

Digital journalism: 25 years of research.

Review article

Ramón Salaverría

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Ramón Salaverría ✉

<http://orcid.org/0000-0002-4188-7811>

University of Navarra, School of Communication

Journalism Projects Department

Edificio Bibliotecas, 31009 Pamplona, Spain

rsalaver@unav.es

Abstract

In 1994, the first web online media outlets were introduced in several countries around the world. Twenty-five years later, digital or online journalism is a confirmed reality and common practice in professional and academic circles. Based on an extensive bibliographic review, this article examines the main areas of academic research related to digital media at the global level in the last quarter of a century. It shows the lines of research on the history of journalism on the Internet, the forms of digital media, their languages and economic challenges. It also reviews the most widespread research theories and methods. The analysis confirms that research on digital journalism is a strong, ongoing discipline, despite the fact that several methodological and thematic challenges will need to be addressed in the next few years.

Keywords

Journalism; Digital journalism; Digital media; Academic research; Communication theory; Research methods; History of communication; Review article.

1. Introduction

What is digital journalism? This question may seem too simple or even inappropriate for a scientific journal. However, the most basic questions are often the most persistent and difficult to answer. And the most important.

If long-standing researchers have posed questions in recent years such as "What is news?" (Harcup; O'Neill, 2001; 2017) and "What is 21st-century journalism?" (Deuze, 2005; McNair, 2006; Broersma; Peters, 2013), it cannot be out of place to discuss one of its most successful versions in the last twenty-five years: digital journalism. Besides, the answer is not all that obvious, no matter how long you think about it. This is confirmed by the huge number of research studies carried out on the topic since the first online media outlets were launched twenty-five years ago in the mid-1990s.

The aim of the next few pages is to review not only the theoretical contributions made to digital journalism (a highly elusive, changing, multifaceted concept), but also the main areas of academic research on the topic. The year 2019 will mark the 25th anniversary of the first news media outlets on the World Wide Web, which makes it the ideal time to evaluate the developments, findings and unfinished business of research on this discipline.

Rather than providing a comprehensive review, this article will discuss the main points. It is literally impossible to include everything published on this subject in a single article. Despite the lengthy bibliography at the end of this article (with over 200 references), this list of publications is merely a condensed selection of the towering piles of content researched and written in recent years on digital journalism. It is impossible to mention all the authors who have written on this topic, but the article discusses most of the important ones. Despite the inevitable omissions and oversights, the aim is to give readers a general idea of the main research areas in digital journalism and online media outlets in the last 25 years, as well as their achievements and current challenges.

In fact, this is not the first assessment of the progress of research on digital journalism and communication in the last few decades. Several authors have helped define the limits of this discipline through extensive reviews that have outlined the research community's main areas of study in recent years (**Fernández-Quijada; Masip, 2013; Mercier; Pignard-Cheyne, 2014; Reese, 2016**). These works are warmly welcomed because the accumulation of specific empirical studies often makes it difficult for researchers to distinguish passing trends from basic essentials.

For example, **Steensen and Ahva (2015)** carried out a study of this kind on the 20th anniversary of the appearance of online media outlets. Their analysis, based on the abstracts of all the articles published between 2000 and 2013 in two of the most distinguished academic journals on the discipline, *Journalism* and *Journalism Studies*, determined that lines of research on journalism had increased dramatically in this period. They observed that studies had moved away from the typical political science approach and were turning increasingly towards a sociological perspective, both in society as a whole and within media outlets. They also perceived that matters of an ethical and philosophical nature such as ethics and objectivity in journalism were gaining importance in journalism studies. In terms of theory, they identified an evolution from pure empiricism to increased attention to theoretical aspects, where the dominant model was grounded theory.

Other authors carried out similar review works and focused specifically on online journalism (**Masip et al., 2010**). The most comprehensive review was done by **Mitchelstein and Boczkowski (2009)**, who classified international research in this discipline in five main areas:

- the historical and market context,
- the innovation process,
- changes in journalistic practices,
- challenges in established professional dynamics, and
- the role of user-generated content.

More recently, other research reviews addressed specific aspects such as the more than 300 research studies on the impact of digital media on political participation (**Boulianne, 2018**).

All reviews are incomplete by nature. They force you to summarize, which means that taking into account all references and approaches is simply impossible. In this article, I decided to leave out bibliometric analysis, which examines research production based on essentially quantitative parameters. For those interested in this type of approach, several recent academic studies are available (**Masip, 2005; Castillo; Carretón, 2010; Caffarel-Serra; Ortega-Mohedano; Gaitán-Moya, 2017**). I have opted for a descriptive approach in this article with the aim of exploring the paths followed by research on digital journalism: history, languages, economic challenges and related topics. However, before we begin, we must first decide on some concepts. Let's begin with our opening question: what is digital journalism?

2. Looking for a term (and its definition)

It may seem surprising that more than 20 years since journalism in digital media took its first steps, there is still no established common name for it used by international researchers. In fact, as we shall see, agreement has not been reached on the definition or even the actual name of this type of journalism. Even today, professionals and academics are not in agreement when it comes to choosing between expressions such as “digital journalism” (**Kawamoto, 2003**), “cyber journalism” (**Díaz-Noci; Salaverría, 2003**), “online journalism” (**Deuze, 2001; Steensen, 2011**), “multimedia journalism” (**Deuze, 2004**), and a long list of similar labels (**Karlsen; Stavelin, 2014**).

The most widespread expression among professionals in most countries is definitely “digital journalism.” Internationally, however, academics do not appear to be in such agreement and, depending on each case and country, they opt for one word or another. For example, in the

Spanish- and Portuguese-speaking research communities, the term “cyber journalism” (*ciberperiodismo* in Spanish and *ciberjornalismo* in Portuguese) is the most widely used. By contrast, in the French-speaking world, the form “digital journalism” (*journalisme numérique*) prevails. Among English and German speakers, the preferred expressions for most of the last 25 years were “online journalism” in English and *online journalismus* in German. However, in the last 10 years “digital journalism” has been gradually taking over and is now the most popular form.

“ More than 20 years since journalism in digital media took its first steps, there is still no established common name ”

Spanish readers will notice that this article, originally written in Spanish, uses the expression “digital journalism” (*periodismo digital*) in the title, whereas in the past the author would have used “cyber journalism” (*ciberperiodismo*) in Spanish (Salaverría, 2005a). This apparent change of criteria should be explained. For the reasons of linguistic accuracy and expressive economy I discussed at the time (Salaverría, 2005a, p. 20), I still maintain that the term *ciberperiodismo* is more accurate and appropriate in Spanish, despite its current limited use in the professional world. It defines the specialty of journalism that uses cyberspace to investigate, produce and, above all, disseminate news content (p. 21). It therefore identifies the journalism carried out “on” digital networks. But the expression *periodismo digital* is broader, as it refers to all journalism carried out “with” digital technologies. The difference is subtle, but relevant. In broad terms, the expression “digital journalism” encompasses all forms of journalism that use digital resources; it therefore includes not only Internet resources and mobile networks, but also digital television (Robin; Poulin, 2000) and digital radio (Martínez-Costa, 1998). Although digital television and radio are rarely considered part of cyber journalism, they are indisputably digital expressions of journalism. The term *ciberperiodismo* is therefore more specific than *periodismo digital* in that it refers exclusively to what is done by media outlets in cyberspace, i.e., the Internet. Therein lies the subtle difference between the two concepts.

