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The Technology of Disquiet: Should Human Journalism Feel Threatened by Artificial Intelligence?

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Abstract

Going through an unprecedented crisis, journalism is in turmoil because artificial intelligence, a tool of the present, could, in the future, become a threat to human employment due to its generative nature. The possibility of having algorithms produce journalistic information has become appealing to companies, so the menace to journalists' jobs is real. But can algorithms replace humans in a profession as specific as journalism? Is there a reason for such disquiet? This paper takes a theoretical approach to four fundamental aspects of the profession: the relationship with information sources, the role of creativity in narratives, the relevance of journalistic authority, and the ethical principles on which journalism is based. In the field of information gathering and processing, the efficiency and speed of algorithms in data processing are surpassed by the possibility of obtaining unknown information thanks to human qualities such as trust and empathy. In the field of production, human creativity and originality remain factors that differentiate professionals from the repetitive approaches of artificial intelligence. Finally, the fact that it is a socially recognised professional activity, operating in an environment guided by ethical and deontological rules, gives human journalists an advantage over this technology.

Keywords
journalism, artificial intelligence, ethics, authority

Tecnologia do Desassossego: O Jornalismo Humano Deve Sentir-se Ameaçado Pela Inteligência Artificial?

Resumo

A atravessar uma crise sem precedentes, o jornalismo vive desassossegado porque a inteligência artificial, uma ferramenta do presente, poderá futuramente transformar-se num risco ao emprego humano devido à sua vertente generativa. A possibilidade de ter algoritmos a produzir informação jornalística tornou-se apelativa para as empresas, pelo que a ameaça ao trabalho dos jornalistas é real. Mas será que os algoritmos podem substituir os humanos numa profissão com a especificidade do jornalismo? Haverá razões para tanto desassossego? Neste trabalho faz-se uma abordagem teórica a quatro pontos fundamentais desta profissão: a relação com as fontes informativas, o papel da criatividade nas narrativas, a relevância da autoridade jornalística e os princípios éticos em que se fundamenta o jornalismo. No âmbito da recolha e tratamento de informação, a eficiência e rapidez dos algoritmos no processamento de dados é superada pela possibilidade de se conseguirem informações desconhecidas, graças a qualidades humanas como a confiança ou a empatia. No campo da produção, a criatividade e a originalidade humanas continuam a ser fatores que diferenciam os profissionais das abordagens repetitivas da inteligência artificial. Por último, o facto de ser uma atividade profissional socialmente reconhecida,

e de operar num ambiente guiado por regras éticas e deontológicas, permite aos jornalistas humanos uma vantagem face a esta tecnologia.

Palavras-chave
jornalismo, inteligência artificial, ética, autoridade

1. Introduction

Journalism is a form of storytelling and is, therefore, a typically human activity. Born in the oral tradition, stories gained longevity with the invention of writing. They expanded their reach with the technological evolution associated with the media on which they are generated and distributed. From the clay used by the Sumerians to Egyptian papyrus, from scrolls to paper, and, more recently, to screens, the evolution of the media that allows stories to reach further, faster and more people is remarkable.

At the same time, printing systems have also progressed extraordinarily. From handwriting, reserved for priests and other scribes, it evolved to the movable type printing press, and from there, printing systems never stopped progressing, increasing in speed and versatility. Only digitisation and the success of digital media later reduced the importance of printing in the media ecosystem.

Finally, distribution systems themselves have advanced due to the exceptional evolution of the means of transport used to bring information to consumers. Initially distributed in atoms, journalistic information now circulates in bits on information highways, reaching consumers on digital media that allow for instant, personalised and contextualised consumption.

Throughout this historical journey, journalism has progressively shifted from the human realm to the realm of machines. This situation has had consequences for the terminology used to describe the activity. "Computer-assisted journalism" (Paul, 1999), "electronic journalism" (Díaz Noci, 2001), "digital journalism" (Machado & Palacios, 2003), "automated journalism" (Carlson, 2015) and "robot journalism" (Kim & Kim, 2018) are some concepts that show how this activity has reduced its dependence on the human element in favour of greater automation. Nevertheless, although it is difficult to separate journalism from technology, it is journalism that must give meaning to new technologies (Zelizer, 2019), which can only happen by strengthening the human component.

