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# Disinformation and Artificial Intelligence: the Case of Online Journalism in China[1]

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**Abstract.** AI has been identified as a factor that can amplify disinformation, which is information similar in appearance, but created and distributed with a malicious intent. Despite its potential negative effects, AI is transforming the media landscape along with other technologies. This article explores the relationship between AI and disinformation in the context of Chinese online journalism. The Chinese cybersphere can be explained through opposing definitions. For example, China is a country where mass media, especially news media, is under government surveillance, and where there is no polarized media, unlike Western democracies. After conducting a systematic literature review on the relationship between AI, journalism, and disinformation in China, gaps detected in the literature include the self-regulated initiatives performed by AI within media outlets, the impact of AI on specialized journalism, the assessment of texts produced by AI, and the effects of echo chamber campaigns and products among the Chinese population.
**Keywords:** Artificial Intelligence; disinformation; journalism; China

## [es] Desinformación e inteligencia artificial: el caso del periodismo en línea en China

**Resumen.** La IA ha sido identificada como un factor que puede amplificar la desinformación, la cual es información similar en apariencia, pero creada y distribuida con una intención maliciosa. A pesar de sus posibles efectos negativos, la IA está transformando el panorama mediático junto con otras tecnologías. Este artículo explora la relación entre la IA y la desinformación en el contexto del periodismo en línea chino. La ciberesfera china se puede explicar a través de definiciones opuestas. Por ejemplo, China es un país donde los medios de comunicación masiva, especialmente los medios de noticias, están bajo vigilancia del gobierno y donde no hay medios polarizados, a diferencia de las democracias occidentales. Después de realizar una revisión sistemática de la literatura sobre la relación entre la IA, el periodismo y la desinformación en China, se detectaron vacíos en la literatura que incluyen las iniciativas autorreguladas realizadas por la IA dentro de los medios de comunicación, el impacto de la IA en el periodismo especializado, la evaluación de textos producidos por la IA, y los efectos de las campañas y productos de cámara de eco entre la población china.
**Palabras clave:** Inteligencia artificial; desinformación; periodismo; China



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## 1. Introduction

The concept of Artificial Intelligence (AI) has evolved from Alan Turing's automatic machines in the 1930s (Ferrara et al., 2016), to the first and second order cybernetics proposed by Wiener (1949) and Von-Foerster (1991) respectively, which focused on the design of regulated and self-regulated systems. While the official birth of AI in the scientific literature is considered to be in 1956 (Biswal & Gouda, 2019), the definition of AI remains elusive (Lucero, 2019), given its impact across various fields of knowledge. The interpretation of AI varies depending on the field, as Broussard (2019) notes, with subfields such as machine learning or natural language processing often being conflated into a single concept.

In the context of communication, there is a diversity of notions surrounding AI. Some authors refer to it as computational propaganda (Bradshaw & Howard, 2017), while others describe it as "algorithmic political communication" (Campos & García-Orosa, 2018, p. 771). Despite the lack of a clear definition,

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AI has been identified as a factor that amplifies disinformation, which is information that appears similar to that which appears in the media but is created and disseminated with a malicious intent (Lazer et al., 2018; Li & Scott, 2020). Technopolitics, the instrumental use of technology for political objectives (López-López & Oñate, 2019), can create fake news with a dual purpose. These contents can be developed as propaganda to harm reputations, institutions, or organizations (Barredo et al., 2021), or to promote a brand, product or service through diluted promotion (Barredo, 2021). Similarly, Zhang et al. (2023) distinguish between hard and soft propaganda based on their negative or positive orientation. Disinformation is always created intentionally, as the strategists know they are producing a persuasive narrative within a journalistic framework. In contrast, misinformation refers to the unintentional dissemination of false information.

AI is transforming the media, along with other technologies (Sun et al., 2022; Xi & Latif, 2022; Jamil, 2020), such as augmented reality, big data, and gamification, and its combination with journalism is shaping new sub-fields like "automated journalism", "algorithmic journalism", or "robot journalism" (Biswal & Gouda, 2019, p. 159) that describe the automation processes related to news production and diffusion. According to Campos & García-Orosa (2018), AI and communication involve three processes: personalized diagnoses, content generation, and content spread.

There are two main associations in the specialized literature when explaining the relationship between AI and journalism. Some authors suggest that AI is biased (Broussard, 2019; Zhang, 2023), reflecting the partiality inherited by developers. However, for other authors, the hybridization of journalism with machine-aided intelligence can be a response to the scarcity of economic resources or a solution to manage content overload and interactions (Diakopoulos, 2019; Wang, 2021).