This clarification helps explain why I used the expression “digital journalism” in the title of this article: I aim to include all digital forms of journalism, not only those related to interactive networks. In fact, since computer technologies began to be embraced by the media, relevant academic contributions have been made on digital forms of journalism that have not been confined to Internet media (Pool, 1983). This article will reflect on all digital forms of journalism while paying particular attention to those that have focused specifically on Internet media outlets. The research done on all of these digital forms of journalism is discussed on the next few pages.

3. Historic perspectives on digital journalism

Journalism’s initial encounter with computing predates the advent of the Internet. In fact, it dates back to the 1950s, when some media outlets began to experiment with using computers in media coverage. The experiment by CBS on November 4, 1952 is often cited as a pioneering example. On the occasion of the US presidential elections, which were held on that day, the television network used a primitive computer, the gigantic *Univac*, to predict (correctly) the final result of the vote based on the count of the first votes (Bohn, 1980).

Over the next four decades, until the early 1990s, media and digital technology continued on a course of mutual approach. Meanwhile, an increasingly scientific and technological approach was under way toward handling information, under the label of precision journalism

Journalism’s initial encounter with computing predates the advent of the Internet

(Meyer, 1973; 1991). While this idea achieved relative success among journalists, it had a considerable impact on journalism researchers and professors in the following decades. Indeed, its echo can still be heard. There is a clear connection between the precision journalism formulated by Meyer in the 1970s and one of the most successful aspects of digital journalism in our era: data-driven journalism.

Up until the late 1980s, during the years in which digitization became gradually assimilated by the media, theoretical treatises (Bagdikian, 1970; Washburn, 1981) and empirical research (see, for example, Reese, 1988; Reagan, 1989) on the adoption of the “new technologies” in journalism were common. As Armand Mattelart (2001) explained, this was also when the influential contemporary concept of the information society was definitively forged (Masuda, 1981). At that time, most of the research on technological change focused on television, which was then considered to be the main electronic medium (Meyrowitz, 1985, p. 5). To a much lesser extent, some studies were also being published on the use of computers and databases in journalistic information (Aumente, 1987) and on the vague potential of developing journalism in interactive networks (Koch, 1991). A few authors, however, including apocalyptic authors such as Neil Postman (1992) and integrated authors such as Nicholas Negroponte (1995) and Roger Fidler (1997), glimpsed the breadth of the change that was being triggered in the media. In the early 1990s, a genuine technological revolution was knocking at the door of journalism.

David Carlson (2003) points to January 19, 1994 (25 years ago) as the date when the first news publication appeared on the World Wide Web. According to that author, the honor of inaugurating the history of Web-based journalism belongs to the *Palo Alto Weekly*, a humble weekly newspaper published in the San Francisco bay area. Before this, however, other larger media outlets had launched online editions on the commercial networks of the time, such as *America OnLine* (AOL), *CompuServe* and *Prodigy*. The first to do so was the *Chicago Tribune*, which published an edition on AOL in March 1992 (Díaz-Noci; Meso-Ayerdi, 1998). This newspaper was followed by big newspapers such as *The New York Times*, *The Washington Post*, the *Los Angeles Times* and *USA Today*. Alongside these big dailies, one of the most influential newspapers of the time was the Californian *San Jose Mercury News*, with its advanced digital edition called *Mercury Center* (Chyi; Sylvie, 1998). The proliferation of digital media was so rapid that, almost immediately, those publications became known as the fourth medium (Bonnington, 1995), in competition with the press, radio and television.

Other countries soon followed the trend that had begun in the United States. Between 1994 and 1996, most countries in the world saw the birth of their first digital media outlets, which were almost always driven by newspapers. Historical research on online media still has much to learn because there are few countries with

There are few countries with monographs on the origin and initial development of online media in their respective territories

monographs on the origin and initial development of online media in their respective territories. Nevertheless, many studies of this kind have been published on countries all over the world. Indeed, historical reviews on the evolution of online media can be found in many different countries such as Argentina (**Bergonzi et al.**, 2008), Bolivia (**Cabrero-Rubio**, 2005; **Banegas-Flores; Barba-Sanjínez**, 2014), Cameroon (**Ngounou**, 2010), Canada (**Perigoe**, 2009), China (**Lagerkvist**, 2008), Costa Rica (**Bravo-Herrera**, 2003), Ecuador (**Rivera-Rogel**, 2012), Estonia (**Tähismaa**, 2003), France (**Charon; Le-Floch**, 2011; **Atheaume**, 2013), Israel (**Caspi**, 2011), Italy (**Gazoia**, 2013), Mexico (**Crovi-Druetta; Toussaint; Tovar**, 2006), Nigeria (**Kperogi**, 2012), Peru (**Yezers'ka**, 2008), Portugal (**Bastos**, 2010), South Africa (**Bosch**, 2010), Spain (**Díaz-Noci**, 2005; **Salaverría**, 2005b; **Salaverría**, 2016, pp. 169-209), United States (**Carlson**, 2003; **Scott**, 2005) and Venezuela (**Rojano**, 2006).

Coincidentally, the first online media in most of these countries emerged at around the same time. With the exception of the most economically and technologically limited countries and countries under authoritarian regimes and severe restrictions on freedom of the press, by the mid-1990s, virtually every country in the world had been hit by that wave. Thanks to these pioneering media, which appeared first on commercial networks and, shortly afterward, on the World Wide Web, the history of online journalism had just begun. And with it came the exuberant development of academia's areas of research.

The spectacular proliferation of online media spurred the sudden interest by researchers. By the year 2000, the main online media directory of the time, which was maintained by the professional American journal *Editor & Publisher*, listed 4,400 online publications worldwide. Of these, 3,161 were based in North America, 1,634 in Europe, 269 in South America and 214 in Asia (**Chyi; Sylvie**, 2000). The phenomenon very rapidly went global (**Siapera; Veglis**, 2012; **Dragomir; Thompson**, 2014). As a result of this globalization, national studies have been carried out such as the ones listed above, and comparative analyses have also been done of the evolution of digital news media outlets on entire continents. Examples of this perspective include several monographs on online journalism in Europe (**Van-der-Wurff; Lauf**, 2005; **Oggolder et al.**, 2019), Africa (**Mabweazara; Mudhai; Whittaker**, 2014) and Latin America (**Salaverría**, 2016).

This national and international research has encountered several as yet unsolved methodological difficulties. As **Díaz-Noci** (2013) points out, researching the history of digital journalism poses major methodological challenges due to the heterogeneity and evanescence of

Although the number of digital publications worldwide is unknown, it can be estimated in hundreds of thousands

online documents, the lack of systematic archives in most online media and, I would add, the vastness of the object of research. Because of the difficulty of covering the complete framework of online journalism, there have been far more studies in the last 25 years that focus on specific media outlets (e.g., **Brinca**, 2006; **Molinos; Marques; Ferreira**, 2006; **Smyrnaiois; Bousquet**, 2011), often as part of doctoral theses, than on national online journalism markets as a whole. In other words, there have been far more studies of trees than of forests.

4. Models of digital journalism

The tendency to study specific media outlets in particular is not surprising, given that the forest of online media publications is not a small one. It might be better described as a rapidly growing jungle. As mentioned above, there were an estimated 4,400 online media publications in the whole world in 2000. And yet, a study carried out in 2018 found more than 3,000 active online publications in Spain alone (**Salaverría; Martínez-Costa; Breiner**, 2018). We do not know how many digital publications are active worldwide, as there are no studies of this size. Nevertheless, a conservative extrapolation of the census for Spain makes it possible to venture with some confidence that the figure will be at least in the hundreds of thousands.

