Catalan Press Council

Algorithms in the newsrooms

Challenges and recommendations for artificial intelligence with the ethical values of journalism

Patrícia Ventura Pocino

Contents

Preamble

In just a few years, the tools that have enabled automated production of news and the personalization of its distribution have totally changed the way that newsrooms work. The algorithms behind what we call artificial intelligence (AI) have become everyday instruments, at least in companies of a certain standing. And everything suggests that this process will be consolidated and will eventually have an impact on more modest newsrooms.

This technology, like all others that have preceded it, should not be viewed by journalists as an end in itself, but as a new aid to help reach the public with greater precision and higher quality standards. And the fundamental ethical principles that must light the path towards this goal remain unchanged.

Every new wave of technology generates an avalanche of casuistic doubts in the field of ethics. This occurred when journalism ceased to be confined to written texts and took to the airwaves. And it happened again when digitization led to the emergence of a new type of media and productive routines that were hitherto unimaginable. But these new ethical dilemmas need to be viewed from the core values that underpin authentic journalism, such as truth, justice, freedom and responsibility.

The new challenges being posed for the ethical attention of journalists include the various applications of AI to news reporting: automated processing of big data, the introduction of algorithms that enable on-demand journalism, and so on. The common factor of these procedures is the apparent depersonalization of journalism. This is happening in many other productive areas and in a good number of professional activities. The most obvious consequences of process automation are associated to labor. But in some areas there are also ethical concerns that warrant special attention. It is happening, for example, in the fields of medicine, law and teaching. And clearly in journalism too.

Faced with the changes that AI is introducing to the way journalists work, the **Catalan Press Council** (CIC) has commissioned a study with a dual purpose: to obtain as accurate an image as possible of the reality of AI in our media's newsrooms and to learn the opinions of local and international experts on how the changes generated by these new tools should be approached in terms of journalistic ethics. The study was produced by the journalist and expert in new media and digital culture, Patricia Ventura. And based on the conclusions, the CIC has prepared its recommendations for the ethical use of AI in the media, which appear at the end of this paper.

Given the breathtaking speed with which technological innovations are happening, the series of recommendations presented herein must be viewed as provisional notes. They have been drawn up with the aim of tackling certain concerns that have arisen very suddenly and that affect a growing number of journalists. But it should be noted that, due to the nature of the technological innovations that have generated them, these guidelines are not exclusively addressed at journalists. Companies that own or run the media would do well to take them into account too. And that is not only because it is desirable for them to be aligned with the aforementioned ethical principles too, but because the credibility of information is also at stake. And finally, the offer of a quality product is a goal that should be pursued by everyone who is part of the production chain.

This this binomial of ethics and quality also needs to appeal to the interests of the audiences for which this information is intended. People have the right to receive truthful, complete and plural information. The misinformation that sometimes seems to command the flow of messages circulating in the media and on social networks, what we could call 'pseudo-media', should be viewed as a social problem of the greatest magnitude – and one that directly affects the health of democracy. In this regard, all the actors in the information process should strive to produce proper pedagogy and become active agents of a media education that today should not only encourage critical interpretation of the media, but also an understanding of the traps that are hidden beneath these new ways of disseminating news.

Catalan Press Council

About the author

Patrícia Ventura Pocino is a journalist and PhD student of Media, Communication and Culture at the Universitat Autònoma de Barcelona (UAB) whose thesis on ethics, artificial intelligence and communication analyzes the digital media ecosystem from a critical perspective, and proposes solutions to endow algorithms with principles so they can be put at the service of a digital public sphere that is governed by democratic values.

She is a consultant and lecturer specializing in new media and digital culture. She has led various projects related to digital transformation in the media and financial sectors, as well as in the fields of culture and entrepreneurship. She is also currently researching and publishing on digital ethics and responsible use of technology.

iD **Patrícia Ventura Pocino**

Department of Media, Communication and Culture. Univ. Autònoma de Barcelona. 08193, Bellaterra, Barcelona.

Media and experts who participated

Media

TV3
CATALUNYA RADIO
LA VANGUARDIA
DIARI ARA
EL PERIÓDICO
RTVE CATALUNYA
BTV
RAC 1
SPORT
MUNDO DEPORTIVO
SEGRE
EL 9 NOU
EUROPA PRESS CAT
EL PUNT AVUI
DIARI DE GIRONA
DIARI DE TARRAGONA
RAC 105
ACN
REGIÓ 7

FUNDACIÓ
F C I C
CONSELL DE LA
INFORMACIÓ DE CATALUNYA

Committee of experts

International

Nicholas Diakopoulos: Professor of Communication and Computer Science at Northwestern University, where he is the director of the Computational Journalism Lab (CJL) and director of postgraduate studies on the Doctoral Program in Technology and Social Behavior (TSB).

Diakopoulos's field of research is computational journalism with active research projects on (1) accountability and algorithmic transparency, (2) automation and algorithms in news production and (3) social networks in news contexts. He is the author of the award-winning book *Automating the News: How Algorithms are Rewriting the Media* (Harvard University Press).

Charlie Beckett: Founding director of Polis, think-tank for research and debate on journalism and international society in the Department of Media and Communications at the London School of Economics. He leads the Polis Journalism AI Project, a global initiative that aims to help journalists and media to explore solutions together to improve the future of AI journalism.

National

Albert Sabater: Director of the Chair - Observatory of Ethics in Artificial Intelligence of Catalonia. Serra Húnter Professor of Sociology. He is also Coordinator of Studies of the Master's Degree in Business Economics in the Faculty of Economic and Business Sciences at the University of Girona.

Karma Peiró: Journalist specialized in Information and Communication Technologies (ICT) since 1995. Co-director of the Visualization for Transparency Foundation (VIT) that promotes the use of open data to empower citizens and the foster accountability in public information. Member of the Advisory Board of the OEIAC and of the Ethics Committee of the Polytechnic University of Catalonia (UPC).

José Alberto García Avilés: Professor of Journalism at the Miguel Hernández University of Elche. His lines of research focus on innovation, quality and journalistic ethics. He is the author of more than a hundred publications on communication and co-founder of the InnovaMedia network.

Joan Rosés: Journalist. Since 2017, he has been the editor of Collateral Bits, a digital publication dedicated to the analysis of the impact of technology on society. He was previously director of the Audiovisual Cluster of Catalonia and director of Activa Multimèdia, innovation and research center of the Catalan Audiovisual Media Corporation.

David Casacuberta: Professor of Philosophy of Science at the UAB, his current line of research is the social and cognitive impacts of information and communication technologies. He is currently a member of the Barcelona Working Group on Ethics, Security and Regulation of Bioinformatics, and a researcher in the consolidated Group of Humanistic Studies in Science and Technology (GEHUCT). He has received the Eusebi Colomer Award for best essay from the Epson Foundation for his book *Creació col·lectiva.*

Introduction

The use of artificial intelligence (AI) in the media is already a reality and the integration process is expected to become faster and further consolidated in the coming years. Recent reports and surveys indicate that the industry will make even greater use of AI applications (Newman, 2021) and that media will increasingly adopt this technology. In the main media of Catalonia, algorithms are already featuring in processes throughout the value chain, and the advantages that the sector perceives with regard to its potential to optimize internal workflows and the dissemination of content suggest a major transformation to journalistic routines in the immediate future.

Today it is common to delegate to algorithms such tasks as identifying newsworthy topics, analyzing and organizing source data, facilitating transcription, translations and similar processes, generating written content and infographics, choosing titles, guiding the process of writing journalistic content, moderating comments, publishing on behalf of the organization on social media accounts, customizing and recommending content to users, and many others. We have already reached the point where we can ask AI things like: What is newsworthy? What form should it take? What title to choose? And what content to highlight? In other words, AI can play a key role in decisions that are at the very core of journalism's editorial function.

According to one of the main international reports on the subject (Beckett, 2019), in the coming years, AI will help to make journalism better in different ways: it will make the production of content more efficient, it will allow more news to be found among the data, it will make it easier to moderate comments, it will enable automatic recognition of false information, it will help to distribute journalistic content better and will assign dynamic prices to ads and subscriptions, among other advantages.

However, the same study also warns that one of the main challenges for integrating AI in newsrooms is of an ethical nature, for successful adoption of algorithmic tools and practices will depend on the media's ability to ensure that they also apply its editorial values and criteria. Here, attention needs to be given to the promises of productivity that are associated with AI, since they can lead to short-term financial decisions that could jeopardize the value of the product and journalistic quality standards.

The aforesaid report also details certain sector-specific concerns in relation to the risks involved in the use of exponential technologies, such as doubts shared by the profession as to whether the savings that process automation might entail will really be invested in better journalism, or aspects related to the potential to generate algorithmic biases, misinformation, or filter bubbles.

When analyzing the international literature on the subject, similar concerns are observed in relation to the use of AI in newsrooms: concern about the risks associated with the lack of supervision of automatically generated content, the potential impact of changes in workflows, the assumption of new legal liabilities, the growing gap in the skills set required to manage this new specialty area, and the potential for algorithms to generate bias (Marconi, 2020).

Here in Spain the concerns are not too different. This is shown by the results of the survey that we distributed among media professionals throughout the country, and which reveal, among other things, an evident concern among the sector regarding the effects of AI on the quality of journalism. We will present the conclusions later.

In this context, neither journalists' associations nor information councils have pronounced or established criteria on the use of algorithms in newsrooms, with the exception of the Finnish Information Council, which recently published a report in which, as well as identifying certain ethical disquisitions, it concludes that there is a need to develop a self-regulatory framework in the sector, in part to prevent other institutions –the European Union or the platforms themselves (sic.)– from being the ones who end up doing it (Haapanen, 2021).

Considering, moreover, that national research on the subject is so scarce (Parratt-Fernández et al., 2021) and that the sector believes that this issue needs to be addressed (Heinrichs, Ellen, 2018), we feel it would be appropriate to stimulate a joint process of reflection and dialogue to identify the main challenges related to the use of AI applied to the management of journalistic information. Therefore, this report aims to provide a starting point and a frame of reference so that each media company can address the many casuistries that might be derived from the incorporation of AI into journalistic routines and that will help professionals establish criteria that subordinate technology to the principles that govern the practice of ethical and, consequently, quality journalism (Alsius, 1998) (García-Avilés, 2021).

Applied to information management, algorithms are highly efficient at performing association, prioritization, filtering and classification tasks involving huge amounts of information (Diakopoulos, 2019). In fact, this is the technology that search engines, social networks and other platforms use to organize the characteristic abundance of content in the digital world. These are the same algorithms that today govern the information flows that circulate in the public sphere (Gillespie, 2014), shape everyday life, influence perceptions of the world, guide people's behavior (Just & Latzer, 2016) and have given rise to what has been defined as a new algorithmic culture (Striphas, 2015) in which platforms, thanks to this technological efficiency, have acquired the gatekeeper role that journalism had traditionally exercised (Negredo et al., 2020).

This change has reconfigured the information ecosystem and has given rise to a new scenario in which we have more tools to create and exchange knowledge and information. These include the kind of platforms that were attributed a key role in achieving the goals of major social movements in the 21st century, such as 15-M in Spain and the Arab Spring (Muñoz, 2011) (Tufekci, Zeynep and Wilson, 2012), which not only used virtual social networks to achieve notoriety and support, but also got them to play a fundamental role in the internal

organization of the movements themselves (Tufekci, 2013). The media themselves have also benefited from social networks and other platforms to identify sources of information and keep track of what they report on. However, despite all the advantages they offer, algorithmic media are as or more vulnerable to hacking and propaganda than the legacy media were in the pre-digital world (Carrie Wong, 2019) (Tufekci, Zeynep, 2016) (Bradshaw and Howard, 2019) (Wardle and Derakhshan, 2017).

In the public sphere that is so dominated today by platforms, low-quality content and all kinds of misinformation are proliferating, including the emerging phenomenon of deepfakes. This 'infoxication' exists largely because these companies are commercially managed on the basis of technological optimization to achieve objectives that, applied to the field of communication, basically translate into getting users to spend time in their domains. The so-called attention economy fosters visibility for those who wish to voice indignation and appeals to existing biases and preferences, and hence disinformation (Tufekci, 2018), thereby allowing the interested parties to muddy the public sphere, generate distrust and spur social polarization. These tend to be companies that know no bounds in the use of persuasive design to take advantage of psychological vulnerabilities (Harris, 2019) (Bridle, 2020) (Patino, 2020) (Wu, 2020), despite often being aware that this might lead to technological dependence or aggravate mental problems (Seetharaman, 2021).