This article explores the relationship between AI and disinformation within the context of Chinese online journalism, as research on disinformation and journalism is still scarce outside the Western sphere (Guo, 2020). Our contribution is an attempt to expand existing knowledge by analyzing relevant sources grouped into the four main problems associated with AI and journalism: privacy security, professionalism and impartiality, humanistic style of journalism, and echo chamber (Sun et al., 2022, p. 10). Before presenting the methodology, results, and conclusion sections, this article first provides an overview of the online news media landscape in China.

### 1.1. Online journalism, and AI in the context of Chinese disinformation

China is known for having a tightly-controlled media landscape, with news media under government surveillance (Xu, 2014) and a mix of party-organ and commercial media organizations (Xie & Zhao, 2014). According to Jian & Liu (2018), from 1949 to the 1980s, journalism in China served as part of the propaganda apparatus. However, in the 1990s, the Chinese media system began to transform as media outlets were released from the propaganda apparatus due to a phenomenon described as "media marketization" (Tang & Sampson, 2012, p. 459). As a result, media organizations began to compete in the market to gain users and economic benefits. One notable effect of this transformation was a softening of the concept of propaganda, even in official media outlets, to attract more users (Zhang et al., 2023).

Unlike in Western democracies, there is no polarized media in China (Tang et al., 2021). Instead, Chinese online media can be divided into two categories: public or official websites such as People's Daily and Xinhua News Agency, which mainly disseminate the CCP's official viewpoints, and private websites with commercial interests such as qq.com and sina.com.cn (Guo, 2020, pp. 993-994), whose content is monitored by the government. Journalists in China must be involved in State promotion as censorship revolves around two key points (Chan, 2011): firstly, journalists must help promote a positive public opinion around the Chinese State, which involves paying special attention to key events on the annual calendar and silencing all topics that could affect the State's popularity; secondly, journalists must help create a positive image of China's recent economic growth. However, censorship should not be viewed as a uniform set of guidelines in the Chinese case. There is a certain ambiguity, which Chinese journalists resist or even combat through subtle tactics (Tang & Sampson, 2012).

Online media platforms and messages in China are moderated through the Great Firewall of China (GFW), a strict technological barrier that controls all web traffic (Peidong & Lijun, 2018). The GFW functions as an integrated system for blocking, filtering, and intercepting instant messages (Xu, 2014), and navigation speeds can be slow and unstable. The GFW operates as both a programmed and manual filtering system (King, Pan & Roberts, 2013). However, maintaining moderation in a system with over 1.067 billion users in December 2022 (China Internet Watch, 2023) is challenging. As per this source, 75.6% of the Chinese population is connected to the Internet.

The Tianjin explosion in 2015 highlighted the relevance of social media in China and the fragmentation of Chinese public opinion (Stockmann & Luo, 2017). Conventional media published resources posted by citizens, and the pressure generated on social media platforms caused a political storm that led to the prosecution of several officers linked to the CCP.

But public authorities are also active and empowered online. The Chinese Internet includes interactive strategies stimulated by local governments to encourage citizen participation (Hartford, 2005; Chen et al., 2016; Stockmann & Luo, 2017; Lu & Pan, 2021),

activism through state media accounts on Weibo (the Chinese Twitter) to inform about an official point of view (Song & Chang, 2017; Zhang et al., 2023), and even the presence of infiltrated members promoting positive attitudes with their comments on the digital arena (Bandurski, 2008; King, Pan & Roberts, 2013). Repnikova & Fang (2018) summarize all the tactics used to promote the State as "authoritarian participatory persuasion 2.0" (p. 771).

Chinese journalists are taking advantage of the internet's special characteristics to avoid severe censorship, such as opening interactive spaces, using microblogs to publish anonymous or fast contents, and employing crowdsourcing to finance investigative journalism (Gao & Martin, 2011; Song & Chang, 2017; Jian & Liu, 2018; López Parra, 2013).

The Chinese cybersphere is a complex entity with opposing definitions (Cui & Lin, 2014). In 2017, the Chinese State Council published the New Generation Artificial Intelligence Development Plan, which set an ambitious agenda for China to become an AI innovation hub by 2030 (Lucero, 2019). Since then, AI has been widely implemented in China. The government uses it to observe citizens through more than 200 million surveillance cameras (Kaplan, 2020) and to collect data for a social credit score system that rewards or penalizes individual behavior. The use of computational propaganda (Harold et al., 2021) and human intervention to promote the State and the CCP (Bandurski, 2008) has also been associated with the Chinese government. Bradshaw & Howard (2017) discovered evidence of cyber troops in China, highly organized teams that work to bias public opinion. These researchers suggest that two million Chinese individuals collaborate to promote a common official online strategy (p. 19).