Given this large size, the diversity of online media is clearly enormous. More than two decades after the appearance of the first digital publications, most of them online editions of daily newspapers, the current diversity of online media is extraordinary: there are digital outlets linked to traditional journalism brands as well as native digital media outlets. Although publications for multiple devices are the norm, there continue to be publications designed solely for viewing on personal computers, while publications designed exclusively for tablets or smartphones are also emerging. As with traditional media, general and specialized media coexist on the Internet; free publications with paid publications; global online publications with national, local (**López-García**, 2008) and even hyperlocal publications (**Tenor**, 2018). And the list keeps growing.

There have been stages in this development, which continues today. As **Scolari** (2013a) explains, the first stage is always that of transition between what exists and what is in the process of being born because

“each new medium that appears fills its space with content from other media” (p. 16).

Several authors (**Fidler**, 1997; **Bolter**; **Grusin**, 2000) have described this connection between traditional media —press, radio, television, news agencies— and “new media” (**Pavlik**, 2001), a label that is now out of date. In the 1990s and in the early years of this century, the predominant model in online media was based on that of traditional media, particularly newspapers. However, over time, digital media have become increasingly independent in both form and content. Most of the first digital publications used the shovelware approach (**Bardoel**; **Deuze**, 2001), a publishing model that consists of simply reproducing on the Internet the content originally created for another platform. Although that model can still be found in some primitive online publications, it has been surpassed by another model, which is based on producing original content for the Internet. Just as has occurred with journalism genres, digital media show an evolution in four stages: repetition, enrichment, renovation and innovation (**Salaverría**; **Cores**, 2005, pp. 148-149). Twenty-five years after the birth of the first online publications, digital media are finally entering the fourth stage.

Along the way, however, there have been some major shake-ups. One of the most disruptive of these, for journalism, was unquestionably the success of content generated and distributed by users. In the early days of this century, the first signs of a phenomenon appeared: the active participation of citizens in public communication, which, over time, has transformed the traditional role of the media. The appearance of blogs, hailed as a revolution by some authors (**Orihuela**, 2006), signaled the start of this phenomenon, which rapidly incorporated the voice of citizens into public communication in general and also, more specifically, into journalism. Of course, media publications had long ago timidly opened their doors to public opinion through features such as letters to the editor (**Grey**; **Brown**, 1970). But the arrival of blogs was a qualitative leap. This new form of publishing allowed for public communication that was free and simple and had tremendous reach. And it was also enthusiastically embraced by millions of users throughout the world. Suddenly, a new divide arose: professional journalism on one side and user-published content on the other.

This dichotomy gave rise to what has been one of the most fertile areas of research in online journalism in all these years: the exploration of the basic tenets, modalities and consequences of user-generated content (UGC) (**Van-Dijk**, 2009; **Leung**, 2009) and journalists’ tortuous assimilation of it into their daily professional routines (**Hermida**; **Thurman**, 2008; **Paulussen**; **Ugille**, 2008). Early research on user-generated content also coincided with a growing criticism of traditional media, which, some predicted, would be unable to adapt to the new context. For example, Jakob Nielsen, known for his publications on website usability, predicted in 1998 that

“most current media formats will die and be replaced with an integrated Web medium in five to ten years” (**Nielsen**, 1998).

That prediction was made 20 years ago and yet we still have books, newspapers, magazines, radio and television.



The New York Times (December 30th, 1996)
<https://web.archive.org/web/19961230230427/http://nytimes.com>



The New York Times (January, 17th, 2019)
<https://www.nytimes.com>

Some predicted not just the disappearance of certain media, but even the death of professional journalism as a whole. Indeed, in the mid-2000s, when ideas about the technological evolution toward Web 2.0 were in vogue (O'Reilly, 2009), the concept of citizen journalism was popularized as a presumptive alternative to journalism produced by professionals. Dan Gillmor (2004) was the main proponent of these ideas, although many other authors spoke out in their favor (Bowman; Willis, 2003). According to their view, the days of media produced by professionals and managed by companies were essentially numbered due to the rising tide of content shared by ordinary citizens. As Manuel Castells put it, there was a move from mass communication to "mass self-communication" (Castells, 2007).

Research examining journalism in relation to social media have become one of the main areas of studies on digital journalism

While some authors reviewed the theoretical bases of citizen journalism critically (Lewis; Kaufhold; Lasorsa, 2010), many empirical studies tested its real reach in many different news markets (Allan; Thorsen, 2009). Many of those studies downplayed the triumphant tone of those who were announcing a radical shift in journalism; the new participatory forms of producing news content were more of a complement to the media than a substitute. Indeed, it was soon seen that, as had happened in the past with other technological innovations, the media gradually assimilated these new phenomena into their daily professional routines. Digital media incorporated blogs, opened up spaces for readers' comments and, in general, offered many new ways for the public to participate in and contribute to the news, thus giving rise to a trend called crowdsourcing (Howe, 2006).

Despite the fanfare that accompanied the launch of certain media dedicated to user-generated information (the most famous case undoubtedly being the South Korean *OhmyNews* (Gillmor, 2004, pp. 125-129)), citizen journalism soon proved to be nothing more than a fad and, as such, quickly declined. Nevertheless, some of its essential traits survived. While it became clear that active audiences were not about to cause the collapse and immediate replacement of the media, they had triggered an irreversible underlying transformation in the relationship between the media and the public. The public no longer consisted of mere passive recipients and were now active interlocutors. "Participatory journalism" (Domingo *et al.*, 2008) was born, also labeled collaborative journalism (Bruns, 2005), with its own dynamics and new challenges.

Academic interest in this trend increased with the expansion of social media. The global success of services such as *Facebook*, *Twitter* and *Instagram*, each with hundreds of millions of users, attracted the interest of researchers because of their rapid and profound impact on the media (Newman, 2009; Hermida, 2012). There was a proliferation of studies examining journalism in relation to social media. At the end of the period analyzed in this article, this research is, in fact, one of the main areas of studies on digital journalism. Based on the key value achieved by the act of sharing (Nogueira-Vivo, 2018), these studies deal with such wide-ranging aspects as the phenomena of public opinion and political participation in the context of social media (Gil-de-Zúñiga; Jung; Valenzuela, 2012), their impact on the media business (Qualman, 2009) and journalistic narratives used on these platforms (García-Avilés; Arias Robles, 2016).

Researching digital journalism goes beyond researching its media

5. Online media and platforms

As we have just seen, researching digital journalism goes beyond researching its media. However, as would be expected, one of the most common areas of research on this discipline has been types of online media (Salaverría, 2017).

Over these first 25 years, the evolution of digital media has been very rapid and intense. As with humans, who experience their fastest growth in the early stages of life, followed by slower growth, online media have shown considerable mutability in these early years. Researchers have tried to explain this diversity through studies of different kinds.

One of the most frequent approaches has focused on exploring the forms and strategies of digital media on the successive publication platforms:

- the World Wide Web (Canavilhas, 2003),
- tablets (Scolari, 2013a) and
- smartphones (Mitchell; Rosenstiel; Christian, 2012).