Although not all technologies share identical policies –and therefore cannot be appraised in the same way– these are, broadly speaking, organizations that base their growth on an economy that mines personal data (Tufekci, 2017), which has given rise to what has been called surveillance capitalism (Zuboff, 2019). This logic has exploited the lack of regulation to gain control over the big data produced by information traffic (Lassalle, 2019) (Bridle, 2020), to the extent that they can command even greater economic and political power than countries. This commercial sovereignty, as Carlos Ruiz (2016) puts it, is accepted by Internet users,

who are entertained by and grateful for the free service, paying the toll with their freedom when they voluntarily allow their privacy to be eroded. According to Lassalle (2019), we are "in the hands of a 'techno-power' that manages the deepest springs of the digital revolution without democratic control or legal interference."

Journalism must ask itself what position it should take in relation to the rise of automated decisions (Thumbler, Mark (coord.) Et al., 2020), how it can maintain its centrality and how it can gain the people's trust. It needs to decide what role to adopt, not only in the field of communication itself, but also in the use of automation in all the spheres in which it is already being applied.

Today, in Catalonia, we entrust AI with such tasks as selecting candidates for jobs, issuing medical diagnoses, caring for dependent persons, granting loans (Peiró, 2020) and estimating the risk of recidivism among prison inmates (Bellio, 2021).

The Spanish Public Employment Service (SEPE) uses algorithms to decide which people are entitled to unemployment benefits. The police also use them, for example, to detect false allegations of theft or to prevent gender-based violence (OASI, 2021). Some of these systems have been questioned for making biased predictions, such as the algorithm that predicts the possibility of juvenile delinquents re-offending (Tolan et al., 2019).

Given the high degree of impact of these automated decisions on people's lives, it is also up to journalists to decide how their democratic role should be exercised, given the possibility of these AI applications being used unethically and, therefore, ending up violating fundamental rights. Hence, journalism will need to consider how it is going to use the same technology that it must monitor, and also acquire the necessary skills and techniques that the leading media companies are already beginning to use to audit these algorithms (Diakopoulos, 2015) (Trielli & Diakopoulos, 2020).

Perhaps there is a new way to help mitigate the credibility crisis that is affecting the media (Amoedo et al., 2021) and to gain the trust of a population that needs more than ever to be able to identify sources and verify information (Kovach & Rosenstiel, 2014). Putting emerging technologies at the service of the values that govern quality journalism can also be an opportunity. In an information ecosystem that is so in need of trust, the differentiation strategy may also involve adding to the public service function of journalism the commitment to lead innovation in communication technoethics.
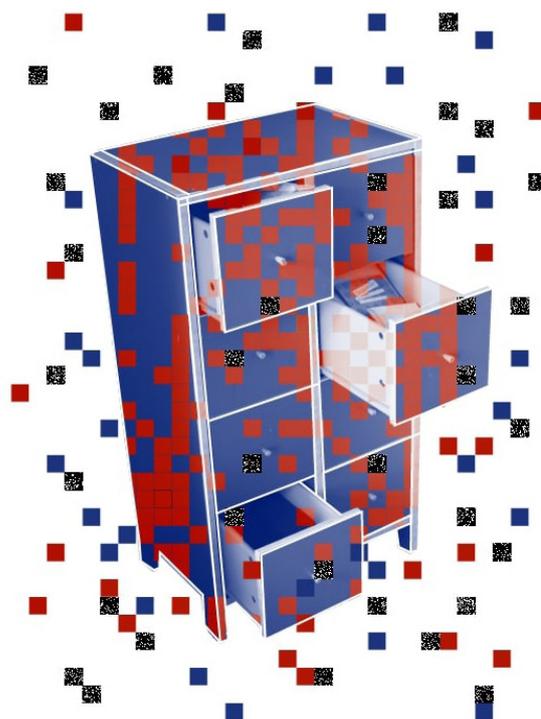
Methodology

In order to identify the main challenges for the ethical use of algorithms, we have conducted a review of the literature on digital ethics. This includes AI ethics from the perspective of computational sciences, or 'technoethics', as well as research from the field of cultural studies of communication, philosophy, digital journalism and journalistic ethics. To specify the most relevant AI tools and applications for analysis, we performed a preliminary assessment of the ethical implications of these new practices by contrasting them against journalistic values (Alsius, 2011), as well as the principles of technoethics (Sabater, Albert & De Manuel, Alicia, 2021).
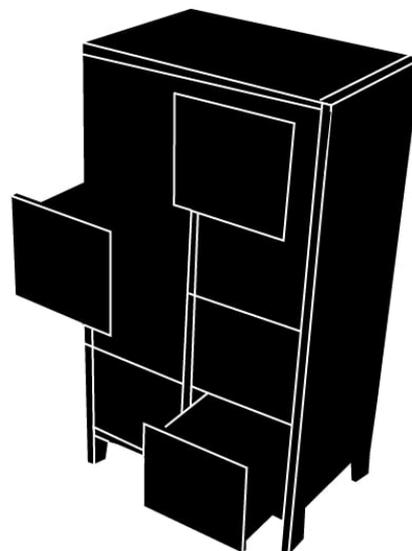
The project involved the distribution of two different surveys. The first was presented to professionals from all over Spain to assess their perceptions of the rise of AI in the media, and the main concerns of the sector with regard to its uses. A second survey was then addressed at representatives of the leading Catalan media organizations in different fields in order to obtain an overview of the current status of the implementation of AI in their newsrooms, and of the advantages and challenges that they identify, and which we share on the following pages.

Finally, different meetings, interviews and discussion groups were held with national and international academic experts specialized in innovation in journalism, journalistic ethics, philosophy, cyberethics and computational journalism, as well as with representatives of the media, to make an assessment both of the dilemmas presented by these new applications and of the ethical principles that may be at stake. All these meetings and interviews were recorded, transcribed, and analyzed by means of a qualitative process of coding of concepts and topics.

State of the issue in Catalonia

In Catalonia, the main media have integrated AI into all phases of production and to a similar extent, although usage is particularly prominent during the phase prior to the creation of content in order to identify newsworthy topics. As for specific applications, the most common use is to detect trends in the news and to gather information. In other phases of the production and distribution process, the most frequent use is for the optimization of content recommendation engines

Do you use AI or other algorithmic systems in your organization?

23,8%

76,2%

● Yes
● No
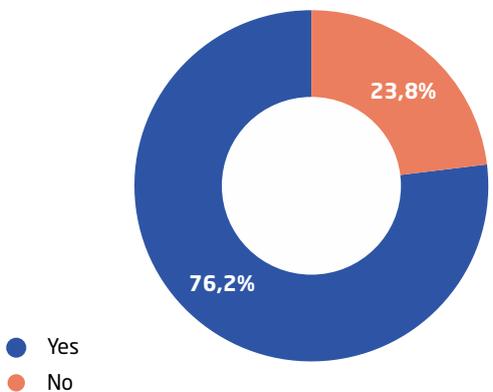
If so, at what moment(s) of the production and/or distribution process do you use AI or other algorithmic systems?

Content selection/trends/choice of angle	88,2%
Gathering information	58,8%
Content creation	47,1%
Distribution	52,9%
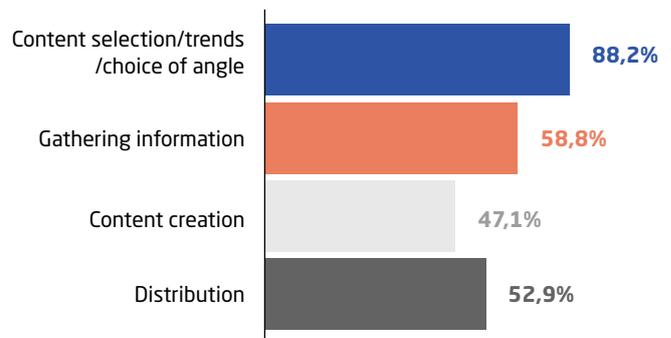
In which specific applications do you use AI or other algorithmic systems?[1]

Identify newsworthy content and/or trends	76,5%
Labeling of photographs and/or video with neural networks	17,6%
Headline A/B testing	52,9%
Sorting of unstructured data	29,4%
Automated text	41,2%
Automated generation of infographics and/or other displays	41,2%
Chatbots that respond to users	5,9%
Change from voice to text format	11,8%
Image recognition	17,6%
Content recommendation engines	76,5%
Optimization of content distribution on social networks*	47,1%
Subscription management	17,6%
Moderation of comments	17,6%
Segmentation/clustering of users	58,8%
Analysis of user behaviours	58,8%
After-sales services	0%
Others related to marketing and sales	11,8%

Media that took part in the survey: TV3, Catalunya Ràdio, *La Vanguardia, Diari Ara, El Periódico,* RTVE Catalunya, Betevé, Rac 1, *Sport, Mundo Deportivo, Segre, El 9 Nou,* Europa Press Catalunya, *El Punt Avui, Diari de Girona, Diari de Tarragona,* Rac 105, ACN and *Regió 7.*

[1] Adapted categorization of the report The next wave of disruption: Emerging market media use of artificial intelligence and machine learning

Algorithms in the newsrooms:
Challenges and recommendations for artificial intelligence with the ethical values of journalism

FUNDACIÓ
F C I C
CONSELL DE LA
INFORMACIÓ DE CATALUNYA

Do you plan to use more AI applications in production or distribution processes?

5%

20%

35%

40%

- ● Yes, in the short term
- ● Yes, in the medium term
- ● Yes, in the long term
- ● Probably, but we don't know when
- ● No, neither in the short nor long term
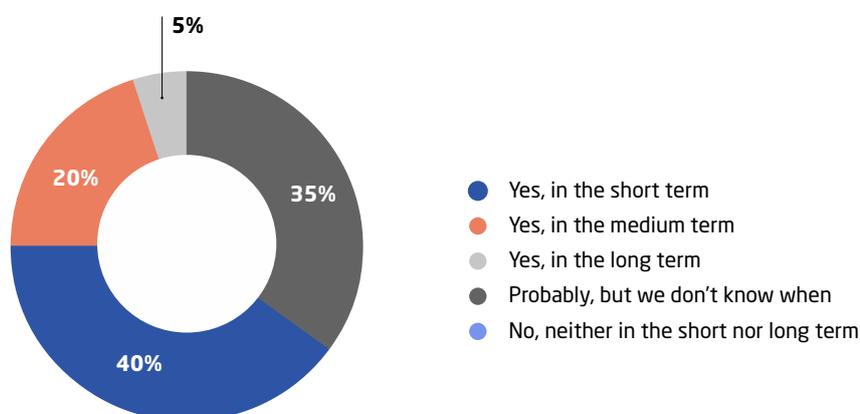
and certain other commercial functions such as clustering and the analysis of user behavior.

Other uses that are becoming more commonplace include the automated generation of texts, videos and infographics, sorting of unstructured data and headline A/B testing, an application that consists of publishing the same piece with different headlines in order for the algorithm to compute which of the versions is likely to get the best Clickthrough Rate (CTR). All the media surveyed intend to incorporate more AI tools and applications and those that have not yet done so expect to start using them eventually.

The Catalan media identify two major advantages in these technologies: first, the potential of data processing to get to know audiences and adapt the product accordingly; and, secondly, efficiency in the management of internal processes, support for systematization and research using large volumes of their own or external data, and the automated generation of contents.

"AI can serve as a support to detect what is of interest to our digital users, to offer them what really interests them in a segmented way and not hit them with information or services that are not relevant to their interests"
Head of Product Department - Radio

"Changes are happening so fast that different models are coexisting, and in the media we need help to profile viewers better and offer

them what they want"
Head of Communication - Television

"AI and algorithmic systems can be good assistants to improve journalists' productivity. They can be especially useful for identifying stories through the analysis of large amounts of content (for example, in social networks) and/or to personalize content for the user according to their implicit or explicit preferences"
Manager – News Agency

"AI can help us in many areas, such documentation processes, research and production of audio-visual material, in the detection of fake news, among others"
Head of Engineering Department - Television

"AI helps to collect and process information to streamline the decision-making process"
Head of Editorial Department - Television

"AI tools are a support and aid for editorial criteria. For example, with an A/B headline an algorithm can tell you which one is most appealing to the reader, but not which best reflects the reality, truthfulness and rigor that should prevail in our work"
Manager - Press

Regarding the challenges, the media mainly highlight the need for staff training and the incorporation of new kinds of employees, as well as

the potential friction in the processes of integrating AI into routines. To a similar extent, another important challenge is to be able to choose the right AI tools and practices to justify the required investment.

In turn, media companies with smaller structures have doubts as to whether all these applications are also within their reach. The media also consider the management of AI integration to be a challenge insofar as it does not devalue the quality of information.