However, Xie & Zhao's (2014) study of students at three Beijing universities found that new generations of Chinese people are less influenced by official propaganda. Professional media are perceived as more credible than party-organ media, indicating a change in user perception. Those who demonstrate greater political awareness are more likely to trust professional media organizations that report on the news agenda objectively and without bias.

Leading Chinese companies have already created AI bots to produce news, such as Tencent's Dreamwriter bot (Kuai et al., 2022). AI is also used to facilitate personalized news consumption through apps that tailor news content to individual users (Biswal & Gouda, 2019). The development of AI solutions is often a collaboration between the State and the private sector. For example, the Xinhua News Agency and Alibaba launched Media Brain in 2017, which creates different news content, including videos, photos, and texts (Xi & Latif, 2022). The People's Daily, the voice of the CCP, has also established the AI Institute with Lenovo and iFlytek, among others (Kuai et al., 2022). Xinhua has developed the world's first AI news anchor in collaboration with Sogou.com, a search engine that is dependent on Tencent (Yu & Huang, 2021). Toutiao Lab and Peking University created the Xiaomingbot in 2016 to generate news on the Olympic Games (Xi & Latif, 2022).

There are various tactics that demonstrate the coordinated work led by the State in China. For instance, in 2019, the Publicity Department of the CCP launched the platform and app Xuexi Qiangguo to encourage greater interaction between local authorities and the people by stimulating online communities. This platform included mass content and a system of gratification, exemplifying how propaganda has been platformized in China (Liang et al., 2021, p. 1870).

Even in a country like China, where there is a strict content moderation managed with the help of the mentioned GFW, citizens are heavily exposed both to international news (Di & Fang, 2018) and to fake news. Nearly half of the Chinese respondents indicated that they frequently received fake news contents (Tang et al., 2021), and, according to this survey, 7 out of 10 respondents considered that fake news is a "serious threat" (p. 502) to China. Fake news prevalence is high, but it is interesting that the typology of fake news changes globally accordingly to cultural and political pre-existent attributes. A study on the top fake news stories in China described that 6 out of 10 of those contents, from 2001 to 2019, were associated to "social life" or "cultural/sport/recreational news" (Wang et al., 2022, p. 726), while "political news" represented only 1 out of 10 content evaluated.

These findings are consistent with a study by Liu and Zhou (2022), who compared the processed contents in a fact-checking unit in China with a similar platform in the United States. They found that health topics accounted for about 8 out of 10 verified contents in the Chinese unit, while in the US unit, there was a similar proportion of fake news related to political motives (p. 4302). The reason for this restriction is primarily because political contents are tightly controlled by the State (Hassid & Repnikova, 2016), and journalists face economic and political pressures (Wang, 2017).

In an authoritarian context, disinformation is controversial. Rumours are frequently described as fake news (Wang et al., 2022), but they play an important role as a political expression (Guo, 2020), even though they are banned from being published in media. As Guo (2020) demonstrated, rumors continue to be spread online, even on public media, when they do not include political implications. Journalists also use social media to publish breaking news as a complementary tool to avoid censorship (Jian & Liu, 2018).

Although there is no clear law regulating AI in China (Lucero, 2019), several initiatives have been implemented in recent years to combat disinformation. In 2011, the Cyberspace Administration of China was created as an organization to regulate the internet in the country (USCBC, 2021). Later on, in 2018, this organization was transformed into the Central Cyberspace Affairs Commission. In 2016, Tencent News, a private media platform, founded Fact Check (Tengxun Jiaozhen), a fact-checking or-

ganization (Liu & Zhou, 2022). However, as these authors note, fact-checking practices in China are still focused more on stopping rumors than "playing the role of a watchdog" (p. 4307).