As a result of the popularization of smartphones and app-based communication systems, a large number of studies have focused on this trend in the last ten years, giving rise to the development of a new discipline: mobile journalism or *mojo* (Westlund, 2013; Wolf; Schnauber, 2015).

Besides studying platforms, researchers have also paid attention to different technologies and services that have been launched on the market over the years with varying degrees of success. These services have often had some connection with journalism, which made them susceptible to analysis of their modalities and potential development as news platforms. This is the focus of studies on journalism in *Second Life* (Brennen; De-la-Cerna, 2010), journalism with drones

(Holton; Lawson; Love, 2015) and locative journalism, based on geolocation technologies (Nyre *et al.*, 2012). Today, one of the areas attracting most interest among researchers is that associated with immersive journalism, a form that is on the rise thanks to augmented-reality and virtual-reality technologies (De-la-Peña *et al.*, 2010; Domínguez-Martín, 2015; Shin; Biocca, 2018).

The study of online media models has also been approached from a publishing perspective. In this case, the division has been established between publications derived from media on other platforms and native digital publications. In the 1990s, digital media linked to traditional media, known as legacy media (Arrese; Kaufmann, 2016), made up almost the entire market; over the years, however, the number of native online outlets has greatly increased. In Spain, media founded on the Internet accounted for one third of all online publications in 2018 (Salaverría; Martínez-Costa; Breiner, 2018). Because of this rapid development, native digital media have begun to be the subject of monographic studies (Nicholls; Shabbir; Nielsen, 2016).

Another different factor of study of online media is their geographic scope. Digital media have shown tremendous versatility in this regard, giving rise to publications with a global reach (*The Huffington Post*, *Quartz*, *Politico*, etc.), as well as hyperlocal publications (Williams; Harte, 2016). Since the first digital media appeared, it became clear that one of their distinctive traits was their ability to ignore geographic limits. As Nicholas Negroponte explained in the early days of the digital era,

“In the same ways that hypertext removes the limitations of the printed page, the post-information age will remove the limitations of geography. Digital living will include less and less dependence upon being in a specific place at a specific time, and the transmission of place itself will start to become possible” (Negroponte, 1995, p. 165).

Indeed, unlike the press, radio and television, Internet media have, since their beginning, shown a hitherto unknown quality: while they allowed for maximum personalization of content, they facilitated the transmission of their content to global audiences, beyond the physical territory of the different media. In recent years, this trans-territorial quality has been somewhat curtailed for legal reasons, as restrictions on publishing rights have proliferated, particularly in relation to certain content such as sports videos, audiovisual fiction series and other similar content. This content can be consumed by users in one country, but is blocked for users outside that country. Despite these legal limitations, all digital media are, in essence, global.

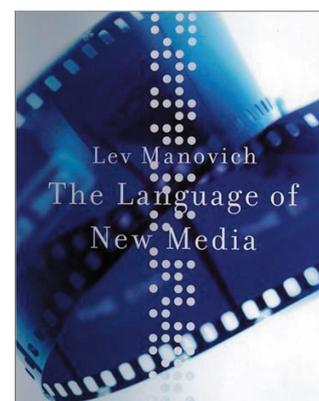
Furthermore, as mentioned, digital media are, or can be, personalized. In the 1990s, different prototypes of digital media had already been designed as personalized news services (Haake; Hüser; Reichenberger, 1994). Over the years, however, that promise of à la carte digital media gradually lost steam, as the big news brands opted for digital publications with a limited degree of personalization. In the last ten years, the development of social media based on personal profiles and the refinement of algorithms that can assign content increasingly adapted to the interests and preferences of each user have brought the old idea of personalized media back to life. The new wave of technologies using artificial intelligence, which can produce, organize and distribute “their” information to each user, poses several professional and ethical challenges for journalism that are being actively analyzed by the academic community (Carlson, 2017).

Current development in the direction of the Internet of Things, a new generation of technologies that will bring connectivity to any electronic device, is a harbinger of the arrival of a new set of online media. In the last quarter century, online media have been limited to computers and mobile devices. However, in the near future, which, in some cases, is already here, online media will extend to devices such as voice assistants, wearables, home automation objects and a whole host of elements we use in our daily lives that we would currently find hard to imagine. News content will have to adapt to this emerging technological paradigm by overcoming the convergence and multiplatform concepts that professionals and academics have been using in recent years (Doyle, 2010; Quandt; Singer, 2009).

6. Language of digital journalism

Another fertile area of research on digital media focuses on narrative forms or modes of communication; that is, on the languages of digital journalism. In reality, it would be more appropriate to expand the frame and, as explained by Lev Manovich, talk about the language of new media in general. Indeed, in his influential book *The language of new media* (Manovich, 2002), this American professor presented a systematic theory of digital media at the beginning of this century, in which he connects them to visual media, most especially cinema. Manovich explained that, despite their novelty, digital media really make use of the narrative conventions of old media.

This debt with the past can be seen in the language of online media. Since the first steps of publications on the Internet, it was seen that their genres and formats were and continued to be directly inspired by nondigital news media. However, shortly afterwards, online media outlets began to exhibit characteristics of their own, which pointed to a gradual disconnection from the languages used by previous media. Time



The language of new media (Manovich, 2002)

has shown that this separation is slower and more gradual than expected. Even today, the genres and communication codes of many online media outlets continue to owe a direct debt to legacy media. It is clear that, 25 years after their birth, many online publications, or at least the most advanced ones, show specific forms of expression that have been the subject of many studies.

The first studies in this area focused on establishing the basic concepts. On this topic, many authors agreed on identifying three main traits in the language of digital journalism: the use of hypertext, multimedia and interactivity (**Nielsen**, 1995; **Salaverría**, 2005a, pp. 21-28).

The term “hypertext” was coined more than half a century ago by **Theodor H. Nelson** (1965) and, since the 1990s, the concept has given rise to a wealth of theoretical contributions regarding its application in journalism (**Huesca; Dervin**, 1999; **Díaz-Noci; Salaverría**, 2003, pp. 81-139). The ability to connect texts, understood in the broadest sense as units of information in any format, is considered to have been one of the fundamental bases of the language of digital journalism. Compared to the static information of the press, radio and television (which do not allow users to expand that initial information), the hypertext links in digital media have taught users how to actively access the news. The news is no longer just read, listened to or watched; it is also browsed. Linear reading of texts is now often replaced with nonlinear consultation.

In theory, the potential for hypertext development in journalism was seen as enormous (**Fredin**, 1997). However, empirical studies have shown that its real application in online media has been far more modest than expected and, in many cases, has been limited to repeating models inherited from pre-Internet journalism (**Himmelboim**, 2010). Online journalism that is a slave to breaking news and easy clicks, and is more concerned with traffic than with quality has ended up turning its back on many of the narrative and documentary possibilities of hypertext, and barely uses it as a resource for increasing views. Furthermore, links have been observed to work as an additional gatekeeping resource: the media outlet not only decides what is news based on the sources and content it chooses to publish, but also on the links it includes in its news (**Dimitrova et al.**, 2003).

Multimedia is the second key element in the language of Internet journalism (**Guallar; Rovira; Ruiz**, 2010; **Salaverría**, 2014). Unlike hypertext, its real development in online media is much more advanced and diverse. The success of online video, a format which, according to different consulting firms, accounted for three quarters of global Internet traffic in 2018, has encouraged online publications to explore multimedia narratives. In this case, academic research has focused on identifying the types of multimedia packages in journalism (**Jacobson**, 2012) and their effect on news consumption by the public.