"The challenge is to get it right"
Head of Marketing Department - Press

"Traditional technical teams aren't ready for this challenge. We need specialists on these matters in our technical teams and hybrid staff in the newsroom"
Managerial Department - Press

"One of the big challenges when it comes to incorporating AI is to identify the right tools in a market that is starting to have different products and actors, which compels us to make a good cost assessment to maximize investment and return"
Head of Product Department - Radio

"The challenge is for journalists to use these tools to improve their daily work and perceive them as an aid, and not as a threat to their job. Automated news is content with little added value that should allow journalists to focus on stories that may or may not require human intervention and that are the fundamental purpose of journalism"
Managerial Department - Press

"These are applications designed for very large volume environments and are difficult to adapt to smaller environments"
Head of Engineering Department - Press

"The main challenge is that everything is happening so fast that we are forgetting the human factor, the need for a lot of pedagogy and to use news formats that help contextualize and understand what is happening. There is much futility, speed without checking and superficiality without taking into account the viewer's maturity"
Head of Communications Department - Television

"We must make sure that automation doesn't make us less rigorous in our approach"
Head of Editorial Department - Television

"Economically, very little is being invested in developing sophisticated tools and algorithms for the journalism industry because it is a sector that generates far less money than other industries in which the use of AI is more advanced"
Managerial Department - News Agency

"The main challenge is to ensure that the pace at which AI processes evolve is accompanied by the knowledge and expertise of media professionals"
Head of Editorial Department - Television

Algorithms in the newsrooms:
Challenges and recommendations for artificial intelligence with the ethical values of journalism

FUNDACIÓ
F c I c
CONSELL DE LA
INFORMACIÓ DE CATALUNYA

Technoethics as an interpretative framework

The first stage of the digitization of newsrooms that began in the 1990s introduced a large number of new tools and applications to the practice of journalism that in turn generated new ethical dilemmas in the exercise of the profession. When the Code of Ethics of the Association of Catalan Journalists (*Col·legi de Periodistes de Catalunya*) was adapted to the Internet in 2016, the general principles that govern the profession were used as a reference.

Journalists must adapt to new developments but, at the same time, preserve the values of the profession (García Avilés, 2021). Truth, justice, responsibility and freedom are equally pertinent values in new practices. However, certain aspects related to the nature and scope of traditional principles undergo certain nuances with respect to the new challenges of digital journalism (Deuze & Yeshua, 2001).

Thus, when addressing this new stage of digitization characterized by the incorporation of exponential technologies, we have also maintained the principles of journalistic ethics as a reference (Alsius, 2011). We have also considered the influence acquired by technoethics (AI ethics from a computational sciences focus), as other authors have also proposed (Dörr & Hollnbuchner, 2017).

In order to make an evaluation of the scope or nuances that the principles that govern the profession could acquire, we felt it would be appropriate to analyze both the main institutional regulatory literature on AI ethics, as well as research on this matter in the field of computational sciences. By drawing on the ethical perspective of this discipline, we were able to take advantage of the accumulated baggage. At the same time, this enabled us to highlight the multidisciplinary approach required to analyze the adoption of AI, in line with the tendency to hybridize scientific and social profiles that, as we will see later, the

integration of automation into the practice of journalism implies.

Beyond the myth created by science fiction –about AI becoming more intelligent than human beings and eventually taking over– there are issues that need to be addressed due to the speed with at which it is advancing and being integrated into all sectors. In many fields it is already essential and numerous cases show that it is a technology that, like any other, has the potential to provide major social benefits.

It should be noted, however, that AI is an exponential technology, which we tend to entrust more and more with decisions that before could only be made by human beings, the consequences of which can have a decisive influence on people's lives. Before, AI was assigned tasks that had a correct solution, such as issuing a bank statement, or ordering a list by date or by name. Today, however, AI is already involved in decisions such as medical diagnosis, education, human resources and others related to the field of justice (*OASI*, 2021), and what is more, the algorithmic procedures for reaching these decisions are often 'black boxes', i.e. algorithms that are impossible to explain due to the complexity and autonomy of machine learning and deep learning systems (Storydata (coord.) et al., 2020). Hence, one of the main features shared by cyberethics guides is the prevention of damage to people that could be caused by errors in automated systems devoid of the human ability to make ethical assessments.

This intention is transversally specified in the main codes of conduct with regard to the principles of justice, privacy, transparency, explainability and accountability (Hagendorff, 2020). In this same vein, the European Commission (EC) establishes seven principles: Human Agency and Supervision, Technical Robustness and Security, Privacy and Data Governance, Transparency, Diversity, Non-

Discrimination and Equity, Social and Environmental Welfare and Accountability (High-Level Expert Group on AI, 2019).

Although we entrust decisions to algorithms, the moral authority over their applications can only be of the person (López De Mántaras, Ramón, 2021), which is why the need for supervision in the different stages of design and implementation processes is also emphasized in cyberethics guides. From the legal point of view, the General Data Protection Regulation (GDPR) recognizes the right of persons in this regard in its article 22: "The data subject shall have the right not to be subject to a decision based solely on automated processing, including profiling, which produces legal effects concerning him or her or similarly significantly affects him or her" (General Data Protection Regulation, 2016).

As the uses of AI have become more sophisticated, ethical and legal regulatory frameworks have been developed and adapted. One of the most important steps was the EU's proposal for the regulation of AI. This is a series of measures to address the opportunities and challenges of AI, aimed at raising trust in technology and its potential impact on individuals, society and the economy. The European Commission's document, published in April 2021, proposes ways to guarantee security, transparency and responsibility in order to avoid any form of injustice, as well as respect for fundamental rights (European Commission, 2021).

The fact is that even though there is some regulation, AI is being adopted at a faster pace than the legal and ethical considerations that are required to assess the risks that its use entails, and our consumer societies are only too eager to embrace innovations that promise greater productivity and efficiency. This context causes people to act reactively. In other words, it is common for applications to be used that are not mature enough because they have not been sufficiently evaluated from a techno-ethical point of view (Storydata (coord.) et al., 2020).

Many of the consequences of this problem are known. Cases of discrimination and other algorithmic errors, which experts and academics have been warning about for some time (BCN Analytics, 2018), are becoming more commonplace. The Civio Foundation in Spain, for example, denounced an algorithmic adjudication procedure that denied benefits to help pay electricity bills to people who in fact did meet the criteria for entitlement to aid (Civio, 2019).

Another well-known case of discrimination was the *Compass* app used by the U.S. police to predict crime, which was found to be prejudicial toward African-Americans by assigning to them a greater risk of recidivism (Angwin, 2016). There was also outcry regarding Amazon's algorithm that discriminated against candidates for positions within the company by ruling out female profiles (Dastin, 2018). Or Apple's credit system that granted loans to men but not women, even though they met the same economic criteria (Vigdor, 2019).

There have also been cases of personal data being collected without the interested parties being aware of it, or of its use for purposes that could never have been imagined by the people who provided it, such as the well-known example of the massive filtering of Facebook users' data to the Cambridge Analytica company that could have influenced the results of the 2016 US election (Martínez Ahrens, 2018). Finally, and more recently, in-house studies of Meta (formerly Facebook) have shown that the company failed to action following its own discovery that Instagram, one of its platforms, is harmful to the mental health of teenage girls (Seetharaman, 2021).

Algorithms in the newsrooms:
Challenges and recommendations for artificial intelligence with the ethical values of journalism

FUNDACIÓ
F CIC
CONSELL DE LA
INFORMACIÓ DE CATALUNYA

Numerous codes of ethics for the use of AI have emerged worldwide following what is considered the first, which curiously enough was formulated in the context of a work of fiction by Isaac Asimov in the 1950s (Asimov, 1989). Today, the multiplication and sophistication of the uses and applications of AI have been accompanied by a proliferation of ethical statements and guides. In Catalonia there is an important precedent, the so-called Barcelona Declaration for the good development and use of AI in Europe (Steels & De Mantaras, 2018).

This statement preceded the subsequent creation of the independent High-Level Expert Group which developed the European Commission's Ethics Guidelines for Trustworthy AI in order to mitigate risks that, according to the document itself, are "difficult to anticipate, identify or measure (e.g. on democracy, the rule of law and distributive justice, or on the human mind itself)" (High-Level Expert Group on AI, 2019). This initiative, one of the most outstanding in the field of ethical regulation of AI, ended up inspiring the European Union's proposed regulation that we mentioned earlier, and which can be considered the most important step to date from the legal point of view.

In Spain, the National Artificial Intelligence Strategy was launched in 2020, and the Catalan strategy was launched at the same time. The Catalan Observatory for Ethics in Artificial Intelligence was created in the same year, which coexists alongside other bodies such as the AI ethics committees promoted, among others, by the main national universities.

Finally, in November 2021, UNESCO approved the first global regulatory framework on AI ethics, in which special attention is paid to its application to information and communication. The issues it considers to need addressing from an ethical point of view include not only disinformation, privacy and platforms applying AI to information, but there is also explicit reference to the

algorithmic management of information carried out by the traditional media themselves (2021): "Communication and information, as AI technologies play an increasingly important role in the processing, structuring and provision of information; the issues of automated journalism and the algorithmic provision of news and moderation and curating of content on social media and search engines are just a few examples raising issues related to access to information, disinformation, misinformation, hate speech, the emergence of new forms of societal narratives, discrimination, freedom of expression, privacy and media and information literacy, among others."

Ethical challenges in the use of AI in journalism

When establishing a framework for the ethical use of artificial intelligence (AI) in the media, the first thing to consider is the current legislation on the matter. The most important regulation to date is the aforementioned and well-known GDPR, which especially applies to issues related to data privacy and management. The aforesaid proposal for the regulation of AI by the European Union (EU) should also be considered in this regard.

This new legal framework establishes a categorization by level of risk depending on the impact that the AI system may have on people's lives and the violation of fundamental rights. In terms of communication, two applications that the proposal considers to be potential causes of risks to the general population are identified and its articles describe how it will regulate its use in the future.

First, it refers to fake content, and specifically so-called deepfakes, images that impersonate people and can mislead the receiver. Here, the sender is required to inform users that it is a deepfake. Although it can be deduced from this that the rule is intended to prevent interested parties from spreading propaganda and other falsehoods, the media could be affected if they chose to use images created with AI that do not correspond to physical reality, such as using virtual presenters. In all cases, there will be an obligation to communicate the fact that an image is not real.

Secondly, the proposal also refers to bots, chat systems that are commonly used in the field of customer service, among others. In the case of journalism, they are often used to answer questions about news and to share other content. In this case, the proposal also requires users to be told when they are talking to a machine. Apart from these two points, it should also be borne in mind that the new regulations call on all sectors to establish self-regulatory frameworks for the

different applications of AI to each area, and that there are other points in this proposal that, although not explicitly referring to the field of communication, should be carefully evaluated in case they could be applicable in certain specific cases. This includes, for example, the use of systems with the potential to manipulate human behavior, such as personalization algorithms and others that could affect people with psychological vulnerabilities or children.

From these specific regulations, it is inferred that the major problem that the EU wants to avoid regarding the use of AI in this field is misinformation, a concern that the communication sector also shares. When asked about the effects of integrating uses of AI into journalistic routines, most of the professionals surveyed expressed concern about misinformation being generated from the media itself. The other most commonly cited concepts when enquiring about their main concerns were bias, echo chambers, polarization, violations of privacy, the dehumanization of content and the loss of quality.

Having reviewed the literature on AI and journalism, AI ethics and technoethics applied to journalism, as well as the results of the surveys that we distributed among media professionals throughout Spain, we organized different focus groups, meetings and interviews with academic

Algorithms in the newsrooms:
Challenges and recommendations for artificial intelligence with the ethical values of journalism

FUNDACIÓ
F C I C
CONSELL DE LA
INFORMACIÓ DE CATALUNYA
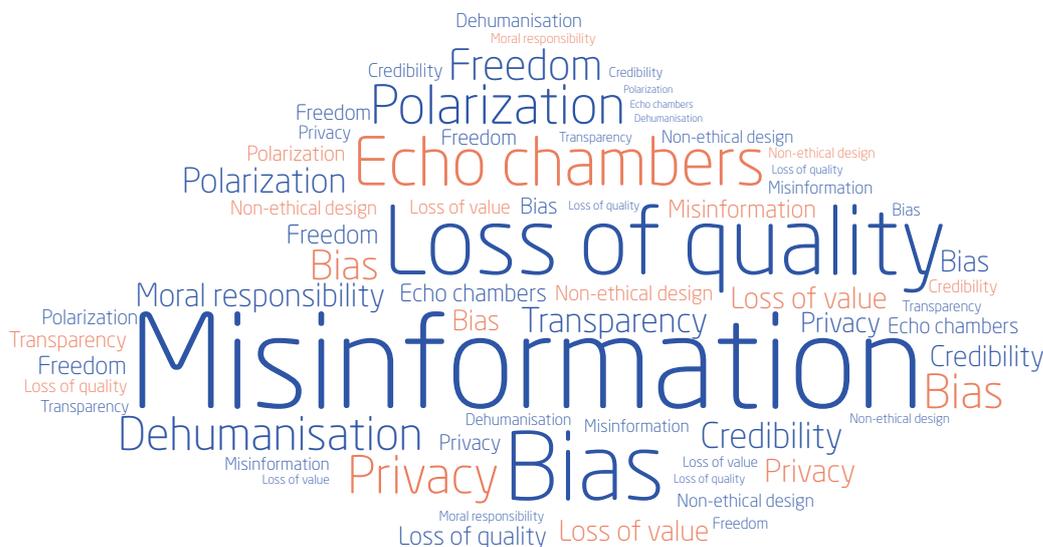
experts, as well as with media representatives. At these meetings, participants were asked what they considered to be the main ethical dilemmas and what principles of journalistic ethics and technoethics they might affect. The main issues that may require attention from specific research that we detailed earlier were also presented in consideration of the most common uses of AI in the field of journalism today.