## 2. Methodology

This study aims to offer a systematic literature review to examine the relationship between AI, journalism, and disinformation in the specific case of China. In doing so, it classifies the main sources and trends published on this topic and identifies gaps in the selected literature when studying the chosen phenomenon. To develop the systematic review, we have simplified the steps proposed by Xiao & Watson (2019), Codina (2022, March, 23th) and applied by Barredo et al. (2021), as the chosen topic is quite specific:

- *Structuring the research lines.* When exploring the relationship between AI and media, some works focus on two processes: news production and online diffusion (Wang, 2021; Xi & Latif, 2022). However, as explained by Sun et al. (2022, p. 10), the previous literature related to AI and journalism has explored four concrete problems: privacy security, professionalism and impartiality, humanistic style of journalism, and echo chamber.
- *Locating the universe*. From March 1st to April 1st, we located all the relevant literature in English language using the following keywords: China + journalism + disinformation; artificial intelligence + disinformation + journalism + China; China, journalism, disinformation; and China + automated journalism. Although we conducted a comprehensive search, this process has as limitation that we could not access the literature published in the Chinese language. This limitation is mentioned to ensure transparency in the systematic review following the recommendations of Codina (2022, March, 23th). The study period was from 2010 onwards, that is, until March 1st, 2023, when data collection began. The documents were sourced from databases such as the Web of Science, Scopus, or Google Scholar. Additionally, we took into account reports published by supranational organizations and associations, alongside scientific works. In this process, we did not apply any exclusion criteria to the texts, mainly because, given the specificity of the research subject, we found few documents directly related to the relationship between disinformation and journalism in China. As a result of the locating task, we contemplated 20 relevant texts directly oriented to the case of China that study AI associated within journalistic production, or management.
- *Relationship with literature.* After all the sources were located, it was written the first draft according to the 4 indicated lines of research. The final article is a product of the discussions and successive revisions achieved by all the authors. A total of 59 relevant sources have been part of this work.

## 3. Results

### 3.1. Privacy security

The first line of research, privacy security, is related to the way AI manages sensitive data (Sun et al., 2022), such as pictures, comments on the web or on social media, among others. In this line, we have detected a gap related to the self-regulated initiatives performed by the AI inside of the media outlets. Maybe that gap is due to the recent implementation of AI, and a use still supervised. The principal works detected are linked mainly to the AI regulation. Continuing in this trend, Lucero (2019) explored which institutions are linked to AI in China, what the national concept is, and what the legal aspects are to regulate it. In the results, the author explains that there is a prevalence of "standards (not laws)" (p. 136), and that most of the standards that regulate AI are influenced by the internationally accepted norms. As an example of such a standard, the author cites the Personal Information Security Specification, approved in China in 2018. This normative corpus provides guidelines on three major aspects: "personal information, data transfer, and data management and governance" (pp. 140-141). As the author concludes, this specification applies primarily to commercial companies, while the central State retains omnimode use of personal data. At the same time, some contradictions are found within e-commerce or cybersecurity laws, as commercial organizations are required to obtain individual consent when collecting user data. However, the government must have access to that data if necessary, without prior consent. For this reason, this work warns that tech businesses are "extra cautious" (p. 143) in trying to anticipate what information the CCP may request.

Privacy security also covers research related to cyber sphere regulation. Rodrigues & Xu (2020), compared the existing legal norms in China and India related to media and social media regulations after the Covid-19 outbreak. Although these authors did not provide empirical data, they noted that China was successful in restricting fake news related to Covid-19 by adhering to concepts such as "social responsibility," "public security", and "social order" (p. 129), which were behind the strict regulation during and before the pandemic.

But this is also a line associated with the regulation of content created. From that perspective, Kuai et al. (2022) examined the relevant actors and results linked to AI and Chinese copyright law and its im-

plications for journalists. According to these authors, the *Chinese Copyright Law* is the legal document that regulates both journalistic and AI messages. These authors triangulated data from the normative set, existing jurisprudence, and official declarations. In the results, it is explained that the Chinese Copyright Law protects AI-created products by giving copyright to the person or company that invested in or developed the content (p. 1902). This creativity protection is also assured by certain cases described in this work. For example, in the *Tencent* v. *Yingxun* (2019) case, *Tencent* claimed the legal right over a post created by its bot *Dreamwriter*, which was shared by *Yingxun*. The court determined that the content produced by the automated news-writing service was the property of the developer, *Tencent*.