The task of telling journalistic stories, which appears to be simple, depends on a complex process involving relationships with information sources, the choice of the most appropriate narratives, a system for legitimising professionals in the sector, and ethical issues related to the performance of the activity. These are the four elements of the process that we will discuss in this paper, thus consolidating some partial approaches developed in previous works (Canavilhas, 2024b) that highlight the growing importance of artificial intelligence (AI) for journalism but also emphasise that the human element is fundamental for this activity to continue to fulfil its social mission.

2. Journalism and Sources: A Matter of Trust

Journalism is not limited to producing informative content based on public data. Its true nature is to reveal new information that is of public interest and has an influence on the lives of citizens. Obviously, known data can also generate relevant information, but this requires a new approach to that data. These two situations are linked to two characteristic moments in journalism: the gathering and processing of information. In the first case, success depends on the relationship with sources that provide new information. In contrast, the second depends on creativity in the analysis and processing of data: let us focus on the first case, as it is the one that interests us in this first point of the paper.

A source of information is "anything that contains relevant information about something relevant to be dealt with and disseminated to the public" (Cascais, 2001, p. 93). Sources are, therefore, the starting point for journalistic work and a fundamental element in news production. Without sources, there would be no news, or at least the news in circulation would be much scarcer because it would be limited to situations in which journalists had been eyewitnesses. Therefore, "a medium without sources is a dead medium" (Fontcuberta, 1999, p. 48) and a journalist without their own sources are severely limited in their professional activity.

While the definitions of source do not vary greatly, the way in which they are classified differs widely. They can be human, documentary, institutional and personal (Cascais, 2001), official, unofficial, specialised and anonymous (Gomes, 2003) or official, regular and occasional/accidental (Santos, 2003). Only one of these classifications makes an explicit distinction between human and non-human sources. However, it is this distinction that interests us because the relationship between journalists and sources "consists, in most cases, of a relationship between two specific people" (Fidalgo, 2000, p. 319).

Throughout this personal relationship, negotiations take place between sources and journalists so that both can achieve their goals: sources want to make public information whose disclosure represents an added value for themselves or their organisation, while journalists seek to gain public attention for their media outlet and enhance their reputation through their work.

Negotiations are satisfactory for both parties when both achieve at least one of their goals, and this is what allows bonds of trust to be created between journalists and sources. This process requires time, positive previous experiences, and mutual knowledge, both personal and institutional, to make a positive reputation resulting from its repetition (Ba & Pavlou, 2002). It is, therefore, not a quick process, and it is difficult for journalists to build a stable and reliable network.

To make the process even more difficult, simply repeating experiences does not guarantee a positive reputation; it is equally essential that both parties know the rules of the game. The source needs to know the limits of journalism in the treatment and dissemination of the information it receives, as there are laws and professional codes to comply with. Therefore, they cannot expect everything to be reported in the way they might have imagined. For their part, journalists know the editorial principles of the media

outlet they work for and are governed by rules that allow them to safeguard the identity of their sources, which is important for the relationship of trust between the two parties. Moreover, although they know that there may be pressure to reveal their sources, they also know that they must maintain professional secrecy.

Luhmann (1988) argues that trust always involves risk, and the relationship between journalists and sources is a good example of this. When a source reveals sensitive information, one of their main concerns is to safeguard their anonymity. This guarantee, which the journalist can give, is provided for in the profession's statutes and code of ethics, but compliance with professional confidentiality depends solely on the journalist. There are legal conditions to protect the source. However, the professional may choose to reveal it to third parties or use references that facilitate its identification, which represents a risk to the source.

Similarly, journalists believe in the veracity of the information they receive because by signing their work, they commit themselves to their editors and the public that this information is true. The situation is even more sensitive when there is no supporting documentation, so trust in the source is crucial for the reported event to become news.

Trust is precisely the belief that none of these risks will materialise, that is, the expectation that the other party will fulfil their commitment. The journalist will not reveal their source and the information that the source provided to the journalist is true.

2.1. Good Morning, This Is the Algorithm Speaking

If the relationship between sources and journalists is based on mutual trust, what can be said when that source is an algorithm? By definition, trust is a psychological state based on two dimensions: cognitive (belief in competence and reliability) and affective (emotional ties), both recognised by the parties involved (Cruz et al., 2018).