We identified the following key issues:

» Automated content consistent with editorial criteria
» Personalization that respects diversity and promotes a thriving public sphere
» Monitoring and quality of data to avoid bias
» Responsible safeguarding of user privacy
» Quality journalism means emphasizing the human factor
» Funding of platforms and journalistic independence
» AI to foster the values of journalism

Automated content consistent with editorial criteria

Automated content generation systems, as well as chatbots, are already quite common in the main Catalan media. AI is responsible for tasks such as transforming data into infographics, converting text into video or, the most widespread use, automated text generation. Thee latter are writing systems that create pieces that may often seem to have been written by a journalist, but are actually very similar news items to any other generated by the same machine, following a standardized and therefore predictable structure in which only the main details are changed, as used with, for instance, sports results, stock prices, weather forecasts and so on. In the automated creation of news, the journalists' role is limited to establishing the narrative structure and filling in the empty fields of a template to tell the system what details it needs to insert into a narrative body.

These news writing systems are used to report on topics that are likely to be structured, such as those described in the previous paragraph. The main journalistic value that the media attach to the creation of news with AI is that coverage can be provided of topics that affect small numbers of the population and could not be offered without this technology due to lack of resources, such as

election results from small towns, or information on minor sporting events, among others.

"If you can find a technology that can do a particular task, for example, writing the weather reports, isn't it a great idea to get the technology to do that? There's a whole load of jobs that humans used to do, and they don't do anymore, and most of them were really boring. If you think your job can be done by a machine, then you should really ask yourself what your job is. You should be doing another job"
Charlie Beckett

For their part, chatbots are agents that interact with the user in response to requests for information. As explained above, they are used in many other sectors, for example in customer service to respond to frequently asked questions. Note that the use of chatbots is one of the practices that the EU intends to regulate by law and refers to it in Title IV of the proposed AI regulation, in which providers are required to ensure that users are clearly informed that they are interacting with a machine and not with a person.

"Agreement and a proactive attitude are needed to transfer journalistic ethics to these new situations and thus prevent outsiders of the profession from making decisions. Users need to know and understand that the method of journalism is very different from that of platforms, where ethical concern is minimal"
José Alberto García Avilés

"Content automation often aims to reach as many people as possible. And that's volume, not quality. This is a fundamental aspect to consider from an ethical point of view. If we ignore this, we don't understand where we are"
Albert Sabater

From an ethical point of view, in the different processes of automated content generation, human supervision is essential to avoid errors in the results that could give rise to incorrect or biased content, and therefore its uncontrolled use would put the veracity of the information at risk. There have been several cases in this regard. For example, in 2015 this kind of software published a

story about an alleged drop in Netflix's stock value, when in fact it more than doubled.

"One of the main issues that I've seen relates to things like uncertainty around accuracy produced by AI systems. There are ethical issues related to publishing uncertain information without really being able to check it, so it can create some tension around the journalistic goal of accuracy"
Nicholas Diakopoulos

"AI can be very helpful. The problem is when human creators and writing machines get mixed up. Then you don't know who's making the news anymore. I think it's going to be very difficult to set boundaries"
Joan Rosés

There have also been cases such as that of a media company that had set out to create infographics –specifically word clouds– from automated transcripts. This system made mistakes, so when creating the infographic the representation of the volume of words was not accurate because its transcription had not been either. On this occasion, the company did monitor the result and having found that it was inaccurate, chose not to use automation even though it involved more resources, or what is the same, they got people to do the transcription. Another problem that occurred in the same company, in this case with the automated generation of texts, was that the system produced gender biased results, specifically by attributing males to positions that were cited in the feminine form (such as '*alcalde*' (mayor) instead of '*alcaldesa*' (mayoress')). Again, human editors reviewed all the texts to make the corresponding amendments. In this case, in addition to monitoring, the company also labeled all this news as automated.

"As a reader and as a member of the public, I want to know that this content has been generated by a machine. I don't doubt that the information is correct. I simply expect the media to be transparent about it"
Karma Peiró

From these examples, we can glean that transparency –indicating that texts are automated–

Algorithms in the newsrooms:
Challenges and recommendations for artificial intelligence with the ethical values of journalism

FUNDACIÓ
F c I C
CONSELL DE LA
INFORMACIÓ DE CATALUNYA

and human supervision are essential to avoid generating misinformation. Especially in these uses of AI, most experts, in line with the forthcoming European legislation on bots, consider that transparency is necessary, and that the public should be able to clearly identify when content is generated by a machine. Experts agree that, in addition to affirming journalistic commitment to truth, transparency is the most efficient protection against possible errors. Again, there needs to be explainability, i.e. evidence of the origin of any type of information in order to act responsibly.

"Another issue is labelling automation, which is probably a more important thing than labelling AI, as it is already part of many things now. For instance, if you use AI to transcribe interviews, does that make it AI journalism? I don't think it does. So, it is about labelling automation and the level to which end users are aware of the degree of automation that's in operation when they read a piece of content. So basically, that they can understand that if there are errors in the output of that content, they have somewhere to go to understand why those errors might be there"
Nicholas Diakopoulos

Personalization that respects diversity and promotes a thriving public sphere

Audiences and what they want to read are increasingly easier to predict by tracking the data that they leave behind when browsing the Internet. Personalization algorithms are a type of information filtering system that determines which content in an information universe a user will prefer based on the study of data such as location, device, behavioral patterns or similar user habits. These types of systems increase the metrics of results, such as page views, the time that users spend on media pages or the frequency of web visits.

The contents that we find on our timeline when we use social networks are an example of a tailored selection based on the information that the platform has gathered about each of us, such as where we connect, with what device, what kind of content we consume, for how long, who our friends are and what content they consume, etc.

Since Cass Sunstein formulated the theory of echo chambers (1999) and Eli Parisier published his study of filter bubbles (2011), much research has drawn very different conclusions, including several claims that these bubble effects that supposedly generate the consumption of digital information have a very limited scope (Guess et al., 2018).

"In our work, we don't really find the existence of filter bubbles in a very stark way. It's not like you're in the bubble or you're out of the bubble, there is not this strong dividing line that defines a bubble. So, it's really the bubble metaphor which is the problem. What we observed is a certain trend to be a little bit more exposed to one point of view and a little bit less to the other. That's more the reality of what's going on"
Nicholas Diakopoulos

In fact, other experts say, it is not so much personalization as a combination of this tailored content, confirmation bias (reaffirmation of our own points of view) and the fact that the information is consumed in the digital environment,

because while we are browsing, we are inside an ecosystem in which we are connected with our communities, which encourages sharing. Unlike offline and solitary consumption, being connected tends to trigger an individual communicative action that seeks to reaffirm one's own biases, seek the approval of those who think like us and at the same time criticize opponents (Tufekci, 2018).

This combination of personalization, confirmation bias and a digital ecosystem that encourages the viralization of emotional content (Brady et al., 2017) would be what promotes the creation of the bubble-like states that Sunstein and Parisier theorized and raises concerns about potential negative effects on democracy. These problems originate from the lack of exposure of people to different points of view, as well as the lack of shared experiences that are necessary for social cohesion.

The report by the EU's high-level group on press freedom and pluralism expressed its concern that "increasing filtering mechanisms make it more likely for people to only get news on subjects they are interested in, and with the perspective they identify with … Such developments undoubtedly have a potentially negative impact on democracy" (High Level Group on Media Freedom and Pluralism, 2013).

"I just wonder if, over time, these algorithms will start undermining one of the functions of media which is to create common ground. If we miss that common ground, it can be difficult to create the conversations that you might want to have with your community. One vision of the media's relationship to democracy is that the media creates the conditions for having those debates, so, if we are not using our algorithmic media to do that, I think we have to be aware and be careful with that"
Nicholas Diakopoulos

From an editorial point of view, personalization is useful to help the reader optimize the time spent in the news site and therefore increase the value of the product. For example, displaying certain content based on the user's location can provide a more useful and interesting selection of news by

including or not including certain topics depending on geographical proximity. Despite being the most controversial form, personalization by interests is also used in the media and *a priori* does not imply any kind of dilemma: if a user never views content about sports, but instead often consults information related to literature, it may make sense for one of the articles that a recommendation engine shows to that user to be related to the topic that he or she has repeatedly shown interest in.

It is also worth considering the expectations of the new generations, who have grown up consuming algorithmic systems such as Spotify, Netflix and Amazon. These sectors of the population already expect the media to help them to optimize their time. As some trend reports suggest, young people expect more personalization, also from legacy media: "Traditional news brands feel their job is to tell people what they should know. Young people want this to an extent, but they also want to know what is useful to know, what is interesting to know and what is fun to know" (Galan et al., 2019).

"If AI is to offer recommendations that provide more context, so much the better. That is providing a better service to the user"
Mariano Fernández – CDO – La Vanguardia

"Where personalization can help is giving people information that is more relevant to them. And of course, when we use AI to personalize, we always have a choice. You can set the algorithm to have serendipity, or if you are sending people a newsletter with personalized recommendations you can include, for example, the editor's choice. So, I think it is quite a simple issue. But it requires that you take control as a news organization"
Charlie Beckett

"The attention economy also forces us to optimize the reader's time. If he has 20 minutes, we can thank him for the time he spends with us by selecting six things that he can read in 20 minutes and which we think will interest him more. But that doesn't mean we should hide from him the other 94 things we've made. He should have them within reasonable reach. This selection process can

Algorithms in the newsrooms:
Challenges and recommendations for artificial intelligence with the ethical values of journalism

FUNDACIÓ
FcIC
CONSELL DE LA
INFORMACIÓ DE CATALUNYA

be virtuous, not just vicious, if there is a good balance between predictability (what the reader wants to know) and surprise (what he didn't know he wanted to know)"
Alex Gutiérrez - Head of Media – Diari Ara

So, in certain contexts this personalization does not entail any risk. However, when it comes to political and other sensitive topics, the effect of consuming content that only reinforces one's own point of view and therefore excludes other perspectives or issues that affect minority groups may clash with the mission of offering a diversity of information to the public (Helberger, 2019). It may also contradict journalism's democratic mission of contributing to community debate around topics of public interest, and of creating common spaces to help people to develop solid criteria for making informed political decisions. In the words of Carlos Ruiz (2016): "Politics is possible because there is a community that is made in communication."

"If personalization algorithms end up deciding which information to show and which not, there is a risk of manipulation and loss of democracy. How is it controlled?"
Karma Peiró

"If a general media organization doesn't offer a global and comprehensive view of reality as a whole, it won't go very far. If there was one that personalized to the extreme of individuality, readers would lose their sense of community and so that would be a strange kind of journalism, because the social aspect would have been lost. Content is king, OK, but if you only produce unstructured content, tailored to each individual reader, you're probably more in the click business than in journalism"
Alex Gutiérrez - Head of Media – Diari Ara

So, as we have seen, personalization is a great advantage when it comes to improving the user experience, which will consequently make the product more valuable. At the same time, however, it may be useful to consider certain aspects when it comes to incorporating its use in the context of journalism. Broadly speaking, the organization can ensure that readers are exposed to different points of view and, by means of the same automated

recommenders, it is also technically possible to ensure that these engines reflect certain values (Helberger et al., 2018). The technology itself provides many possibilities and degrees of application that can be adapted to the strategy of each media organization. A good example is the value-based algorithm developed by Radio Sweden (Beckett, 2020). It is an engine designed to recommend content in accordance not only with criteria such as the magnitude or life of the news item, but also whether the piece grants visibility to communities that do not normally have it or whether it originates from dialogue with the listeners, among other 'public service values' promoted by the broadcaster.

When producing these designs, the questions that each media organization will have to answer will emerge according to the principles that they want to reflect. A key aspect will be balance of content: basically what will be included or excluded and to what extent. Furthermore, given the natural human inclination towards confirmation bias, the organization will have to decide whether to exclude from the system certain more sensitive topics such as those mentioned above that encourage users only to share their own point of view on social networks and those that contribute to the polarization of the digital public sphere (Marconi, 2020).

Finally, and taking into account the new European regulation on AI that we have already discussed in previous sections, it would be advisable to evaluate these service personalization applications from a design and implementation perspective to determine the extent to which they have the potential to manipulate the behavior of people with psychological vulnerabilities or minors and assess their possible consequences.