### 3.2. Professionalism and impartiality

This line of research is related to the ethical transformations of journalism motivated by the implementation of AI (Sun et al., 2022). For instance, in the Western sphere, Diakopoulos (2019) highlights the launch of ModBot in *The Washington Post,* in 2017, as an example of AI implemented to moderate user comments on the online media and to avoid disinformation. We have detected a lack of studies on how AI impacts professionalism and impartiality in specialized journalism. In that sense, Li & Scott (2020) work is focused on sport journalist and misinformation. They chose an exemplary case occurred during the Covid-19 pandemic outbreak. Wu Lei was a football player part of the RCD Espanyol, in Spain. Thomas Guasch, a football journalist in Spain, informed about the possible Lei's infection of Covid-19, which later one was proved to be false. This news was republished in China without the adequate fact-checking, and it reached about 110 million times of views on Weibo, the Chinese Twitter. This case showed how social media can facilitate the spread of misinformation. The authors also note that this acceleration is due to the "artificial intelligence algorithm" (p. 510), which plays a key role in defining gatekeeping practices on the websites. This algorithm can play a dual role, both by mining popular stories posted on the social media and as automated systems of recommendation - as soon as one fake news is viewed for a user, it is suggested to another user.

Xu & Gutsche (2021) interviewed 25 information professionals in Beijing in 2017 to investigate the relationship between social media and investigative journalism. The results indicated that social media were seen as "information overload" platforms (p. 1152), due to the confusing mix of fake news and user generated content. The study highlights that in the past, social media were used to gather relevant sources, but at the time of the research, the consulted journalists considered offline research to be more important for investigative journalism. The study also found that journalists explained that detecting fake news requires an abundant investment of time. Although AI was not explicitly mentioned, the authors noted that "meeting face-to-face with sources" (p. 1157) was a way for journalists to respond to the issue of information overload.

Professionalism and impartiality are also associated with other studies that observe how AI is being adopted as a tool linked to disinformation. Xi & Latif (2022) studied the implementation of AI in two newsrooms: Toutiao and Xinhua News. They interviewed four key professionals about the evolution of these media outlets. In this work, the authors indicated that technology has helped to evolve journalism, specifically in data collection and results presentation. In those processes, AI boosts both "proofreading and review" (p. 36) of the media products. At the same time, virtual reality and augmented reality features also create a newer news consumption experience called "immersive news" (p. 37), where users have direct access to the scenarios, principal facts, and actors. These authors explain that AI has contributed to the generation of fake news through user recommendations. Therefore, platforms are filled with clickbait products, searching desperately for user attention. The algorithm is based more on commercial tactics than on strong ethical values. It depends on previous sources that can be biased or inaccurate, so the results follow the same pattern.

It is also relevant in this line of research to consider the studies connected with the message features. Wang et al. (2022) reviewed the characteristics of fake news in China from 2001 to 2019. To do so, the authors examined, using content analysis, 189 relevant fake news published by the Shanghai Journalism Review. The results show that the analysed fake news was related to clickbait campaigns or the obligation to publish content as fast as possible without verification processes. These authors also stated that, in comparison with Western journalists, Chinese journalists are not used to contrasting information from public sources, as there is "the principle of Party character" (p. 732). For that reason, fact-checking is often done inside of the media outlet through non-standardized gatekeeping mechanisms, rather than as an individual commitment. Outside of the media, fact verification processes depend on platforms such as Tencent WeChat or Sina Weibo, along with the official People's Daily, the newspaper published by the CCP.

Other perspectives on this research line have focused on the user experience. For instance, Sun et al. (2022) conducted a survey in 2020 with the general Chinese population aged 18 or older. In total, they examined the perceptions of 1558 respondents regarding the implementation of AI in the media industry. The results of the survey showed that 9 out of 10 respondents had purchased an AI device the year before the survey, indicating their enthusiasm for this technology. When the authors asked respondents about the potential advantages of using AI in journalistic performance, the traditionalistic approach, i.e., work done by humans, received 50% or more of the general approval for news fact checking, writing, subject

planning, and user interaction (p. 12). In comparison, for those surveyed, AI advantages achieved agreement of 50% or more in 10 out of 14 questions. Some of the perceived advantages of AI in news production included clues collection, public opinion monitoring, and content distribution, among others (p. 11).

### 3.3. Humanistic style of journalism

In this line of research is discussed how AI that interacts with a deeper reflection in journalistic products (Sun et al., 2022), in our case linked to disinformation. AI can be used as a tool to manipulate reality (Kaplan, 2020), both consciously -with the creation of new resources, via social bots, or deep fakes, for example-, or unconsciously, as it happens with the algorithms on social media that enable a bubble filter, that means, a selective exposure to content. We have detected a gap related to the lack of studies associated to assess the humanistic style within texts produced by AI. One exception of this perceived gap is the work of Jia (2020), that presented the results of two experiments conducted between 2019 and 2018 in order to compare user perceptions on news written by AI vs news written by humans. Participants considered human-written better both in "readability and expertise" (p. 2623), while in the case of the credibility there were no perceived differences.