In affective terms, it is unlikely that journalists will develop any kind of relationship with the algorithm that compiles information for them, so this is impossible. On the cognitive side, it is possible to imagine that journalists may trust the competence of the algorithm. However, their lack of knowledge about the databases used is a major obstacle to trust in AI. Currently, few media outlets disclose the databases consulted by their AI applications, and the lack of transparency regarding data is widespread in this type of application (Canavilhas & Biolchi, 2024). Something similar occurs with the functioning of the algorithms themselves, which obey routines and priorities introduced by programmers but unknown to journalists. Added to this are problems related to "hallucinations" (Maleki et al., 2024), which means that journalists have little confidence in the information they receive when it is compiled by an AI application without any human supervision.

From the human source's perspective, the situation is not very different. First of all, because the first premise mentioned in the case of journalists remains the same, it is not possible to develop an emotional relationship with the algorithm that collects the information, be it an automatic questionnaire or a chatbot. Furthermore, the source knows that the algorithm development team will have access to their data, and it is not certain

that their anonymity is guaranteed since computer programmers are not subject to the professional secrecy guaranteed by journalists.

Assuming that trust "may be defined as confidence in the reliability of a person or system, regarding a given set of outcomes or events, where that confidence expresses a faith in the probity or love of another" (Giddens, 1990/1991, p. 36), it is difficult for a journalist or a source to trust an algorithm, putting their credibility at risk.

Furthermore, algorithms have difficulty adapting to situations for which they have not been trained (Guerin, 2022), either because they are new or because they are part of a changing reality. In contact with journalistic sources, the unexpected is a constant, and the reaction of one party always influences the perceptions of the other, which can alter the level of trust. Once again, the human ability to adapt to new situations is stronger than that of an algorithm, which is inherently limited by the data it feeds on.

Thus, whether due to technical issues related to the accuracy of the information collected by AI or the impossibility of establishing emotional ties with a computer code, human journalists will continue to have advantages in the information-gathering phase.

3. Storytelling: The Role of Creativity

Despite the importance of journalism in democratic societies, gaining the attention of consumers has become difficult, given the proliferation of information sources. Therefore, the way information is organised and coded has become a fundamental element for effectively capturing audiences. It is in the field of languages and narratives that innovation and creativity are two variables to be taken into account, constituting a space of differentiation between humans and machines.

Creativity and innovation are intrinsically linked. Without original ideas, it is not possible to innovate, and without innovation, it is not easy to create creative products. However, while creativity always innovates, innovation does not always generate creative products, so the trigger for evolution lies in the power of ideas.

In the field of journalism, innovation can occur in the production, distribution, organisation and marketing phases (García-Avilés et al., 2018). However, in this work, we are only interested in production because this is where innovation can arise in the area of languages and narratives.

By transforming events into information products, journalists apply their technical knowledge, but this does not allow them to differentiate themselves from one another, given that their professional training is very similar. They, therefore, resort to personal linguistic styles, original approaches or distinct narratives to assert their journalistic brand, differentiating themselves from the work done by other media outlets (Canavilhas, 2023). This is where creativity plays an important role, as it can be used both in language and narrative, mentioning here the two fundamental codes identified by Martínez Albertos (1991) for the press sign system: the linguistic and the iconic.

The linguistic code is related to the text itself. It draws on journalistic writing techniques and style guides for the rules necessary to organise information and transform

it into a news article. This code is closely linked to the media outlet in which it will be disseminated, so creativity focuses on the linguistic component of adaptation to the consumption platform. Variables such as the amount of text or the editorial style fall within the linguistic code.

The iconic code, on the other hand, is more related to elements that complement the text. When Martínez Albertos (1991) defined this code, its constituent elements were images (photographs, graphics, illustrations), something that has been enriched online with a wide variety of other multimedia content, such as sounds and moving images.

However, the emergence of the web and smartphones has brought more than just new types of content: the potential for interaction associated with multimedia and platformisation (van Dijk et al., 2018) has enabled the emergence of new narratives due to the potential of interactive environments and their power to transform "the effectiveness and meaning of previous interfaces" (Lévy, 1990/1993, p. 108). Manovich (2001/2005) adds that "in semiotic terms, the computer interface acts as a code which carries cultural messages in a variety of media" (p. 113), pointing out that a code is rarely a neutral carrier, affecting the messages transmitted and imposing its own logic capable of generating new narrative opportunities by appealing to interaction.

The shift from the newspaper's interface (paper) to that of mobile devices (touchscreens and multiple sensors) has opened up a wide range of possibilities that draw on features such as tactility (interaction), levelability (movement), opticality (use of the camera), and locatability (location; Palacios et al., 2015), affecting the way the message reaches consumers.