"The question becomes: How much content should be personalized versus not personalized? Where do you put the balance point? Also, what content is off limits for personalization because there are maybe some kinds of behaviour which are individually or socially detrimental and we might not want to reinforce those behaviours by having the algorithm show you the same thing repeatedly.

Maybe that's self-destructive. All these questions are really huge value questions. Where are you going to draw the line? What kinds of content are off limits?"
Nicholas Diakopoulos

"When you design recommendation systems, what you want is to get it right, and it's difficult and delicate because the systems have a certain degree of autonomy. For example, with sports, because recommending a Real Madrid piece to someone who supports Barça, or a Barça piece so someone who likes Espanyol usually generates rejection. So, you must be very sure that what the content catalogue has recommended is at least not going to hurt the user. With content like series or documentaries there aren't usually any problems, because if the system gets it right, great, but if it isn't right people aren't too bothered, but when it comes to politics, religion, sports... That's why I think people should always get an explanation as to why they receive a certain recommendation. This is all part of explainability, because the algorithm sometimes gets it right and sometimes it doesn't"
Alberto Alejo - Head of Software Engineering Development - CCMA

"When we design a service for children, and decide that when they finish watching one video another one will play automatically (considering their preferences), are we offering a good service from an ethical point of view, considering that it's a minor? Until a while ago we didn't think about this, and now we are beginning to consider ethical variables when we design this type of service"
Geni de Vilar - CCMA Digital Media

Responsible processing of user data to safeguard privacy

One of the most significant characteristics of digitization, as we were saying, is the data that users generate while browsing the Internet. Today, the level of exploitation of all this information is a competitive advantage for any organization, which will receive more and better knowledge about its audience's needs and thus be able to identify the best conditions to sell its product or improve its service.

Data are essential to carry out any automatable task, and the casuistry in the areas of use is very extensive, but undoubtedly one of the main advantages of this new scenario for the media is knowing about its audience's preferences. This change has been a turning point in certain areas of media management, both commercially, because it means services can be adapted to needs and behaviors, and from an editorial perspective, since it helps to orient information towards the real interests of each user in ways like those detailed in the previous section on personalization.

In the past, the editorial process worked partly by intuition, but for some time, thanks to analytics, we have been able to know how many visits a news item has received, the time spent, the video view rate, where readers connect from, what interests they have, how they behave and many more variables that can be used to optimize the product to achieve its objectives in better conditions and that vary depending on the media organization's business model: from page view optimization to increased subscriptions.

For journalism, the possibilities for knowing about user preferences that have arisen from enhanced information processing tools and techniques are a great opportunity. At the same time, however, the sector will have to reflect on the role it wants to play in an internet in which the mining of personal data has become one of the great threats to freedom (Lassalle, 2019) (Zuboff, 2019) (Harari, 2018) (Bridle, 2020) (Ruiz, 2016) (Peirano, 2019). People are increasingly aware of the implications of transferring their personal data, and it is no coincidence that two of the biggest tech companies

Algorithms in the newsrooms:
Challenges and recommendations for artificial intelligence with the ethical values of journalism

FUNDACIÓ
F C I C
CONSELL DE LA
INFORMACIÓ DE CATALUNYA

are adapting their strategies accordingly. Apple now allows tracking to be blocked from its devices, while Google plans to soon remove third-party cookies from Chrome, its browser, and redefine its targeting techniques so that it does not need individual user data. The New York Times, for example, has adapted its environment to this new and more privacy-friendly scenario ("How the New York Times Prepared Itself for a Cookieless World", 2021).

Precisely in the communication field we find the best known examples of the most questionable type of personal data management in companies such as Meta, Amazon, Google or any social network, which directly base their business models on this exploitation and the methods used to do so are not at all transparent, with the use of persuasive design to increase time spent and engagement with their domains, and ambiguous announcements about their purposes (Harris, 2019) (Peirano, 2019) (Wu, 2020) (Patino, 2020). Hence, the digital ecosystem has become a surveillance environment that has led to the kind of extractive economy (Zuboff, 2019) that journalism often also condemns.

As we said earlier, the media industry will have to consider its role in this context and act responsibly with its users' personal information if it wants to help build trust at a time when there is such a need to identify reputable and reliable sources (Newman, 2021).

"If you collect data to give the user what they want, or the way they want it, perfect. What might be questionable is creating database packages to sell to third parties"
Mariano Fernández - CDO - La Vanguardia

In addition to the readers' browsing data, more than ever newsrooms are now circulating details that could become part of the day's news. The most common cases can be found in the uses made of all this information by data journalism (the technological evolution of precision journalism), which is able to take advantage of all the raw data like never before to transform them into valuable information for the public.

The management of all this information also entails certain implications from an ethical and

legal point of view, which could apply, for example, to data gathering methods ranging from the more traditional to more technical ones such as scrapping, and not forgetting all the subsequent management (Lewis & Westlund, 2015), such as secure storage and dilemmas regarding the need or not to retain all this data.

"Journalists have a presumption that it is in the public interest to invade privacy. We have to be thinking harder about the way that we collect data, store data and how we then use it, for example, in relation to advertising"
Charlie Beckett

"For a long time, the press has been financed by people paying for ads at prices that are not justified by market returns, but were a convention. Now we have moved on to an ultraspecialization in which we know everything: how many people look at an ad, what responses it generates in each user. This is a powerful tool, because it optimizes investment, but it raises the ethical question of whether editorial decisions are made thinking fundamentally about the contextual advertising that can be inserted in each article"
Àlex Gutiérrez - Head of Media - Diari Ara

The legal framework is a suitable tool when it comes to establishing a code of good practices in data management. Specifically, the General Data Protection Regulation (GDPR) imposes direct obligations, whereby a company may process personal data under conditions of fairness, transparency, having a specific and legitimate purpose, and being limited to the data necessary to fulfill that purpose (General Data Protection Regulation, 2016).

"One of the central points of a decalogue should be to specify that only the information strictly necessary for the purpose for which it is intended is collected, who has access to that information and in what way. Therefore, we need to get away from the idea of "collect what I can and then we'll see what I use it for"
David Casacuberta

In addition, data needs to be processed on the basis of certain legal grounds. Regarding the use of data for AI applications, the report by the Catalan Data Protection Authority (Peiró, 2020) highlights the GDPR's principle of limitation of purpose, which states that data must be collected for a specific and explicit purpose, and that it should not be used in an incompatible manner. The other principle that it emphasizes is that of minimization, whereby data used in an operation must be adequate, relevant and limited to what is strictly necessary to achieve its purpose. In short, the GDPR recognizes the use of data to satisfy the legitimate interests of the company, but provided that people's rights and freedoms are not affected.

"A code of conduct is required with respect to the data obtained that specifies how it is collected, and especially if it is shared with third parties. This is a matter of responsibility. In a way, you're not only representing a company, but the kind of society that you want to live in"
Albert Sabater

One of the media's main concerns regarding data management has to do with the use of services offered by companies operating in the cloud and that provide algorithms and software to perform AI applications that would otherwise be inaccessible due to the high costs involved in developing them. Only the likes of IBM, Microsoft, Google and Amazon have sufficient resources, expert personnel and database volume (Government of Catalonia, 2019). The problem, the media say, is that in order to use them you need to transfer your own data without having any guarantees as to how they are subsequently managed.

In addition, some of these companies may have servers outside of the European Economic Area. This issue, international transfer of data, is also regulated by the GDPR (2016). To avoid problems, some media have gone so far as to give up improving certain services.

"For most media, AI is still too far away to avoid being supported by the large platforms that provide the service. However, for me, such outsourcing raises certain doubts of an

editorial nature, about data control or about wasting the very intelligence generated. Because if the beauty of AI is that it gathers knowledge... where is it held? Inside the company, or outside?"
Alex Gutiérrez - Head of Media - Diari Ara

Finally, it should be noted that the experience we have gained in the years since the European regulation was applied invites us to reflect on how we communicate the issues regarding the purposes and uses of personal data, which is often in the form of cookie notices and privacy clauses that are too long and difficult to understand. The principle of transparency comes into play again here, whereby we should be able to use all the communication tools that we have available to get the message across in the simplest and most understandable way possible, deciding which information to communicate and for what purpose and making it clear how the user can access and control it..

"Privacy clauses are rarely read and are usually accepted in order to go to the website in question; so the fact that there is a law is not a solution. The solution is for the newsroom to make it very clear that it must comply with a code of ethics and explain to the public, in ten steps, with drawings, in a very simple way, what data it is collecting and for what purpose"
Karma Peiró

Monitoring and quality of data to avoid bias

An algorithm is "a set of steps that are followed in order to solve a mathematical problem or to complete a computer process" (*Merriam-Webster Dictionary*, 2021), a calculation procedure that consists of fulfilling an ordered and finite series of instructions that leads, once the data have been specified, to the solution that the generic problem in question has for the data considered (*Enciclopèdia Catalana*, 2021). Therefore, if the result of algorithmic processing is based on the data that have been fed into the system, the better the data the more accurate the automated decision will be.

Algorithms in the newsrooms:
Challenges and recommendations for artificial intelligence with the ethical values of journalism

FUNDACIÓ
F CIC
CONSELL DE LA
INFORMACIÓ DE CATALUNYA

In this context, the quality of the data is directly related to the purpose to be achieved with the algorithm. For example, a machine translator bases its decisions on previous learning from large corpora of data. The process consists of feeding millions of sentences in one language into a system, together with the same number of translations of these sentences in another language, and by doing this the algorithm extracts patterns that it learns. Therefore, in order for the algorithm to make good translations, it is essential for it to be fed an abundant amount of data that are sufficiently diverse and representative of society as a whole, for otherwise this system will, in all likelihood, produce erroneous or biased translations. For example, regarding gender (Storydata (coord.) et al., 2020), translations should not attribute a stereotyped gender to words that have none, such as translating the English 'nurse' into the Catalan '*infermera*' (as opposed to '*infermer*') or 'lawyer' into 'advocat' (and not 'advocada').

Bias is therefore one of the main risks when integrating AI tools into processes, and when situations like this occur, the automated decision is more of a value judgment made from prejudice than an objective and impartial assessment, and this clashes with the ethical and legal value whereby different groups must be treated equally and, therefore, puts the principle of justice at risk.

Logically, the more social impact the algorithmic decision has, the more serious the consequences of bias can be. In earlier sections, we mentioned the cases of the racist algorithm used by the US police and Amazon's staff recruitment algorithm that ruled out female candidates for engineering positions. All these problems occur as a result of the bias in the data that they have been fed. In the case of the sexist staff recruitment system, for example, the reason was that the algorithm had learned from the data that it had been trained with (the company's own recruitment data) that men had been chosen for these kinds of jobs, so the probability of a female candidate being selected by the algorithm was practically nil. Similarly, the case of the racist policing system arose because the algorithm probably learned from the data that more African-Americans get arrested. And we can find more and more cases like these in which decisions

are delegated to AI, such as the granting or not of loans, the calculation of insurance risk, medical diagnosis, and many other decisions of significant social significance.

Applied to information, the impact that algorithms have on society occurs in the public sphere on which the prosperity of our democracies depends. One of the potentials of AI is its scale effects and the capacity for impact of erroneous algorithmic decisions or directly false content is, as we have seen, one of the biggest social concerns in the field of communication.

When you encounter a diverse database from which you want to get a series of answers, you need to think of the right questions to ask it. If the questions are biased, the answers will be too, because it's an automatism that's generating them for you. So, the values of the journalist asking the questions to the database come into play here. Honesty is essential for avoiding bias"
Ximo Blasco, News Management Coordinator at TV3 – CCMA

"Consideration of explainability -having evidence of where any type of information comes from- is essential for all of us who work in the management of statistical and non-statistical information, not just journalists. The thing is, we've gone from managing relatively small volumes of information to very large ones. Journalism must learn to master these big data management techniques in order to minimize risks"
Albert Sabater

Biased content therefore has the potential to affect the quality of the information that is disseminated, with the corresponding consequences for audience training and their right to information. As explained in the AI ethics section, the European Union will take specific measures as a result of these risks.

In media, the casuistry can be very broad. In the section on automated content generation we gave different clear examples of potential bias and errors as a result of data. A very different case, but that also stems from data input, can occur in editorial

processes that involve the selection and distribution of content, such as recommendation engines and automatic summarization, where there is a risk of excluding information of journalistic relevance if the only content that gets displayed is that which the reader consumes the most or when engines are only optimized to get clicks.

Following on from that example, if we commission an algorithm with the task of highlighting the biggest stories of the day on the home page of a website, app or newsletter, part of the input data will be the universe of content from which the algorithm will have to choose the most appropriate items. Selection of these main stories will be based on further data, such as the pieces have received the most visits from other readers. With all the information that it has been fed, the algorithm will decide which contents to highlight in this area of the web interface.

What if this algorithm is designed only to take into account page views as the main criterion? In that case, users will find that the top articles of the day include, in all likelihood, shock news, sensationalism, gossip and so on. If the intention of this selection is for the user to get an idea of the most important news of the day, this would not be achieved because the algorithm is biased.

