but soon the service was divided into two types of users: residential and business. They offered exclusive services to the latter, such as website design, hosting, housing, virtual mail server, etc. As the market evolved, the company expanded its offerings with an information portal featuring specialized channels, its own search engine, and even a paper magazine that subscribers received at home.

On January 12, 1999, British Telecom announced the acquisition of Arrakis for the astronomical amount, for those years, of 13 million euros, which drew attention because the only asset the Seville-based company brought was its customer database. This was, as explained by Ruiz de Elvira, the first foreign incursion into the Spanish telecommunications market. The acquisition of Arrakis, according to Karma Peiró, was like the acquisition of other Spanish sites, such as Olé, which made a lot of money for having an original idea. It was something comparable what happened with the purchase of internet domains. Darío Pescador, chief editor of Baquía at that time, commented in the interview that “the analysis was evident for us: the big players had realized that the internet was not a passing fad.”

Regarding this period, the beginnings and subsequent commercialization of the internet, Andrés Torbado highlights that the war to attract users between access providers and content generators, that is, media companies, was very intense. To some extent, many of those involved did not understand what was happening. This led to integration movements, associations, and direct confrontations. On the other hand, telecommunications companies were perhaps too cautious in their deployment, while media outlets for some time believed in semi-closed systems to capture users, not foreseeing that the internet would inevitably be much more open. Karma Peiró summarizes this period of commercialization with a very concrete example:

“I remember that ‘Internet 2’ that was intended to be created, to which universities, research centers, private companies, etc., would connect. The threat of having a first and second-class internet” (Peiró, during the interview).

Finally, Darío Pescador refers to the attempts by providers like Infovía to offer “closed gardens” in the style of America Online. For him and many users, the internet was something simple and everyday, with the only obstacle being the problem of supply and access. Time showed that when the connection became easier and more affordable, the explosion was inevitable. It is worth noting that in those years, the first e-commerce businesses and online banking services were starting to develop, and a company called Amazon delivered English books to homes that were not available in Spain. The dot-com bubble and its subsequent burst, he concludes, were not only a problem of technological and social backwardness in Spain but also of the irrational greed of the markets.

### 3.3. Popularization of the Internet: Work Environment, Uses, and Expectations of its Utility

After reviewing the evolution of the Internet in Spain and before the popularization of the Web starting in 1995, it is relevant to analyze how the use and the most common services for users evolved as they became aware of the advantages and applications offered by the Internet. According to the interviewees, the uses were diverse and gradually increased from professional to personal realms. Alongside professional email tools used exclusively by Ruiz de Elvira and Andrés Torbado, there were others used by Juan Pablo Seijo and Sonia Blanco, such as BBS, IRC, and distribution lists. Darío Pescador, on the

other hand, extensively used the internet in the years preceding its popularization, with the first services he used being email (Eudora), FTP, Newsgroups (Usenet), and Gopher for searches. In 1995, Pescador began working in one of the first web development companies in Spain, quickly familiarizing himself with all internet services. Pedro de Alzaga, in addition to the web and email, used Telnet and Veronica, which at that time seemed like cutting-edge technology, as he himself comments, issue has also been discussed, more recently, by Lacerda Nobre *et al.*, (2021). Finally, Karma Peiró mainly used email, Gopher, thematic portals, and Compuserve forums, as well as private chats from the company she worked for, Servicom.

The high costs of internet access in the early years were a factor that most citizens did not understand and could not afford, which slowed down the development of web usage in households. In 1996, only 1% of the population had internet access at home (The World Bank, 2023). In addition to this, there were issues with the quality and slowness of the service. Blanco, Seijo, Pescador, and Torbado all highlight this circumstance, especially when many people were not aware they were paying for the connection, hence the difficulty in understanding why they had to pay additionally, even if it was a symbolic cost, to internet service providers.

Thus, the emergence of free ISPs represented the much-needed revolution that internet in Spain required. Javier Fernández-Barrera comments in this regard that when the influx of free services arrived, he realized that over time, internet would become a right. Karma Peiró, on the other hand, explains that when ISPs began to emerge, she couldn't see where the business could be, but the number of connected people had grown so much in such a short time that it was understandable that these services were offered. In 1996, the number of internet users was just over one and a half million, while in 2003, this figure reached 12 million people (Díaz Noci, 2005).

The memories associated with the internet of the late 20th and early 21st centuries are diverse and, in some cases, contradictory, linked to multiple providers, portals, modems, slow connections, and blocked phone lines while users attempted to connect. At times, users patiently dealt with the circumstance of canceling the only means of communication with the outside world, leading some professionals like Ruiz de Elvira to hire two telephone lines for domestic use.

The revolution that the internet brought about was not only in terms of communication but also in terms of information (Papí-Gálvez, 2020), which became apparent early on. Sonia Blanco points out two very important milestones that demonstrated the importance of the internet in meeting the population's information needs. One of them was the assassination of Miguel Ángel Blanco, a councilor of the People's Party, by the ETA terrorist group on July 13, 1997. The New York Times was the first media outlet to report the news before any other Spanish news outlet. Users who, like her, had internet access at home were better informed than the rest of the Spanish population relying on print and broadcast media in the country. Another historic moment on a global scale was the terrorist attack on the Twin Towers in New York on September 11, 2001. With such high demand for information, the media had to simplify their websites in order to serve all the information without causing server crashes.