In this sense, linguistic and iconic codes have become insufficient to describe the new system, and a haptic code has, therefore, been proposed to encompass the relationship between the consumer and the content. This code is inextricably linked to the consumer interface and the technological potential of the receiving device, opening up the field for innovation in terms of narratives. The possibility of personalising consumption, offering information in a geographical context, or augmented reality are examples of haptic codes that could help differentiate human work.

3.1. To Exist Is to Be Different: The Potential of Interactivity

When confronted with textual content produced by humans and AI, consumers find no qualitative differences (Clerwall, 2014; van der Kaa & Krahmer, 2014), and there are even cases where machine production is rated as more credible (Wu, 2019), often because it includes more data (Murcia Verdú et al., 2022). This situation seems to indicate that there are no significant differences between the output of human journalists and texts produced autonomously by generative AI. However, we must not forget that these experiments were conducted with a single journalistic genre: news.

From the perspective of journalists themselves, the excess of data characteristic of algorithmic production makes news less appealing and more difficult to understand (Thurman et al., 2017). Other authors (Thäsler-Kordonouri et al., 2024) go even further

when they say that when reviewing automatic texts, journalists should aim to "reduce the quantity of numbers, better explain words that readers are unlikely to understand, change inappropriate wording, and increase the amount of language that helps the reader picture what the story is about" (p. 17). The general idea is to make texts more understandable, which refers to a more simplified journalistic language, but also one that is more contextualised in sociocultural terms and resulting from human critical thinking that increases the quality of information (Martínez-Navarro, 2024).

The issue of language is also mentioned by Canavilhas (2024a), who, when analysing the texts produced by ChatGPT for the special edition of a Portuguese newspaper, states that they are "encyclopaedic, illative and pleonastic" (p. 10). This reality points to a non-journalistic and uncreative style, which is a clear disadvantage compared to journalism done by humans.

In terms of iconic code, one cannot speak of autonomous work because the content is the result of collaboration between algorithms and journalists who write the prompt requesting a particular image. This is not always the case with texts, as they may have been generated based on automatically collected data.

In this iconic field, the greatest limitation is in terms of creativity, which is not limited to a compilation or recreation of previous creations. As Chiang (2024) rightly points out, "the companies promoting generative-A.I. programs claim that they will unleash creativity. In essence, they are saying that art can be all inspiration and no perspiration — but these things cannot be easily separated" (para. 9). The author points out that creative work involves multiple choices by the creator, who, at each step, is forced to choose some ideas over others. Assuming the algorithm is limited by the instructions of the prompt and the databases where it searches for information, human beings base their creations on universal knowledge but also on their personal experience, their life experiences, and their ability to perceive nuances (Thurman et al., 2017), linking this complex array of information into humanised narratives (Carlson, 2015). This is true for text, but it becomes even more visible in images.

There remains the haptic level, a field where there may be greater differentiation between humans and algorithms because it is where creativity has a greater preponderance. While it is true that professional routines and the economic situation of the media have reduced the space for creativity in journalistic work (Deuze, 2019), it is no less true that in recent decades, new platforms have emerged that have facilitated the use of more appealing multimedia narratives.

If we consider creativity as "the ability to produce work that is both novel (i.e., original, unexpected) and appropriate (i.e., useful, adaptive concerning task constraints)" (Sternberg & Lubart, 1999, p. 3), it is clear that the new narratives born of technological evolution fit this definition. The traditional ways of reading (newspapers), listening (radio) and watching (television) have been joined by a multitude of possibilities that combine previously used content (text, sound and image) in multimedia narratives, adding interaction and immersion, among other options. An example of this is the "parallax scrolling" technology, which achieved enormous success thanks to the report "Snow

Fall: The Avalanche at Tunnel Creek" (Branch, 2012), published by *The New York Times*. Another trend that explores the haptic level is immersive content, namely virtual reality, augmented reality and 360º content. Seeking to transport the user to the scene of the events (Longhi, 2016), this type of content has opened the field to more creative narratives with enormous potential to engage consumers.

While it is true that algorithms can find more specialised information and combine a greater diversity of information sources (Franks et al., 2022), this does not mean that more creativity will emerge at the haptic level. This combination may result in content with some originality at the linguistic or iconic level but not in innovative narratives in terms of interaction, particularly with regard to the diversity of possibilities related to the information context.