"It is essential to monitor the data that algorithms are fed: what data, how they are obtained, who filters them, what bias they might have... in all processes from production to distribution we need to monitor who has generated them, who controls them, whether they are sold or not and, ultimately, how users interact with them"
José Alberto García Avilés

Therefore, the better the quality of these data and the better they are monitored, the more accurate the result of the algorithmic decision will be. It is up to the professionals in charge of these systems to ensure, first, that the orders given to the algorithm are the right ones to achieve the purpose sought; second, that the data fed into the system are appropriate, i.e. it can obtain the information it needs to perform the procedures for its given purposes; third, the necessary human supervision

of the result of the automated process must be guaranteed; and finally, as in any AI application, transparency is essential, i.e. we explain before or can explain later why our system has made a certain decision.

"There should be control over the whole process: from the source of the data until they reach the public. How they are collected, how they are treated... But this is impossible today, because it isn't profitable for the media"
Karma Peiró

Quality means emphasizing the human factor

One of the main concerns expressed by journalists regarding the use of AI in the media is that automation affects the quality of the journalistic product. Although the dominant discourse boils down to the idea that the incorporation of AI will translate into more time for professionals to work on more creative tasks, most respondents have different views. In the sessions and interviews that we conducted with experts and the media, this point also emerged on different occasions.

"Everything that can be automated will be automated, because it entails cutting costs. It's said that robots will do the most mechanical tasks and that journalists will continue to be in control, but we must be careful because this is a narrative that AI companies are selling to us. It happened a few years ago with convergence. If one person could do the work of three, that person would be hired. So, if a machine can do the work of three in times of crisis for communication companies... I think the narrative they're selling us is too rosy" José Alberto García Avilés

The sector's main concern on this issue is the perception of the risk of the quality of the journalistic product diminishing as a result, mainly, of a further increase in the speed of procedures that makes fact-checking difficult, as well as the potential effects described in previous sections, such as biased algorithmic systems or the danger of journalism losing its role as a community service due to over-personalization. The survey also shows that the sector makes a direct connection between automation and misinformation, even when it is the media organization itself that uses the technology.

"AI provides speed and immediacy. The ability to be more immediate than any source therefore accelerates all processes and decreases the journalist's ability to filter, analyze, check and verify. Consequently, it puts the professional in a very delicate position. He has to be quick, he has to answer before anyone else, but his verification methods are machine-based. If he is to apply his own criteria he won't have time to check" Joan Rosés

It is essential to determine the limitations of each of the applications of algorithms to journalism when making decisions on how to integrate automation into workflows. Given that computing is about processing data, the tasks that get the best responses from AI will therefore be those that are quantifiable. So, determination of the degree of delegation to algorithms means rigorously assessing the potential degree of success of each type of automated task.

One of the main challenges when it comes to maintaining quality is therefore to understand what jobs to delegate to AI or, expressed the other way round, what humans can do better than machines: "It is not just a matter of ascribing meaning to the computational but also about ascribing meaning to journalism by way of talking about what computation can and cannot do (…) The articulation of computational journalism strongly depends on the juxtaposition of human instinct with mechanical speed and automation ", says Taina Bucher (2017).

"It's going to be the judgement, the design of the algorithms, how we use the datasets and then how we add value, how we create content that has better judgement, better ethics, that is more diverse and more relevant. That's where the human factor becomes more important" Charlie Beckett

Without this knowledge, automation can compromise practices associated with quality journalism such as those discussed earlier or others such as the human component that affects originality, attractive style or the amount of research invested (Alsius, 1998). "This leads to a need to design clever information workflows that take advantage of automation where possible but also blend that with human effort to ensure the output meets professional expectations of accuracy and quality even though that may limit the benefits of automation to scale and speed" (Diakopoulos et al., 2021).

"One of the issues I would undoubtedly raise

regarding progress in ethical journalism is not only the application of AI systems, but their absence too. We need to consider whether we really want to automate everything. Then, we'll have to decide, in the newsrooms and offices, what processes should involve no machines and be very clear about it"
Albert Sabater

The value of the final product will be linked to the fact that the integration of AI is carried out strategically, the objectives that the newsroom intends to achieve and its adaptation to the quality standards of the informative product. In short, it is about determining how the time that automation saves will be reinvested, while also taking into account that the human factor is still necessary at different levels and is critical in order to maintain quality.

We should also note that AI generates new work of a more technical nature (Marconi, 2020), such as the creation of structures for automated texts, mastery of database management, and the filtering of possibly newsworthy topics provided by data gathering tools, among others.

"In an ideal world, we use that time to do what humans do best, which is being creative, making editorial judgements and having a human understanding of stories, and of people. That's going to become more important, because if machines can do basic journalism, then anyone with a machine can do that journalism"
Charlie Beckett

"AI is a complement to human effort, so to take advantage of AI is not about switching it on and waiting for it to save time and money. In fact, what we have identified is that it can also generate a lot of new work. For example, a news discovery tool that sends out 20 possible topics to look at once a week can represent an hour of work. So, maybe that means I'll get a great story out of it, great, but it does create more work for humans"
Nicholas Diakopoulos

The first era of digitization that hit the newsrooms in the late 1990s, and which has been consolidated in recent times, already introduced a multitude of new production routines associated with digital publishing that have ended up having an impact on the time available for content generation and hence modifying the type of work assigned to the journalist: posting items on the website, image processing, optimization of content for distribution on networks or search engines, together with all the subtasks that all that can entail, such as Search Engine Optimization (SEO) with its keywords, tags, hyperlinks, fulfilling of text length parameters, creation of alternative titles, labeling of images, and so on.

So, automation will imply a greater need for humans to perform other technical functions that have less to do with more traditional journalistic routines such as connecting with sources, focus, contextualization, style, depth of research and so on, which are all ingredients associated with quality journalism that turns information into the knowledge that enables decisions to be made.

"Knowing that keywords are important, tags are important, SEO is important, links, enrichment, having a well-cared for home page... There comes a time when all this distracts from my main function, which is to talk to people and get them to tell me things that the public wants to know. If I do this kind of packaging work for 20 minutes a day, it's tolerable. If I have to do it for two hours, it's less tolerable. We need to get more automation, but it it depends what tasks"
Alex Gutiérrez - Head of Media - Diari Ara

Marconi's (2020) distinction between automated journalism and augmented journalism is interesting at this point. The former is more associated with the automatic generation of simple content that provides greater volume, such as the creation of texts. The latter implies a use of technology aimed at singularizing the final product, which includes complex tasks that require a large amount of computational intensity, such as the algorithmic analysis of large databases related to a research project.

So, when introducing AI, the media must be able to strike a good balance between savings and investment that considers how the efficiency that automation can provide impacts the ethics, and hence quality and value of a product, for these components, as we said at the beginning, can also be decisive for the achievement of commercial targets.

Process automation will lead to even more changes in the organization of work teams, and in the field of decision-making it will be essential to have a very clear strategic vision when integrating new technology and reorganizing in times of major uncertainty in the communication market, which is still struggling through an unprecedented crisis, in which, although it seems that certain subscriber-based business models are starting to catch on (Medill News Leaders Project, 2019), it is also true that there are many lingering doubts about the chances of survival of the whole traditional media ecosystem, at least as we knew it in the last century.

"What the media will say is 'give me a business model. Or tell all the readers to pay to read me, because I need to pay wages and expenses at the end of the month'"
Karma Peiró

Technical staff will proliferate in newsrooms. Engineers and algorithm designers are becoming an important part of the team and hence their participation in the outcome of the journalistic product is growing, and so is their responsibility (Haapanen, 2021). Journalists, meanwhile, will continue to modify their routines and will have to work with developers to bring the product in line with ethical standards. And while this redefinition is happening, it will be essential to provide technological training for journalists, as well as ethical and editorial training for engineers.

"We have gone from managing relatively small volumes of information to very large ones. To avoid losing control of information, journalists need to master these big data management techniques"
Albert Sabater

"It is important to bear in mind that this technology implies a high risk of the journalist losing control. This is happening in all professions. It's time to raise a debate in the profession about the ethical implications of automated journalistic processes. We also need to specialize in understanding how this technology works, because a minimum amount of training is required in order to know the risks"
Karma Peiró

One of the main skills that journalists will need to acquire is computational thinking, which in Diakopoulos's words consists of "formulating problems so that a computer system can help solve these problems." It will also be important to know about key concepts like the differences between simple automation, AI, machine learning, deep learning and others that, we believe, will in turn help to establish effective communication with developers.

"It's mostly about understanding the limitations of these technologies and the limitations of the data driven quantified version of reality that can be generated by one of these AI driven tools. Knowing what's possible and what's not. Or knowing what's not possible but maybe if you combine technology and the human element in a certain way maybe then it becomes possible"
Nicholas Diakopoulos

31

Funding of platforms and journalistic independence

In addition to these major ethical challenges, both in the related literature and in the surveys and interviews carried out as part of this study, there are some other issues that appear with a certain recurrence. One of these is the role of platforms in relation to journalism. This is not the place to examine how algorithmic methods have influenced journalistic practice. In the previous section we already highlighted some of the new tasks that editorial staff have taken on to optimize the dissemination of content through these new gatekeepers. All these practices and their effects on the quality of the informative product have already been widely discussed in the academic field, as well as from the media itself (Marín García, 2019), and it is a matter that they are addressing with considerable difficulties depending on their business strategy.

As we were saying, this is not the place to analyze this issue, but an associated dilemma often arises regarding the possible over-influence of platforms on the practice of computational journalism: both Google and Meta (formerly Facebook) today make the biggest financial investments in innovation in the media industry. Moreover, they do this with the support of a technological infrastructure that is often impossible to develop internally in the media. These platforms also tend to provide a number of training resources based on their own tools for managing algorithmic information.

This is a point that is generally viewed in a positive light by a sector that is very much in need of funding and training due to the lack of independent structural involvement. However, there are also those who believe that the role of these platforms could compromise the independence of those funded media or projects (Fanta & Dachwitz, 2020) (Mols, 2020). Precisely to foster journalistic independence, the EU published a new action plan aimed at the media industry in its member countries in order to protect their 'strategic autonomy', which it considers threatened because, among other things, "online non-EU platforms are gaining large market shares" (European Commission, 2020).

"I am concerned that we often don't see how Google's funding can affect European media and its independence, when it is the first thing we should be asking"
Joan Rosés

"What is being proposed is that Google or Facebook, which are benefiting from journalism, should end up contributing to the well-being of these media. The point is that these platforms never become such an important source of funding to cause over-dependence. Therefore, the amount that they finance should not be excessive with respect to the total revenue that that media organization can obtain"
Ximo Blasco, coordinator of News Management at TV3 – CCMA

"The amount of money the platforms spend in supporting journalism is very small for them. Where they do support news organizations massively is providing incredible access to audiences and excellent tools such as search, or huge datasets that can be very useful. Try to imagine doing journalism without the kind of search developed by these platforms. I think the infrastructure they build is more important for journalism than any kind of direct financing"
Charlie Beckett

AI to foster the values of journalistic products

Another of the challenges that is interesting to consider from an ethical point of view is how AI can be a useful aid to produce journalism that is more in line with the media industry's values.

A clear example are AI applications that can detect misinformation on the Internet and others that are already being experimented with, such as the algorithms used to identify human bias in the news, such as the AIJO Project (Beckett, 2020) and the tool developed by the Financial Times (Waterson, 2018). In these latter applications, AI is used to determine the degree of male presence compared to that of women in a news product. Their functionalities include detecting levels of representation by gender in both images and textual citations.

"It's the ethics of how we generate the information and ethics of how we process it. These are two complementary tasks. In one we must ensure that our action is ethical and, in the other, that third parties behave ethically. The normal thing, in professional codes, is to deal with the first part (what do I have to do to be ethical). But I think in this context it makes sense to include this other more proactive action"
David Casacuberta

Recommendations

Based on the foregoing reflections, the Catalan Press Council has drawn up a series of recommendations for endowing AI with the ethical values of journalism, and does so in the conviction that this technology can become a powerful tool in the media industry provided that its usage is guided by such values as the provision of quality information and public service.

01.
Data quality and responsible management

Safeguard the source and diversity of data and ensure constant monitoring of its representativeness

Algorithms work with data. Just as we verify sources, we need to verify the data –origin, diversity, etc. –, paying special attention to representativeness. Databases need to be questioned: Are they illustrative enough of the groups to which they allude? Are they complete enough to inform on the topic that one intends to report on? Bias can potentially influence the quality of the content and affect the right to information.

All groups should be treated with respect and this includes data management. The efficiency of AI is largely based on the identification of patterns in the data. We need to be very careful, because there is a danger of stereotypes and bias surfacing when technology is used to detect patterns. Special attention must be paid to the treatment of minorities and avoiding sexism, racism and similar prejudices.