Closely related to multimedia is transmedia, another important concept that has impacted not only the academic world, but also professional practice. This idea became popular in 2003, when Henry Jenkins used it in an article published in *MIT's Technology review*. In the article, he explained that we had entered

“an era of media convergence that makes the flow of content across multiple media channels almost inevitable” (**Jenkins**, 2003).

Transmedia, as described by Jenkins and by the authors who followed him (**Scolari**, 2013b), refers to the trend of producing and consuming content in a supplemental manner through different channels. It is therefore a synthesis of the concepts of multimedia, convergence and participation, which results in cultural expressions that are perfectly suited to the culture of mixing and matching that is so successful on the Internet. This culture is most highly developed in expressions such as the fandom phenomenon, communities of film buffs and fans of cult fiction series. To a lesser extent, it has also appeared in journalism content (**Renó**, 2014; **Rost; Bernardi; Bergero**, 2016).

The third major concept associated with the language of digital journalism is interactivity. As mentioned above, interactivity has been a key factor in the development of online journalism in recent years because it has driven participative or collaborative journalism. More specifically, interactivity is also an essential element of the language of digital journalism. And it is also one of the elements most studied by the academic community, even more so than multimedia. Many of these studies focus simply on identifying and analyzing the interactive resources used by news websites (**Stroud; Scacco; Curry**, 2016). Other studies, however, go further and explore the effects of these interactive qualities on how information is interpreted by the public (**Chung; Nah**, 2009).

Some new storytelling categories studied by academia include long-form journalism, slow journalism, immersive journalism, and newsgames

The combination of all these ingredients has given rise to increasingly developed ways of presenting online news content. In the early years, digital media barely left room for anything other than simple news and certain classical journalism genres (interviews, reportage, chronicles, columns, etc.). However, over time, they explored much richer and more innovative ways of presenting information content. For example, feature articles have undergone a clear metamorphosis (**Larrondo**, 2009) through the development of multimedia resources and the exploration of novel hypertext and interactive formulas. Other genres, such as live news updates and interactive infographics (**Cairo**, 2012), have also contributed to renewing the genres and formats of digital journalism.

Besides the classical paradigm of journalism genres, new ways of classifying content have emerged from online media. These renewed categories order news information based on criteria such as its narrative features, its length and how it combines multimedia formats. Some of the most successful categories and those most studied by academia include

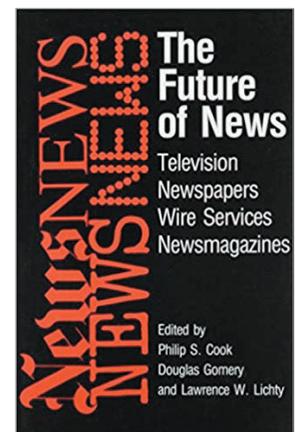
- long-form journalism (**Wolf; Godulla, 2016; Hiippala, 2017**),
- slow journalism (**Rosique-Cedillo; Barranquero-Carretero, 2015**),
- immersive journalism (**De-la-Peña et al., 2010; Domínguez-Martín, 2015**) and
- newsgames (**Burton, 2005; Bogost; Ferrari; Schweizer, 2012**).

7. Economics of digital media

One of the most important points in the last 25 years in regard to digital media has been its economic impact on the communication industry and, by extension, on the long-term viability of quality journalism.

Economic uncertainty has become a primary concern, first and foremost for media outlet directors and professionals, who have been forced to deal with the radical transformation of their market. It has also been a concern for the academic community, which has almost exclusively analyzed this transformation by describing it rather than making proposals. Although some authors have made suggestions on how to solve the media's serious economic problem (**Vaccaro; Cohn, 2004; Cagé, 2015**), the vast majority of studies have merely quantified and analyzed the effects of this transformation (**Grueskin; Seave; Graves, 2011**).

In the 1980s and early 1990s, before the digital impact, the news media business was highly lucrative and relatively stable. Naturally, there were differences between different media. Television was unquestionably the most profitable format, thanks to its enormous income from advertising. It was followed by the press and radio, with more modest but nevertheless substantial levels of profitability. It is true that the publishing industry watched with concern as young people moved away from reading newspapers (**Smith, 1980; Bogart, 1989**), but it is also true that those same young people spent their time watching television, a medium that, in the end, often belonged to the same newspaper owners. In each journalism market, media outlets competed with their rivals, but did not feel threatened by external competitors. It is symptomatic that a book published in 1992, i.e., just before the start of the digital-journalism revolution, had the following title: *The Future of news: Television, newspapers, wire services, newsmagazines* (**Cook; Gomery; Lichty, 1992**). It is significant that online media were not even mentioned when listing the media of the future. Few people foresaw the breadth of the change that was about to take place. And from one day to the next, everything changed.



The future of news (**Cook; Gomery; Lichty, 1992**)

In reality, it was not even necessary to wait for the rise of today's Internet giants (e.g., *Google, Facebook*), which have cornered the advertising market since the 2000s. In the 1980s, companies had already appeared that foreshadowed this new external competition for journalism. The first commercial Internet providers began to connect homes to the Internet and, with that, they became the first platforms providing citizens with access to the incipient digital media. Although their focus was not on journalism, companies like *AOL, Compuserve* and *Prodigy* became the first online providers of news content in the late 1980s. Few were aware of it at the time, since the World Wide Web had not yet been invented, but it was the first step toward a change that would destabilize the entire news media industry.

Although the first economic studies of digital media found a limited substitution effect with respect to traditional media (**Bromley; Bowles, 1995**), it was not long before other studies began to warn of the power of the Internet to disrupt the media business (**Chyi; Sylvie, 1998**). The change that had started to take place in information-consumption habits was, in fact, a serious threat to the future of news companies. Digital transformation had made journalism content so accessible and omnipresent that it virtually lost all value. Information had become a commodity, a ubiquitous raw material with barely any added value.

The tremendous economic success of *Google*, thanks to its *AdWords* service, a search-based advertising platform, which was launched in 2000, was a major step in the decline of the media business. Whereas before, a large part of the audience had begun to migrate to the Internet attracted by the growing range of free content, the advertising model invented by *Google* meant that the media also began to lose their advertisers. News companies entered a death spiral and continue falling today: traditional publications lost readers and, although business increased through their respective online editions, it did so with very little financial return. From that moment, the problem with the media's business model became a priority matter, not only for media executives but also for academic researchers.

“ In 1990s, few researchers foresaw the breadth of the change that was about to take place to media business ”

Since the turn of the 21st century, a plethora of studies, monographs and reports has been published analyzing the transformation of the media business. One of the pioneers and most influential researchers in this discipline is the American Robert G. Picard. He is the author and director of many studies on the economic impact of the Internet on the media and was one of the first to explore the “emerging business models” (Picard, 2000, p. 66) of digital media. This type of study began to show not only the erosion suffered by the traditional business of news companies, but, more profoundly, the keys to the radical change in the rules of the business. Similar to the fate of the publishing, cinema and music industries (Vaccaro; Cohn, 2004), the news business saw its traditional models collapse while new opportunities arose for new actors with innovative ideas. News media are facing an ambivalent reality. So far, many outlets have lost, but some are beginning to win thanks to their innovative strategies; in the words of Cham-Olmsted,

“the Internet provides an alternative distribution channel for traditional media products and strengthens the position of the existing media with their readership and audience, while competing with legacy media for the consumer’s attention and resources.” (Cham-Olmsted, 2004, p. 2).