As with the excessive use of numbers (Thäsler-Kordonouri et al., 2024) and the redundancy of ideas (Canavilhas, 2024a), AI is inefficient at contextualisation, particularly with regard to the "how, when and where" to use information elements, which means that human journalists still have an advantage over algorithms.

4. Who Says What: Authority and Legitimacy

The nature of journalism and its role in communities are determined by the social importance it is recognised as having. Its legitimacy "consists of the recognition of the field's own competence to select and distribute information on a large scale within the social fabric, thus giving discourse a public character" (Pissarra Esteves, 1998, p. 148).

Beyond the selection of events for public discussion, the usefulness of journalism for citizens is based on the power of intermediation "between collective and individual experience by providing typical interpretations for problems which are defined as typical" (Berger & Luckmann, 1995/2004, p. 68). The social use of this news allows the formation of public opinion and guides citizens and society to take a position on the issues reported (Park, 2008), allowing citizens to control political decisions formally (voting) and informally (public opinion) (Carpentier, 2006).

Journalism occupies a prominent place in modern societies because it is an important source of diverse, relevant, accurate and verified knowledge (Ekström & Westlund, 2019), reported in its own accessible language, distributed massively and at short intervals. In these societies, modern institutions develop according to two mechanisms of disembedding, understood as the "'lifting out' of social relations from local contexts of interaction and their restructuring across indefinite spans of time-space" (Giddens, 1990/1991, p. 24).

The first mechanism is "symbolic tokens", defined by the author as "media of interchange which can be 'passed around' without regard to the specific characteristics of individuals or groups that handle them at any particular juncture" (Giddens, 1990/1991, p. 25). To illustrate, Giddens (1990/1991) talks about money, something that allows everything to be exchanged for everything else and separates space from time because its

holder can acquire whatever they want, regardless of their distance from what they want to obtain and the space where they have the money.

The second mechanism is "expert systems", defined as "systems of technical accomplishment or professional expertise that organise large areas of the material and social environments" (Giddens, 1990/1991, p. 26). Examples of this reality are professionals such as engineers, doctors or lawyers, to name just three. Here, too, the separation of space and time is evident in that the recognition of professionals and trust in their expertise is independent of the social context.

Both the files and the experts are socially legitimised. Therefore, citizens believe that a mere piece of paper (cheque or note) has the same value inscribed on it and that a particular person, because they are in a doctor's office, wears a white coat and has a stethoscope around their neck, is effectively qualified to solve their health problem.

It is in this context that Miguel (1999) seeks to frame journalism within expert systems but highlights a characteristic of journalism that distinguishes it from other expert systems: the "proof of effectiveness". While in different systems, there is proof of their correct functioning (bridges that do not collapse, patients who are cured with certain medicines, etc.), in journalism, there may be doubts about the veracity of the information or the true importance of the event. This difficulty leads Miguel (1999) to put forward the hypothesis that journalism is, after all, a "meta-expert system" because news helps "to confirm or refute established beliefs in the reliability of various *expert systems* – by the simple fact that information consumers no longer rely solely on their personal experience, but also on that which is reported to them" (p. 202).

Despite this potential limitation, I believe that journalism is, in fact, an expert system first of all because it has a "specific practice and a final product" (Miguel, 1999, p. 199) recognised by society, something that is proven by the fact that citizens increase their demand for information in times of uncertainty (Chadwick, 2013). Moreover, even in a period of crisis of credibility, such as the current one, some journalism is contested on the basis of comparison with "good journalism", which reminds us of the social importance of journalistic activity as long as it fulfils its role. What may be at stake is not the activity itself but rather the poor performance of some media, which sometimes leads to this type of generalisation.

The fundamental role of journalism for democracies is not limited to its nature: the fact that humans do it contributes decisively to its credibility, as proven by studies in which consumers attribute less credibility to news when informed that it was produced by algorithms (Henestrosa & Kimmerle, 2024).

4.1. Access to and Exercise of the Profession: The Portuguese Example

In the past, access to professions consisted of learning by osmosis, i.e., masters (specialists) taught the trade to apprentices, who, at a certain point, earned the right to work on their own (legitimacy). The Enlightenment and the Industrial Revolution helped to develop the education system, creating two parallel paths: on the one hand, formal

education as a state obligation, and on the other, more vocational education in the workplace to meet the needs of the market. Over time, formal education was organised into cycles of study, from primary to higher education, while vocational education developed its own trajectory.