02.
Process monitoring

Assure the technical quality of data processing to minimize risks and mitigate errors

All processes need to be monitored, from the design of information processing systems to the methods used to disseminate their results. This supervision should include testing prior to the launch of all new information products. And it is also a good idea to re-test once feedback from users has become available, both from observation of their consumption patterns and from directly requesting their opinions.

Ethical questions must be asked with regard to systems design: What are the purposes of optimizing the system? Are we just looking for more clicks or are we implicitly seeking to do better journalism? The desire to achieve good commercial results should not preclude, but should instead accompany, the upholding of deontological criteria.

03.
Transparency and accountability

As far as possible, make users aware of the existence of algorithms and the basic features of their operation

Even when monitored, automated systems can make mistakes and reproduce bias. Transparency is the most efficient protection against these potential errors. Some of the leading organizations in the journalistic sector have opted for transparency as a means to mitigate the loss of media credibility and enhance public trust.

Algorithms challenge this goal because of the opacity involved in the way they make automated decisions. Transparency is essential for building trust in the current context of a proliferation of misinformation in the public sphere, much of which is precisely caused by the use of an artificial form of intelligence that prioritizes commercial goals over human values. Transparency showcases the media organization's respect for its users by allowing them to judge the value of the information.

As a general principle, the data and their source must be transparent. We clearly do not need to reveal every detail of the algorithmic process, for industrial reasons or simply because the mechanisms are so complex. We therefore have to decide what aspects of automation the user needs to be informed about. For example, it may not be necessary to report that AI was used to make a transcription, but users should be told when a text has been created automatically, or that a recommendation was generated by an algorithm.

In any case, users should at least be clear about the degree of automation involved when they consume content, so that if they do find inaccuracies they know what to attribute them to and how to file any claims. Such transparency is a fundamental aspect of accountability, a concept that is increasingly appreciated in public life in general and in the journalistic world in particular.

04.
Responsible management of data and privacy

Only collect the required personal data, make them anonymous if they are not relevant and protect them from misuse by third parties

The data transparency defended in the previous point must obviously be compatible with the necessary protection of privacy, especially with regard to regulations on the matter. We must bear in mind both the ethical exhortations concerning the right to privacy as well as current legislation, in particular the General Data Protection Regulation adopted by the European Union to protect natural persons in matters regarding their personal data and the circulation thereof.

Automation totally distorts the nature and scope of such a sensitive area at the moment as privacy issues. It is better to collect only the information that is strictly necessary for the purpose in question, and to be explicit about how this was done, where those data are stored, who has access to it and how.

This is even more the case if data is shared with third parties, whereupon it is essential to ensure that these third parties also use it only as is strictly necessary for the purpose for which it was disclosed to them.

Special attention should be paid to the responsible management of the databases of institutions. We need to consider how we obtain them and whether we have the owner's consent. People often provide data without being aware that they can get into the media's hands. So, all the necessary precautions should be taken to protect people's privacy, such as rendering data anonymous, storing databases securely and limiting their use and preservation.

———
5. Personalizations and recommendations

Prevent the use of tailor-made algorithms from undermining pluralism or causing damage to vulnerable communities

Algorithms are used to provide users with two types of services that can be very useful, but which entail obvious dangers of information impoverishment: on the one hand, the personalization of information based on the supposed specific interests of each user; and on the other, recommendations of products or services that are tailored to their preferences. In both cases, there is a risk that these propositions could be lacking in terms of general perspective, or that certain possibilities could be ignored in the proposals made by the algorithm. So-called filter bubbles subject users to a kind of mental encapsulation, with the consequent decline in personal autonomy and, worse still, pluralism.

It is therefore important, when designing personalization or recommendation services, to ensure that automation does not conceal or obscure information of greater public interest. If systems are optimized to only show their users items that get the most views or the types of content that they consume the most, there is a danger that those users will not get to see other types of content that could be useful or important for a wide variety of reasons.

It is advisable to take this into account during the actual design of these systems. It is possible to include variables that encourage the inclusion of content with certain journalistic criteria or that discourage other topics that are overly susceptible to polarization. These tools should consider social diversity and inclusion. It would also be advisable to avoid filter bubbles that might in extreme cases incite radicalization or acts of violence.

Special mention should be made of the fact that these systems have the potential to manipulate behavior, often through the deliberate use of persuasive design techniques. This can feed what

is known as 'confirmation bias' (reaffirmation of one's own points of view), and can be particularly dangerous when it affects groups like children and the psychologically vulnerable.

———
06. Enhancement of the human factor

Never forget that people can make ethical assessments that machines cannot

For the time being, and until proven otherwise, people have superior capabilities to machines, at least as far as ethical decisions are concerned. As more tasks get automated, the human capacities of workers need to be promoted and emphasized. If automation saves time, then it may be a good idea to invest that time in getting journalists to do the things they should know best, such as enhancing quality by interacting with sources, observing, researching, providing context, adding a human touch, using an attractive style, applying creativity and so on.

Technology in itself has no ethical criteria. Only journalists can imprint the principles of journalism on the product. That is why it is also important to be able to monitor the technology, and this requires training.

———
07. Training and promotion of interdisciplinary project teams

Achieve sufficient levels of training to combine technical knowledge and the application of ethical principles

Journalists need technical training to keep on top of processes and to be aware of the risks that they entail. Newsroom staff should be in a position to audit their own and external algorithms and

Algorithms in the newsrooms:
Challenges and recommendations for artificial intelligence with the ethical values of journalism

FUNDACIÓ
F CIC
CONSELL DE LA
INFORMACIÓ DE CATALUNYA

participate in decisions with regard to automation and the ways that it can be put at the service of journalistic endeavor.

Journalists do not need to learn to program to achieve this. But they do need to grasp certain basic concepts in such areas as computational language. They must be able to understand that the parameters of an algorithm can be adjusted and see how that changes results.

Engineers are usually trained to achieve performance (results based on corporate metrics). But they should also receive training in journalistic values, which can also be transformed into strategic metrics of a more qualitative nature.

To endow AI with values, both engineers and journalists need to be trained in the ethical risks, and it is therefore advisable to promote interdisciplinarity among project staff and thereby get them to think in a more complementary manner. For example, using real R+D projects for training.

It is common to hire systems developed by third-party companies. Training is also essential for dealing with the suppliers of external tools and to assess the options available from a techno-ethical perspective applied to journalism.

Just as the media have the ability to audit the algorithms of other sectors (e.g. medicine, justice), they should also evaluate and control the algorithms specific to their own industry, whether produced internally or externally. When reporting on third-party technology, they must be able to do so independently. This includes the algorithms created by platforms, even when these have funded the organization's own training or journalistic innovation projects.

—
08.
R+D and proactivity

Promote research addressed at exploring convergence between the technical efficiency of systems and the values of ethical journalism

It is advisable for media organizations to promote or engage in R+D projects that investigate ways for AI to help foster the principles of journalism. For example, it is very important to develop fact-checking tools and similar applications to detect bias.

As far as possible, third-party services and use of the cloud should be avoided when the media is unsure what is done with the data that it transfers. If there is no alternative to external tools, it is generally preferable not to wait for offers to arrive but to always act proactively, seeking agreements in order to participate in the creation of these tools, to ensure that they are adapted to the mission and values of the organization itself, and that their effectiveness can be measured with its own indicators. To achieve this, it may be worth considering partnerships with other media with the same problems and also with specialized researchers or universities.

Bibliography

A European approach to artificial intelligence | Shaping Europe's digital future. (2021). European Commission. https://digital-strategy.ec.europa.eu/en/policies/european-approach-artificial-intelligence

Agudo, U., & Matute, H. (2021). The influence of algorithms on political and dating decisions. *PLOS ONE, 16(4),* e0249454. https://doi.org/10.1371/journal.pone.0249454

Alsius, S. (1998). *Ètica i periodisme (1. ed).* Pòrtic.

Alsius, S. (2011). *Cap a una gran base de dades per a l'estudi de l'ètica periodística.* https://doi.org/10.2436/20.3008.02.18

Amoedo, Avelino, Vara-Miguel, Alfonso, Negredo, Samuel, Moreno, Elsa, & Kaufman, Jürg. (2021). *A pesar de la débil confianza en las noticias, las marcas periodísticas y locales conservan credibilidad | Digital News Report España 2021.* https://www.digitalnewsreport.es/2021/a-pesar-de-la-debil-confianza-en-las-noticias-las-marcas-periodisticas-y-locales-conservan-credibilidad/

Angwin, J. L., Jeff; Mattu, Surya; Kirchner, Lauren. (2016, May). Machine Bias. *ProPublica.* https://www.propublica.org/article/machine-bias-risk-assessments-in-criminal-sentencing

Artificial intelligence #CoE4AI - YouTube. (2021). Council of Europe Directorate General Human Rights and Rule of Law. https://www.youtube.com/playlist?list=PLy62ZXxDue4-qJ8CFXuXBF46U--LdfOlo

Artificial Intelligence—Research and data from the Pew Research Center. (s.d.). *Pew Research Center.* Accessed 13 November 2021, at https://www.pewresearch.org/topic/internet-technology/emerging-technology/artificial-intelligence/

Asimov, I., 1920-1992. (1989). *Yo, robot / Isaac Asimov [translation to Spanish by Manuel Bosch Barrett].* Edhasa,.

Beckett, C. (2019). *New powers, new responsibilities. A global survey of journalism and artificial intelligence.*

Beckett, Charlie. (2020a). Crossing boundaries together to tackle journalism biases. *Polis LSE.* https://blogs.lse.ac.uk/polis/2020/12/08/crossing-boundaries-together-to-tackle-journalism-biases/

Beckett, Charlie, C. (2020b). An algorithm for empowering public service news. *Polis.* https://blogs.lse.ac.uk/polis/2020/09/28/this-swedish-radio-algorithm-gets-reporters-out-in-society/

Bradshaw, S., & Howard, P. N. (2019). *The Global Disinformation Order 2019 Global Inventory of Organised Social Media Manipulation.*

Brady, W. J., Wills, J. A., Jost, J. T., Tucker, J. A., & Bavel, J. J. V. (2017). Emotion shapes the diffusion of moralized content in social networks. *Proceedings of the National Academy of Sciences.* https://doi.org/10.1073/PNAS.1618923114

Bridle, J. (2018). *New Dark Age: Technology and the End of the Future.* Verso Books

Bucher, T. (2017). 'Machines don't have instincts': Articulating the computational in journalism. *New Media and Society*, 19(6), 918-933. https://doi.org/10.1177/1461444815624182

Carrie Wong, J. (2019, February). How Facebook and YouTube help spread anti-vaxxer propaganda. *The Guardian.* https://www.theguardian.com/media/2019/feb/01/facebook-youtube-anti-vaccination-misinformation-social-media

Catalonia AI. The Artificial Intelligence Strategy of Catalonia (2020). Generalitat de Catalunya. Departament de Polítiques Digitals i Administració Pública. https://politiquesdigitals.gencat.cat/en/tic/catalonia-ai/index.html

Civio. (2019). Que se nos regule mediante código fuente o algoritmos secretos es algo

que jamás debe permitirse en un Estado social, democrático y de Derecho. *Civio.* https://civio.es/novedades/2019/07/02/que-se-nos-regule-mediante-codigo-fuente-o-algoritmos-secretos-es-algo-que-jamas-debe-permitirse-en-un-estado-social-democratico-y-de-derecho/

Conference of Ministers responsible for Media and Information Society. (2021). Council of Europe. https://www.coe.int/en/web/freedom-expression/media2021nicosia

Dastin, Jeffrey. (2018). Amazon scraps secret AI recruiting tool that showed bias against women. *Reuters.* https://www.reuters.com/article/us-amazon-com-jobs-automation-insight-idUSKCN1MK08G

Deuze, M., & Yeshua, D. (2001). Online Journalists Face New Ethical Dilemmas: Lessons From The Netherlands. *Journal of Mass Media Ethics*, 16(4), 273-292. https://doi.org/10.1207/S15327728JMME1604_03

Diakopoulos, N. (2015). Algorithmic Accountability. *Digital Journalism*, 3(3), 398-415. https://doi.org/10.1080/21670811.2014.976411

Diakopoulos, N. (2019). *Automating the News: How Algorithms Are Rewriting the Media* (p. 322). Harvard University Press.

Diakopoulos, N., Trielli, D., & Lee, G. (2021). Towards Understanding and Supporting Journalistic Practices Using Semi-Automated News Discovery Tools. 5, 30. https://doi.org/10.1145/3479550

Dörr, K. N., & Hollnbuchner, K. (2017). Ethical Challenges of Algorithmic Journalism. *Digital Journalism*, 5(4), 404-419. https://doi.org/10.1080/21670811.2016.1167612

European Comission. (2020). *Digital Decade: Commission launches Action Plan to support recovery and transformation of the media and audiovisual sectors.* https://eur-lex.europa.eu/legal-content/ES/TXT/PDF/?uri=CELEX:52020DC0784&from=EN

European Comission. (2021). *Regulation of the European Parliament and of the council laying down harmonised rules on artificial intelligence (artificial intelligence act) and amending certain Union legislative acts.* European Comission.