Finding business models that are sustainable over the long term has become a key challenge for the media (Van-der-Wurff, 2012). Different studies have examined the sources of funding that the media have begun to apply in their search for that rare alchemy that is profitability (Kaye; Quinn, 2010; Picard, 2011), with special attention to paid content (Herbert; Thurman, 2007). To the traditional sources of advertising, sales and subscriptions, online media have added an increasingly diverse catalogue of revenue sources (Cea-Esteruelas, 2013) such as sponsored content, event organization, sales intermediation and online service provision. The combination of these traditional and modern sources has given rise to an ever-lengthening list of business models: free (advertiser-supported), paid or subscription-based (paywall) (Myllylahti, 2014), soft paywall (metered paywall), membership-based, mixed (freemium), donation-based (crowdfunding) (Casero-Ripollés, 2010; Cerezo, 2017; Palacio, 2018).

In light of this diversity, one of the emerging areas of research in recent years is the comparison of the business models of native digital media and online media derived from traditional markets (Arrese; Kaufmann, 2016).

8. Other topics and disciplines

As we have seen, research on digital news media has been carried out in many areas. Each of these areas also has its own branches, which makes the whole field so complex that it is impossible to cover fully in an article of this nature. Nevertheless, before looking at other theoretical, methodological and general matters, it is necessary to provide a concise description of some other research topics and disciplines that the academic community has shown particular interest in over the years. I will highlight four of them:

- 1) the changing technological context,
- 2) multimedia convergence and the evolution of journalists’ professional routines,
- 3) innovation models in news organizations and
- 4) research on new audiences of online media.

Given that digital journalism arose thanks to a technological leap, it is not surprising that this has been one of the areas researchers have paid the most attention to. Understanding online journalism required understanding its changing technologies. The Internet not only led to the evolution of the tools of journalism, but also produced a comprehensive change in its paradigms (Orihuela, 2004).

Research on the technologies of digital journalism have been divided into two main categories: studies of journalistic production and studies of news consumption.

Studies on production have analyzed the way in which digital technologies have changed journalists’ work habits and environments. Digital tools quickly showed their ability to transform work processes in newsrooms, but not always for the better (Cottle; Ashton, 1999), and forced journalists to master multiple skills (García-Avilés *et al.*, 2004). There is a well-founded concern regarding the increasingly difficult working conditions of journalists. The harm this does to the quality of published information is also of concern. Nevertheless, it cannot be denied that digital tools have also had a positive side: they have broadened the media’s range of activities and coverage. Disciplines such as data-driven journalism, multimedia news storytelling and advanced analysis of audience metrics would be impossible without the digital production technologies that have been developed in the last quarter century.

“ Mobile journalism is one of the fastest-growing areas of research in the 2010s ”

Studies on digital information-consumption technologies have analyzed the specific features and opportunities of the devices launched on the market during this time. Starting in the 1980s, the first studies on digital journalism technologies analyzed the potential for developing platforms such as videotex (Carey, 1982; Heikkinen; Reese, 1986) and teletext

(Henke; Donohue, 1986) and others. With the arrival of the Internet and especially the popularization of the first online media outlets, the focus of research on technology shifted to computers. Topics such as the strengths and weaknesses of reading on-screen began to be studied through the use of experimental tools such as eye-tracking devices (Outing, 2004).

The launch of the *iPhone* by *Apple* in 2007 was the next technological leap for news consumption. For some years before that, different mobile phones had made it possible to consult journalism content using primitive systems such as WAP (Wireless application protocol). However, the *iPhone* revealed a new form of multimedia interaction with content to its millions of buyers throughout the world. In addition to traditional text, new formats were now available at all times such as photography and, especially, audio and video. Other technology companies soon brought their own alternative smartphones to market, while telecommunications companies drove the connectivity of these devices with rapid progression from the most rudimentary standards [2G (GPRS) and 3G (UMTS)] to more advanced standards [4G (LTE)] and, at the time of writing, 5G. At the same time, there was a proliferation of devices for reading electronic books, known as e-readers. Although some newspapers developed editions adapted for these devices, the initiative was soon shelved, particularly as a result of the launch of the *iPad* by *Apple* in 2010. Tablets became another successful way of consuming information on the go. We all know the result of that process: citizens enthusiastically adopted smartphones (in different sizes) and now spend hours and hours using them every day.

The technological leap from the personal computer to the mobile device opened the way for mobile journalism or *mojo*, one of the fastest-growing areas of research on digital journalism in the 2010s (Westlund, 2013). Much of this research on mobile communication and on other technologies is based on uses and gratifications theory in an attempt to use it to explain why people replace certain devices with others launched on the market.

Besides strictly technological research, another area of interest to researchers is multimedia convergence and the evolution of journalists' professional routines. With a focus taken from the sociology of organizations, these studies have explored the internal change undergone by the media and media professionals: how work spaces, journalist profiles, decision-making dynamics and the relationship with sources and the public have changed, as well as other topics. A large part of these studies has focused on the concept of convergence, with special attention to the change in work dynamics in newsrooms and an examination of the difficult coexistence (often mere cohabitation) of traditional journalists and digital journalists (Boczkowski, 2005; Quinn, 2005; Salaverría; Negro, 2008).

Another important area of research that is linked to these phenomena of multimedia convergence and the integration of newsrooms focuses on innovation models in journalism organizations (Gynnild, 2014). As discussed, media outlets have faced a technological, social and economic scenario of abrupt changes and have had little time to react. In order to meet these challenges and take advantage of the opportunities of the new market, some media outlets have adopted innovation strategies of different kinds. The most common ones have focused on product innovation by experimenting with multimedia narratives and thinking up new content and services. Others have focused on internally restructuring the company with the aim of promoting new projects and keeping the organization up to date with market innovations. Finally, much innovation has been based on distribution and sales systems, driven by the new devices and platforms launched by technology companies. Although there are differences between countries, it has been shown that the media organizations most inclined toward innovation have not exactly been the big ones; in Spain at least, more innovation has been seen in small online media organizations, particularly native digital media outlets (García-Avilés *et al.*, 2018). It has happened in many other fields and journalism is no different: the weakest have been forced to embrace the fact that necessity is the mother of invention (Sádaba-Chalezquer, 2016).

Another research topic focuses on investigating the audiences of digital media. Since the beginning, online media outlets displayed a unique ability to attract an audience that was different from the audience of the press, radio and television. In the early years of the online press, in the 1990s, that almost experimental audience consisted of people with mid-level or advanced computer skills and, especially, young people. But this situation soon evolved. As digital media became established, their audiences diversified so that, after the first 25 years, they now constitute an undeniably intergenerational journalistic phenomenon. The fact that digital media outlets continue to attract more young people does not mean that they are of no interest to adult audiences. Instead, it highlights the increasing difficulty of legacy media (including television) to attract young people. Today, digital media attract young and old in equal measure, whereas legacy media are consumed by an increasingly older audience.

“ If the overhaul of research methodologies has been intense, a more modest adjective would be needed to describe the overhaul of theories ”

There is a wealth of studies on the profile, distribution, interests and habits of digital media news consumers. Many of these studies and reports have a more professional than academic focus, as they are often aimed at providing strategic

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State of the News Media

Data and trends about key sectors in the U.S. news media industry

<http://www.pewresearch.org/topics/state-of-the-news-media>

references for decision-making by news companies. One of the most highly respected reports is the *State of the news media* produced every year since 2004 by the Pew Research Center.