In parallel with the development and specialisation of the education system, countries began the process of regulating access to professional practice. To enter certain professions, it became necessary to hold a degree. However, some trades, due to their specific nature and the lack of adequate training, continued to require a combination of compulsory schooling and on-the-job training.

In the particular case of journalism in Portugal, access to the profession requires compulsory schooling (12th grade) and an internship, which is shortened in cases where candidates have a degree. The authority of Portuguese journalists is conferred by a title awarded by the Professional Journalists' Card Commission, and there is specific legislation that protects them, such as the Journalists' Statute[1], and rules that they undertake to comply with, such as the Code of Ethics[2]. In Portugal, the granting of a journalist's licence is legal recognition that a particular professional has the authority to produce news information.

In addition to the authority conferred by a document that symbolises their membership in an expert system (Giddens, 1990/1991), journalists also undergo a process of legitimation, understood as "the recognition of a subject by other subjects, in the name of a value accepted by all" (Charaudeau, 2009, p. 3). In the case of journalists, there is initially a "macro legitimation" related to their professional activity, as journalism fulfils a social need for freedom of expression (Missika & Wolton, 1983). However, there are two further forms of legitimacy: recognition by the public, in the form of positive comments or sharing of work on social media, and recognition by managers, in the form of praise, salary increases or promotions.

Thus, in addition to the authority derived from social recognition of the profession, journalists undergo a process of legitimacy that is related to their professional performance. In this field, journalists who have better sources of information, are more innovative, conduct better research or stand out for their analytical and interpretative skills end up being the most prestigious and recognised.

For all these reasons, journalism done by humans and journalism done by algorithms has little in common beyond following a similar process: compiling information and producing a new product. The former is an expert system whose authority, even in times of crisis in the sector, is socially and globally recognised. It is distinguished by its analytical, interpretative and creative nature, which underlies human reasoning and has various levels of internal and external legitimacy. The latter is a computer code that seeks to exploit efficiency and speed. Although competent in data processing and pattern

[1] Law No. 1/99, of January 13, amended by Law No. 64/2007, of November 6, and rectified by Rectification Statement No. 114/2007.

[2] See https://jornalistas.eu/codigo-deontologico/.

detection, algorithms fail to recognise meaning, contextualise phenomena and interpret (Sandoval-Martín & La-Rosa Barroleta, 2023), so their impact on society is very limited.

5. Ethics: Human Codes *versus* Computer Codes

Not all professions are regulated by specific legislation related to the performance of their activities. Even fewer have a code of ethics with rules that must be observed in their professional conduct. Journalism is one of the professions guided by a code of ethics, so the introduction of algorithms in production requires an ethical discussion because it "constitutes a fundamental axis for the preservation of the fundamental values of journalism" (Forja-Pena et al., 2024, p. 247).

The problems begin right at the information-gathering stage, as the data used can lead to biased information (Ventura-Pociño, 2021). Popular tools such as ChatGPT produce text based on patterns learned from large volumes of data without human supervision. Therefore, there is a real risk that their texts may include biases resulting from errors in the data or the predominance of certain points of view or ideas (Bender et al., 2021; Feng et al., 2023). Considering that 85% of the Wikipedia community is made up of men (Ní Aodha, 2017), it is natural that the approach to topics is more masculine than feminine, which immediately contaminates research based on information taken from this repository. This gender imbalance extends to other variables such as language, ethnicity or religion, so the risk of bias is significant.

In this case, the risk is identified, but what about cases where the sources of the algorithms are unknown databases? An algorithm that searches for information about the invasion of Ukraine only in Russian newspapers will present completely different results from one that does so only in the Western press. Omitting information about the origin of the data from users will result in a misinformed audience because it has only received one point of view on the conflict, creating an ethical and informational quality problem resulting from automatic production (Guzman & Lewis, 2020) in this case without control of the sources.

To test this situation, one of the best-known chatbots (Google's Gemini) was asked to write two texts on the conflict, in one case using only Russian newspapers and in the other using Western newspapers. The response was as follows: "unfortunately, I cannot comply with that request. The main reason for this is the extreme difficulty in finding impartial and reliable information about the war in Ukraine in Russian publications"[3]. In this case, the programmers included code to prevent bias in the information collected by users, but this is not always the case.