Fanta, A., & Dachwitz, I. (2020). *Google, the media patron. How the digital giant ensnares journalism.* [Preprint]. SocArXiv. https://doi.org/10.31235/osf.io/3qbp9

Galan, L., Osserman, J., Parker, T., & Taylor, M. (2019). *How Young People Consume News and the Implications for Mainstream Media.* https://reutersinstitute.politics.ox.ac.uk/our-research/how-young-people-consume-news-and-implications-mainstream-media

García-Avilés, J. A. (2021). An Inquiry into the Ethics of Innovation in Digital Journalism. In M. Luengos & S. Herrera-Damas (Ed.), *News Media Innovation Reconsidered* (1a ed., p. 3-19). Wiley. https://doi.org/10.1002/9781119706519.ch1

Gillespie, T. (2014). The Relevance of Algorithms. In T. Gillespie, P. J. Boczkowski, & K. A. Foot (Ed.), *Media Technologies* (p. 167-194). The MIT Press. https://doi.org/10.7551/mitpress/9780262525374.003.0009

Guess, A., Nyhan, B., Reifler, J., & Lyons, B. (2018). A*voiding the echo chamber about echo chambers: Why selective exposure to like-minded political news is less prevalent than you think* (p. 25). Knight Foundation. https://kf-site-production.s3.amazonaws.com/media_elements/files/000/000/133/original/Topos_KF_White-Paper_Nyhan_V1.pdf

Haapanen, L. (2021). *Media councils and self-regulation in the emerging era of news automati*on (p. 20).

Hagendorff, T. (2020). *The Ethics of AI Ethics: An Evaluation of Guidelines*. 30, 99-120. https://doi.org/10.1007/s11023-020-09517-8

Harari, Y. N. (2018). 21 Lessons for the 21st Century. *In 21 Lessons for the 21st Century*. Debate.

Harris, T. (2019). Our Brains Are No Match for Our Technology. *The New York Times*. https://www.nytimes.com/2019/12/05/opinion/digital-technology-brain.html#click=https://t.co/KPqbKtBV4P

Heinrichs, Ellen. (2018). We need to talk! About artificial intelligence and ethics in journalism. *Data Driven Investor*. https://medium.datadriveninvestor.com/we-need-to-talk-about-artificial-intelligence-and-ethics-in-journalism-e2d52e5cd45f

Helberger, N. (2019). On the Democratic Role of News Recommenders. *Digital Journalism*, 7(8), 993-1012. https://doi.org/10.1080/21670811.2019.1623700

Helberger, N., Karppinen, K., & D'Acunto, L. (2018). Exposure diversity as a design principle for recommender systems. *Information, Communication & Society*, 21(2), 191-207. https://doi.org/10.1080/1369118X.2016.1271900

High Level Group on Media Freedom and Pluralism. (2013). *A free and pluralistic media to sustain European democracy*. European Commission.

High-Level Expert Group on AI. (2019). Ethics guidelines for trustworthy AI. *In European Commission*. https://ec.europa.eu/digital-single-market/en/news/ethics-guidelines-trustworthy-ai

How The New York Times prepared itself for a cookieless world. (2021, September 9). *WAN-IFRA*. https://wan-ifra.org/2021/09/how-the-new-york-times-prepared-itself-for-a-cookieless-world/

Johnson, Courtney & Tyson, Alec. (2020). Are AI and job automation good for society? Globally, views are mixed. *Pew Research Center*. https://www.pewresearch.org/fact-tank/2020/12/15/people-globally-offer-mixed-views-of-the-impact-of-artificial-intelligence-job-automation-on-society/

Just, N., & Latzer, M. (2016). *Governance by Algorithms: Reality Construction by Algorithmic Selection on the Internet*. https://doi.org/10.1177/0163443716643157

Kovach, B., & Rosenstiel, T. (2007). *The elements of journalism: what newspeople should know and the public should expect*. Three Rivers Press.

La intel·ligència artificial a Catalunya: Informe tecnològic. (2019). Generalitat de Catalunya. Unitat d'Estratègia i Intel·ligència Competitiva d'ACCIÓ i Secretaria de Polítiques Digitals.

Las 10 mejores iniciativas de inteligencia artificial con impacto social y ético. (2020, October 28). *Compromiso Empresarial*. https://www.compromisoempresarial.com/innovacion_social/2020/10/10-mejores-iniciativas-inteligencia-artificial-impacto-social-etica/

Lassalle, J. M. (2019). *Ciberleviatán: El colapso de la democracia liberal frente a la revolución digital* (2a ed.). Arpa.

Lewis, S. C., & Westlund, O. (2015). Big Data and Journalism: Epistemology, expertise, economics, and ethics. *Digital Journalism,* 3(3), 447-466. https://doi.org/10.1080/21670811.2014.976418

López De Mántaras, Ramón. (2021, September 13). El problema es el Dr. Frankenstein, no su monstruo, por Ramón López de Mántaras. *La Vanguardia*. https://www.lavanguardia.com/ciencia/20210913/7696391/problema-dr-frankenstein-monstruo.html

Malatras, Apostolos & Dede, Georgia. (2020). *AI Cybersecurity Challenges: Threat Landscape for Artificial Intelligence* [Report/Study]. ENISA. https://www.enisa.europa.eu/publications/artificial-intelligence-cybersecurity-challenges

Marconi, F. (2020). *Newsmakers: Artificial intelligence and the future of journalism.* Columbia University Press.

Algorithms in the newsrooms:
Challenges and recommendations for artificial intelligence with the ethical values of journalism

FUNDACIÓ
FCIC
CONSELL DE LA
INFORMACIÓ DE CATALUNYA

Marín García, B. (2019). *La tiranía del clic.* Turner.

Martínez Ahrens, J. (2018). Cambridge Analytica: La compañía que burló la intimidad de 50 millones de estadounidenses. *El País.* https://elpais.com/internacional/2018/03/20/estados_unidos/1521574139_109464.html

Medill News Leaders Project. (2019). *Revenue Models—Making Something Worth Paying For.* https://localnewsinitiative.northwestern.edu/research/news-leaders/revenue-models/

Merriam-Webster Dictionary. (2021). *Algorithm.* https://www.merriam-webster.com/dictionary/algorithm

Mols, B. (2020, November 25). AI in Journalism: With Power Come Responsibilities. *Global Investigative Journalism Network.* https://gijn.org/2020/11/11/ai-in-journalism-with-power-come-responsibilities/

Muñoz, J. M. (2011). *La llama que incendió Túnez.* https://elpais.com/diario/2011/01/23/domingo/1295758353_850215.html

Negredo, S., Amoedo, A., Vara-Miguel, A., Moreno, E., & Kaufmann, J. (2020). *Los algoritmos superan a la marca de los medios para llegar a las noticias en internet | Digital News Report España 2020.* https://www.digitalnewsreport.es/2020/los-algoritmos-superan-a-la-marca-de-los-medios-para-llegar-a-las-noticias-en-internet/

Newman, N. (2021). J*ournalism, Media and Technology Trends and Predictions 2021* (p. 48). Reuters Institute Oxford. https://reutersinstitute.politics.ox.ac.uk/journalism-media-and-technology-trends-and-predictions-2021

Pariser, E. (2011). *The filter bubble: What the Internet is hiding from you.* Penguin Press.

Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation).

Parratt-Fernández, S., Mayoral-Sánchez, J., & Mera-Fernández, M. (2021). Aplicación de la inteligencia artificial al periodismo: Análisis de la producción académica. *El Profesional de La Información,* e300317. https://doi.org/10.3145/epi.2021.may.17

Patino, B. (2020). *La civilización de la memoria de pez: Pequeño tratado sobre el mercado de la atención* (A. Martorell, Trad.).

Peirano, M. (2019). *El enemigo conoce el sistema: Manipulación de ideas, personas e influencias después de la economía de la atención.* Debate.

Peiró, Karma. (2020). *Artificial Intelligence: Automated Decision-making in Catalonia* (p. 142). Autoritat Catalana de Protecció de Dades. https://apdcat.gencat.cat/en/documentacio/intelligencia_artificial/index.html

Petit, M. (2018). Per una crítica de la raó algorítmica. Estat de la qüestió. *Quaderns del CAC, XXI*(44), 11.

Ruiz, C. (2016). *La digitalización del otro: Los retos de la democracia en la era del ciberespacio.* Milenio.

Sabater, Albert & De Manuel, Alicia. (2021). *Artificial Intelligence, Ethics and Society: An Overview and Discussion Through the Specialised Literature and Expert Opinions* https://www.udg.edu/ca/Portals/57/OContent_Docs/Informe_OEIAC_2021_eng-3.pdf

Seetharaman, G. W., Jeff Horwitz and Deepa. (2021, September 14). Facebook Knows Instagram Is Toxic for Teen Girls, Company Documents Show. *Wall Street Journal.* https://www.wsj.com/articles/facebook-knows-instagram-is-toxic-for-teen-girls-company-documents-show-11631620739

Shaw, Robert, Cook, Clare, Garcia, Emiliana, Gyulnazaryan, Heghine, Melano, Juan, Parusinski, Jakub, & Sabadan, Alex. (2021). *The next wave of disruption: Emerging market media use of artificial intelligence and machine learning. An overview of new technology implementation in emerging market media.* International Media Support (IMS).

Spain AI Strategy Report. (2020). Government of Spain. Ministry of Economic Affairs and Digital

Transformation. https://knowledge4policy.ec.europa. eu/ai-watch/spain-ai-strategy-report_en

Storydata (coord.), Bellver, Carina, & Ventura-Pocino, Patrícia. (2020). *Open Data and Artificial Intelligence, Tools for Gender Equality* (Generalitat de Catalunya, Vol.7).http://governobert.gencat.cat/web/.content/01_Que_es/04_Publicacions/colleccio_govern_obert/GovernObert_7/docs/Govern-obert-7_D22-9-acc.pdf

Striphas, T. (2015). Algorithmic culture. *European Journal of Cultural Studies*, 18(4-5), 395-412. https://doi.org/10.1177/1367549415577392

Sunstein, Cass R. (1999). The Law of Group Polarization. *John M. Olin Law & Economics Working Paper*, 91. http://www.law.uchicago.edu/Publications/Working/index.html

Thumbler, Mark (coord), Chiusi, Fabio, Fischer, Sarah, Kayser-Bril, Nicolas, & Spielkamp, Matthias. (2020). *Automating Society Report-2020.* https://automatingsociety.algorithmwatch.org

Trielli, D., & Diakopoulos, N. (2020). *How Journalists Can Systematically Critique Algorithms.* 5. http://www.nickdiakopoulos.com/wp-content/uploads/2020/02/How-journalists-can-systematically-critique-algorithms.pdf

Tufekci. (2017). *We're building a dystopia just to make people click on ads.* https://www.ted.com/talks/zeynep_tufekci_we_re_building_a_dystopia_just_to_make_people_click_on_ads

Tufekci. (2018, agost 14). How social media took us from Tahrir Square to Donald Trump. *MIT Technology Review*, 14. https://www.technologyreview.com/s/611806/how-social-media-took-us-from-tahrir-square-to-donald-trump/

Tufekci, Zeynep. (2013). "Not This One": Social Movements, the Attention Economy, and Microcelebrity Networked Activism. *American Behavioral Scientist*, 57(7), 848-870. https://doi.org/10.1177/0002764213479369

Tufekci, Zeynep. (2016). As the Pirates Become CEOs: The Closing of the Open Internet. *Daedalus*, 145(1), 65-78. https://doi.org/10.1162/DAED_a_00366

Tufekci, Zeynep & Wilson, Christopher. (2012). Social Media and the Decision to Participate in Political Protest: Observations From Tahrir Square. *Journal of Communication, 62*(2), 363-379. https://doi.org/10.1111/j.1460-2466.2012.01629.x

Vigdor, Neil. (2019). *Apple Card Investigated After Gender Discrimination Complaints—The New York Times.* https://www.nytimes.com/2019/11/10/business/Apple-credit-card-investigation.html

Wardle, C., & Derakhshan, H. (2017). *Information Disorder: Toward an interdisciplinary framework for research and policy making.* www.coe.int

Waterson, J., & editor, J. W. M. (2018, November 14). Financial Times tool warns if articles quote too many men. The Guardian. https://www.theguardian.com/media/2018/nov/14/financial-times-tool-warns-if-articles-quote-too-many-men

Wu, T. (2016). *The Attention Merchants: The Epic Scramble to Get Inside Our Heads.* Deckle Edge.

Zuboff, S. (2019). *The age of surveillance capitalism: The fight for a human future at the new frontier of power* (First edition). PublicAffairs.