<http://www.pewresearch.org/topics/state-of-the-news-media>

The report analyzes the profiles of the media and their audiences in the United States. Together with this type of market report, there is also a long list of purely academic studies that use quantitative and qualitative methodologies to examine the transformation of the news-consuming public and the novel ways in which it behaves on the Internet (see, for example, **Tewksbury**, 2005; **Masip et al.**, 2015). They also study such topics as the impact of audience metrics on journalists and specifically their effect on how journalists select, write and hierarchize the news (**MacGregor**, 2007).

In the area of audience, the broadest and most prominent study on news consumption on the Internet and mobile devices is, without doubt, the *Digital news report*.

<http://www.digitalnewsreport.org>

This study has been produced annually since 2014 by the *Reuters Institute for the Study of Journalism*, University of Oxford, with the contribution of a dozen other universities in other countries. In its 2018 edition, the latest edition at the time of writing, the report made a comparative analysis of the consumption of online news in 37 countries, based on a survey of more than 74,000 Internet users.

As we have seen, research on digital journalism has given rise to many developments and areas of interest. Besides the disciplines mentioned, other studies focus on journalism ethics in the digital setting, factors related to selective attention to news (filter bubbles and echo chambers) and, particularly in recent years, the serious threat of deliberate disinformation over online networks — the much-vaunted fake news. Indeed, there is much that this article has not covered. But what has been discussed is sufficient to show the undeniable diversity and notable maturity of research on digital journalism.

9. New methods, old theories

So far, we have looked at some of the main areas on which research on digital journalism has focused in recent years and mentioned the areas researchers have paid the most attention to, with a summary of their main contributions. This enormous corpus of academic research in the field of the social

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sciences would have little validity if it had not been carried out with due methodological thoroughness. The following lines will deal with this: What are the characteristics of research on digital journalism and online media from the point of view of the methodologies used?

This is an essential matter for the research community and, in the last ten years, it has begun to appear as the subject of monographic studies (**Palacios; Díaz-Noci**, 2009; **Karlsson; Sjøvaag**, 2016; 2019). In the last 25 years, researchers have not only been faced with the challenge of exploring a growing reality (that of digital news media outlets), but have also been forced to design and apply suitable study methods and tools.

Some methodologies, especially those based on observation, have not undergone a major evolution compared to how they were applied previously with nondigital media. For example, the many studies published during these years on professional routines in the newsrooms of digital media (see **Boczkowski**, 2004; **Domingo; Paterson**, 2011, among others) based on ethnographic methodologies are not substantially different from those that were carried out (and are still carried out today) on nondigital media. Ethnographic research has given rise to specific methodologies on the Internet, as part of the emerging concept of netnography (**Kozinets**, 2015), but the reality is that most ethnographic studies on the media are still anchored in traditional research models.

Among qualitative research methodologies, studies based on in-depth interviews have also not varied substantially. The application of this research method essentially follows the models that have been applied for decades in many social science studies. Nevertheless, subsequent analysis of the content of these interviews has begun to benefit from much more sophisticated tools. In recent years, researchers in the social sciences have incorporated different analytical applications that have been brought to market (*NVivo*, *ATLAS.ti* and similar tools), which facilitate the exploration of linguistic frequencies in interview transcriptions and help identify relationships between concepts. These computer programs make it possible to analyze those aspects not only in texts, but also in many different multimedia elements, which makes them especially useful for researchers studying digital news media outlets. These applications are able to translate the qualitative raw material, which is often unstructured, into well-ordered quantitative magnitudes that can be analyzed and represented graphically.

These same tools, together with others that can analyze large volumes of data (*R*, *Python*, etc.), have given a major boost to another of the principal research methodologies in digital journalism: content analysis (**Flaounas et al.**, 2013; **Lewis; Zamith; Hermida**, 2013). Before these tools became available, research based on content analysis was limited to small samples, as it was often impossible to analyze very large populations or datasets. Today, thanks to content digitization and to these powerful computational calculation tools, research is carried out on data corpuses that would have been unthinkable barely ten years ago.

Perhaps the most telling example of this quantitative leap (in this case, the term quantitative is more appropriate than qualitative) is the increasingly large number of studies on journalism and social media (**Newman**, 2009; **Hermida et al.**, 2012). Owing to the nature of these networks, made up of millions of users spread all over the world, studying them involves working with huge volumes of content in the realm of big data. Without powerful analysis and visualization tools, analyzing these data would be impossible. However, the computational applications developed in recent years make it possible to analyze massive datasets, not only using traditional statistical procedures, but also by applying analysis models based on machine-learning technology (**Bouwman; Trilling**, 2016).

“ Digital media and their community of researchers have lived parallel lives: from being almost nobodies, they have become the undisputed protagonists ”

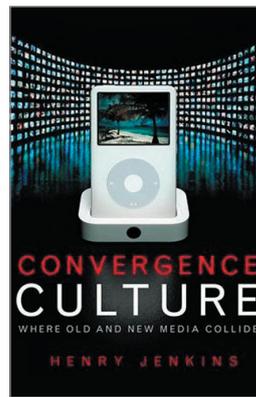
If the overhaul of research methodologies has been intense, a more modest adjective would be needed to describe the overhaul of theories. These first 25 years of digital media have not been particularly fertile in terms of the creation of new theories for the general interpretation of journalism. The ideas of the great thinkers of the 20th century in social communication, journalism and public opinion (authors as diverse as Walter Lippmann, Marshall McLuhan, Paul Lazarsfeld, Harold Lasswell, Umberto Eco, Jürgen Habermas and others) essentially continue to form the theoretical interpretation framework that holds up a large part of the research on the journalism of our times. In the words of **Mitchelstein** and **Boczkowski** (2009, p. 575),

“most studies continue to use existing lenses to look at new phenomena.”

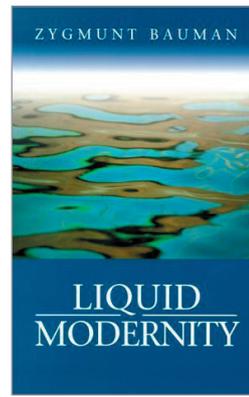
Although the ideas of those authors continue to determine the theoretical framework, this does not mean that they have not been revised. On the contrary, the flood of empirical studies in the last thirty years, presented at innumerable conferences and in an endless list of articles in the growing number of scientific journals on communication, has helped extend the scope of these theories to include new settings.

To better explain this idea, it may be useful to look at an example, in this case, the agenda-setting theory. This popular theory was put forward almost half a century ago by the American professors **Maxwell E. McCombs** and **Donald L. Shaw** (1972) and explains how the media determine not only the opinions of citizens but, especially, the topics of debate

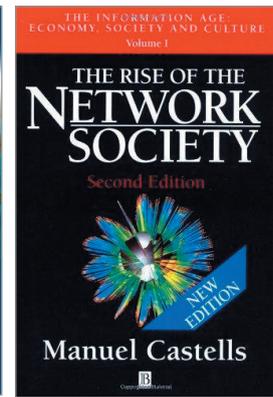
among public opinion. The first studies to test the agenda-setting theory, which were based mainly on content-analysis methodologies, focused on information published by newspapers. Later, in the 1980s and 1990s, these studies spread to audiovisual media, particularly television. Since the 2000s, we have witnessed a new step forward for this theory; in this case, in the context of online media and social media. The most recent studies on influential persons on social media, known as influencers (**Meraz**, 2009), are really just another link in the chain of empirical research based on this theory.