On their part, Karma Peiró recalls Bill Clinton's attempt to control internet content with the Telecommunications Act of 1996 and how thousands of websites turned black in defense of freedom of expression. Peiró also mentions the anti-globalization movements and how photographs of assaults on global summits, such as the one in Genoa in 2001, were disseminated through the internet. Blanco and Peiró, finally, refer to the emergence of the first Spanish media outlets on the internet. The media pages

took a very long time to load, which made connection times longer, resulting in exorbitant telephone bills during those years.

As the internet took shape, Juan Pablo Seijo points out the fascination provoked by witnessing the growth of web content and its form. The fact of seeing the page of a person thousands of kilometers away with similar interests and the love for sharing them with the world was what impacted users the most at that time.

With the advent of mobile phones and ADSL connections, Pescador states that the internet started to become invisible and omnipresent, democratizing a service that had been limited to a privileged few due to its cost and accessibility. Andrés Torbado summarizes these years as:

“The feeling of being a pioneer, an explorer in a new universe, of having the keys to the castle when others didn’t understand what would happen to them, of participating in an unstoppable new literacy that one had to embrace or succumb to and remain in darkness” (Torbado, during the interview).

Karma Peiró, who had been writing about what was happening on the internet for five years by the late 1990s, admits that she could barely imagine everything that had happened in the last 40 years, nor could she even think of the boom that the internet experienced with the massive entry of mobile phones. In this regard, Blanco acknowledges that when mobile phones became smart with internet connectivity, the true globality and omnipresence of the Internet were achieved.

At this point, it is worth asking whether these protagonists of a change in communication methods and access to information were aware not only of the present but especially of the future of this whole process. When asked whether they thought at any moment, both in their early stages and in the initial moments of commercialization, that the internet could become a global and omnipresent means of communication as it is today, the interviewees for this work responded firmly and unanimously that yes, without a doubt, especially due to the feeling, as Sonia Blanco admits, of witnessing the birth of something that would completely change the world and society. This is something shared by Darío Pescador, but he adds that he was also very aware of the resistance from more traditional sectors, especially telecommunications companies, and the obstacles they were consciously and deliberately placing in its development.

And, to conclude, from what was the past, how it evolved into the present, and the expectations for the future, the interviewees transition from enthusiasm to pessimism, not so much from a technical standpoint but from a conceptual one. Karma Peiró recalls that as early as 1999, more than fifty thousand people were mobilized via email in Seattle to protest against the World Trade Organization Summit, protesting against globalization. This is followed by the impact of social networks on the Arab Spring revolution (El Hamdouni, 2013; Martínez Canizales, 2020; Norris, 2015) or the 15M movement in Spain (Casero-Ripollés, 2015). Then, the feeling of pessimism arises in Juan Pablo Seijo when analyzing the quality of content and realizing that today it is a system that is “as wonderful as it is a cesspool in equal parts.” Seijo agrees with Sonia Blanco in concluding that he thought the internet would be a space where there would be more common sense and fair play, and not the levels of harassment and hostility, both commercial and in terms of participation and content, that we see today.

## 4. Conclusions

From the literature review and interviews conducted, it can be concluded that the initial experiences of charging for access did not facilitate internet access for families and small businesses. In the early years, there was also nothing of interest on the Internet for the public consuming media. It was the emergence of the Web and the arrival of access providers with affordable prices, as well as the implementation of Infovía, that led to a process of user incorporation, along with the creation of content, which attracted more users.

There were pioneering companies in commercialization, such as Goya, Servicom, or Compuserve, which were eventually overshadowed by small companies that, taking advantage of the benefits of Infovía, started to market access at low prices. This work reveals that without the initial boost from these companies, the government would hardly have launched an initiative like Infovía, whose objective was to facilitate internet access for the Spanish population, as they took the most risk in assuming the costs of deploying their own internet marketing network and popularizing access until the arrival of Infovía.

Until the arrival of operating systems like OS2 Warp, first, and Windows 95, later, the internet was only accessible to a minority of university researchers who accessed it from computers in their computer centers. The services that these researchers and scientists accessed, such as email or later web pages, began to be perceived not only as an academic activity but as entertainment and leisure tools.

On the other hand, those who were curious about the advantages of the internet but did not have access to a university connection began to use alternative networks such as BBS and Fidonet, which were the germ of the pioneers of an internet independent of university networks.

The presence of the first media outlets on the Web, starting in 1995, not only incentivized all types of users to contract a connection but also opened the doors to a new way of doing journalism and revealed a new medium for information and communication.

All of this has undoubtedly brought about a revolution, a before and after in human history, as happened with the invention of writing and later printing. Its protagonists - as the interviewees themselves define it for this work - experienced it with a sense of fascination and initial disbelief. The success of the technology was assured; the question was how the quality and functionality of the content that would gradually fill the internet and the Web would evolve.

From providing spaces and services for scientific research and the ability to know what was happening thousands of kilometers away simultaneously, from the other side of the world, with what that means for access to information and the defense of democracy and human rights, the internet has also become a supplier of entertainment and disinformation. How the next years will be for the development of content and the uses of the internet will undoubtedly be crucial for future generations in a more interconnected but less free and informed world.

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