Point 9 of the Code of Ethics for Portuguese journalists states that "journalists must reject discriminatory treatment of people based on their ancestry, colour, ethnicity, language, territory of origin, religion, (...) gender or sexual orientation" (Sindicato dos Jornalistas, 2017). However, if an algorithm collects information from unscrutinised

[3] Search conducted on October 2, 2024, using the following prompt: "write a 1,500-character text about the conflict in Ukraine. Use only Russian newspapers or other publications as sources".

databases, it is impossible to guarantee compliance with this point. If the algorithm functions as a support tool in a newsroom, journalists will follow their usual work routines, comparing the results with their own knowledge and other sources. However, if it is autonomous production using generative AI, the poor quality of the data will lead to biased work, contrary to the nature of journalism.

If, in the field of text, there is a real risk of perpetuating stereotypes and biasing information, in the field of images, the situation is equally worrying. Some authors (Shumailov et al., 2024; Wenger, 2024) argue that at a certain point, generative AI will start to feed on images generated by AI itself, leading to the production of meaningless information and the collapse of the model: in this degenerative process, information loses quality because training is done with increasingly degraded data. Proportions aside, the situation is similar to what happens when someone wants to make several photocopies of a document and, instead of using the original, always uses the previous copy as the original. In the end, depending on the number of copies, there will be very few similarities between the last copy and the original document. Therefore, in a future scenario where AI is inspired by the images it generates, the degradation caused by feedback will be increasingly rapid, and there will come a point where it will no longer be possible to know whether the images correspond to the reality they are supposed to represent.

Another problem relates to protecting the identity of people involved in situations that are the subject of news reports. In the Portuguese case, Point 10 of the Code of Ethics states that "journalists are obliged, before collecting statements and images, to ensure the conditions of serenity, freedom, dignity and responsibility of the people involved" (Sindicato dos Jornalistas, 2017). However, if the collection/publication is automatic, it will be difficult to comply with this rule, given the difficulty of algorithms in distinguishing feelings from decontextualised images found in databases.

Added to this is the use of AI in the production of fake images (deepfakes), but disinformation processes using AI are beyond the scope of this paper.

In addition to problems related to text and images, the authorship of automatic content is another fundamental element for journalism (Thurman et al., 2017; Tsamados et al., 2020). The impact of this activity on society and the possibility that some news items may trigger legal proceedings are two strong reasons why ways of identifying the authorship of texts produced with the support of AI are necessary. In the case of journalists, Point 5 of the Code of Ethics states that they must "take responsibility for all their work and professional acts" (Sindicato dos Jornalistas, 2017), but in the case of news produced in co-authorship with AI, responsibility should be shared with the company that provided the algorithm, a situation not yet provided for in current legislation.

Given that the prestige of the media, its professionals and its investors are tested in every edition of a newspaper, radio news service or television news programme, the care taken in choosing generative technological resources should be identical to, or even greater than, that brought in hiring human resources.

In addition to all the reasons outlined throughout this paper, it should also be considered that computer codes are rarely neutral, incorporating the values of the

programmers themselves, which influence the resulting news product (DeVito, 2017). Therefore, rather than looking for cheap or effective technologies, journalism companies that acquire generative algorithms should test their alignment with the ethical principles of journalism and their editorial guidelines.

6. Final Remarks

The presence of AI in journalism is a relatively recent phenomenon, but its use has evolved very quickly since the initial experiments in the first decade of the new century (Canavilhas, 2023). The speed with which the process has unfolded has raised a wide range of questions, including the discussion about whether AI tools could replace journalists.

Throughout this work, the work of algorithms was compared with that of journalists, finding that humans currently still have an advantage in the various stages of the news process, particularly when it comes to characteristics such as creativity and empathy (Møller et al., 2024). Although some authors believe that training algorithms (Linden, 2017; Marconi & Siegman, 2017) will improve these tools, adapting them to media editorial principles and the characteristics of journalists themselves, others believe that this will be difficult "because the idea of technological quick fixes by 'embedding' editorial values into algorithms do not work" (Porlezza & Schapals, 2024, p. 364).

This situation has serious ethical implications, so it is essential to monitor how data is collected and processed (Ventura-Pociño, 2021), but this also requires systems to be more transparent (Canavilhas & Biolchi, 2024), allowing for scrutiny.

Despite this, it is indisputable that AI is a powerful tool and a valuable aid to journalism, provided professionals in the field supervise it. In a collaborative human-machine work environment, AI could be a strong ally for journalism in overcoming the crisis it has been in since the beginning of the century.

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