Convergence culture
(Jenkins, 2006)



Liquid modernity (Bauman,
2013)



The rise of the network society (Castells, 1996)

Like the agenda-setting theory, other classical theories in journalism (framing theory, uses and gratifications theory, information theory and many others) are being revisited and, in some cases, revised by contemporary researchers on digital journalism.

Of course, not all research is set in the context of these theories. The phenomenon of the Internet already has its own thinkers, some of whom are still emerging, while others are firmly established. The second group includes authors such as the sociologist **Manuel Castells** (1996), thanks to his influential theory on the network society, the philosopher and sociologist **Zygmunt Bauman** (2013), with his theory of liquid modernity, and **Henry Jenkins** (2006), mentioned above, for his theory of convergence and transmedia culture.

10. Conclusion and pending challenges

The first 25 years of research on digital journalism have been prolific. A discipline that had a humble birth in the shadow of more classical areas of media research has forged ahead and now constitutes the most dynamic and vigorous area of research on journalism. In reality, digital media and their community of researchers have lived parallel lives: from being almost nobodies, they have become the undisputed protagonists.

Like digital journalists, researchers on this topic have come up with their own concepts and methods for dealing with a reality in rapid transformation. The digital journalism academic community took some pre-existing theories and tools and adapted them while it developed new tools, with which it has studied hitherto unknown realities and innovative phenomena.

The general conclusion is positive: a fertile and diverse field of research has been established with multiple areas and increasingly more stable research methodologies. Studies on digital news media boast firmly established scientific and professional conferences (Austin, Cardiff, Perugia, Huesca) and respected specialist journals (*New media and society*, *Journal of computer-mediated communication*, *Digital journalism*). Other high-impact journals such as this one (*El profesional de la información*) periodically issue monographs and special editions to digital journalism. Leading publishers have also released collections of books that focus on digital media, based on which they regularly publish collected works, monographs and manuals. The main international communication research associations (*ICA*, *IAMCR*, *AEJMC*, *ECREA*) have divisions and working groups that deal with phenomena and trends in digital media from different perspectives. Numerous national and international research projects are dedicated to exploring this discipline, which encourages the creation and strengthening of specialist and interdisciplinary research teams. Regardless of the elements considered, it cannot be denied that research on digital journalism is now a firmly established discipline.

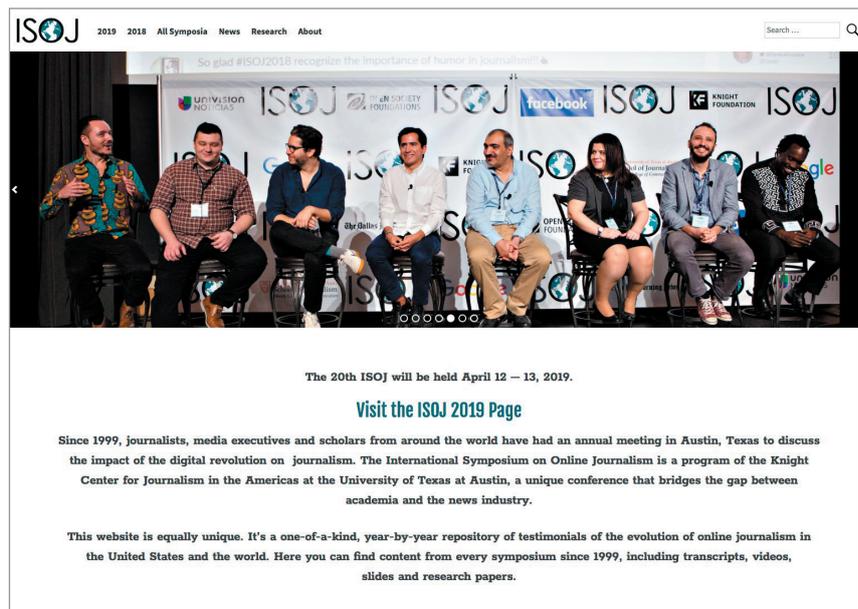
“ More than data and diagnostics, journalism as a profession demands ideas and solutions ”

But it still faces challenges. As I mentioned some years ago in this journal (**Salaverría**, 2015), there are some aspects in which research on digital media needs an overhaul. At that time, I mentioned five aspects:

- 1) moving forward on native digital research, understood as research that goes beyond comparative studies with other platforms and focuses exclusively on studying digital media;
- 2) using advanced research technology;
- 3) committing to innovation-oriented research;
- 4) strengthening the analysis of phenomena by providing more than simple case descriptions; and
- 5) opening up research to topics and areas that receive little attention.

In the few years since those thoughts were published, some steps have been taken that I consider to be in the right direction.

Indeed, research focusing on purely digital media is gaining ground. An increasing number of studies and projects are looking at publications created for the Internet, which are given the same treatment (or almost the same) as that given to traditional journalistic brands. The phenomenon of social media, which has exploded in recent years, has contributed to this evolution in interests, given that a large part of the most important journalistic phenomena worthy of study today occurs outside traditional media. As native digital media move rapidly toward becoming firmly established and many traditional names in journalism continue their decline, a myriad of studies can be expected in coming years focusing on purely Internet-based media. Who knows whether this will lead to a phenomenon like the one triggered 25 years ago: at that time, the focus of academic research shifted from nondigital media to digital media. Perhaps in the coming years, we will see a new shift, in this case, from non-native digital media to native digital media.



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There can also be no doubt that the use of advanced research methodologies and technologies has grown in recent years. Big data has ceased to be merely a subject for study for journalism academics and has become an everyday work tool. Quantitative studies proliferate in scientific journals on digital journalism, thus reducing the space dedicated to exclusively qualitative research. Now, data accuracy and size are as important as the shrewdness applied in data interpretation. This evolution has a positive side, as it reinforces the scientific credibility of studies, which are increasingly carried out on complete populations or highly representative samples. However, this extreme empiricism also has its drawbacks: among the avalanche of individual studies, there is a need for more holistic analyses that can deal with the whole and not just the parts. Perhaps for this reason so much progress has been made in recent years in empirical research, but not as much has been made in the theories and interpretative models.

Another pending task is improving the transfer of results from the scholar community to the professional world in order to spread sorely needed innovation. In the academic community, there are those who, with good reason, state that universities should not be at the service of industry. But they should not turn their backs on it either. Unfortunately, that is what tends to happen. In studies on digital journalism, there is a dearth of academic contributions that are of use for solving the very serious problems of the media and journalists. After the disappointing evolution of the profession of journalism in recent years, it would seem justified for researchers to adopt a new approach by not simply observing, but making any proposals they can. More than data and diagnostics, journalism as a profession demands ideas and solutions.

Digital media have completed a key phase in their history: the initial stage. It has been 25 years of triumphs and failures, of trial and error. The academic community has followed these steps closely and analyzed their phenomena and processes. On a global scale, a research discipline has become firmly established and boasts shared concepts, tools and methods. The next quarter century will likely see major technological, social and professional innovations that will continue the profound transformation of journalism, quite possibly at an even faster pace than in recent years. It will be interesting to see how academic research responds to this challenge.

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