Most of the selected works in this line are focused on the AI news anchors. From this perspective, Yu & Huang (2021) interviewed 18 journalists -13 of them working in Chinese national media outlets, the rest were working in international media-, to analyse the influence of AI within their jobs, along with the internal processes of implementation of AI inside of the media outlets. In the results, the researchers found a general agreement on the perceived benefits of AI, concretely, to develop the "tedious routines" (p. 419). For example, bots can minimize the time investment within the data gathering processes. This technology can also be an ally to check figures. But a criticism that was mentioned by the journalists consulted was the lack of "self-consciousness, or identity" (p. 420) of IA. These perceived omissions restrict creativity, which is essential for journalistic storytelling.

Wang (2021) examined AI in relation to three aspects of media processes: news writing, AI anchors, and information dissemination. This work highlights that China was lagging behind in the global race for AI due to difficulties primarily linked to the use of Mandarin, along with methodological gaps. However, the study also points out that Chinese society is open to accepting AI as a part of media products, and AI anchors are an example of this. In contrast to this work, Zhang (2023) presented an essay discussing how to integrate AI anchors into news broadcasts. This author indicates that AI anchors still have a long way to go, as they can reflect thoughts but are unable to develop their own thoughts.

In a similar manner, Xue & Jin (2022) conducted an experiment to investigate users' satisfaction with certain physical characteristics of AI news anchors. The study involved approximately 200 participants who were divided into six groups based on different content attributes, such as humanoid and non-humanoid, male and female, and anthropomorphic and non-anthropomorphic. The authors found that users preferred AI news anchors who were good-looking females with an anthropomorphic voice.

Although AI is not directly mentioned, certain authors examine the information design on social media to detect fake characteristics and attributes. Wu & Pan (2021) studied the spread of news from the People's Daily official account on WeChat, which is similar to Western Facebook. Specifically, they collected 36 news stories posted in 2020 that had more than 10,000 likes within two days of being posted. As these authors suggest, there are around 20 million official news accounts on WeChat as of 2019, and 24% of them have between 100,000 and 500,000 followers (p. 133). By analysing the style, this work discusses how personalization, closeness to users, and an overall positive tone are introduced in the chosen posts. To boost engagement, some posts included a variety of colors or formats, along with multimedia implementation with videos or pictures as preferred resources. This positivity may be a response to the dominant user emotions on the cybersphere. In that sense, Dong et al. (2020) studied the relationship between rumors and emotions associated with the People's Daily and Tencent Myth Busters posts on Weibo during the Covid-19 pandemic in 2020. As presented in the results, most of the public emotions expressed by users were linked mainly to anger. The angrier the public felt, the more posts increased.

### 3.4. Echo chamber

The echo chamber points to a situation where users receive only one side of sources or information (Sun et al., 2022). In those situations, fake news and polarization are the main effects. According to the quoted authors, this is one of the main public concerns, along with "privacy leakage" motivated by AI (p. 15). In this line of research, we have observed a lack of studies associated with the effects of echo chamber among Chinese individuals, and the considerations and imaginaries of journalists about these strategies.

Most of the works found in this line of research are focused on discussing how echo chambers are employed by the official Chinese media, as they are part of the Chinese State and are activated mainly during key events. For instance, during the 2021 Taiwanese referendum, there was a perceived increase in CCP's sources circulating on the official media to spread a common imaginary (IORG, 2022). However, echo chambers can also emerge with relevant topics to create a spiral of silence 2.0 (Barredo, 2021). Cheng (2023) analysed 65 comment datasets published on People's Daily and found some tactics orchestrated in the comments to reinforce the State's position.

Echo chamber is also related to the selective exposure, as users do not criticize the content's trustworthi-

ness when there is an individual agreement with the point of view (Lazer et al., 2018). From that angle, Zervopoulos et al. (2020) examined a dataset composed of nearly 14 millions of tweets related to the Hong Kong protest of 2019, along with 41.996 tweets from news agencies and 103.359 tweets from journalists' accounts. With a classification provided with the computer-aided Machine Learning, authors concluded that the tweets with fake news had some common features, as "unconventional vocabulary, longer length, fewer punctuation marks and shorter sentences" (p. 417).

Harold et al. (2021) conducted "more than two dozen" interviews (p. 77) with journalists and relevant elite speakers such as academics or military officials. In this book, the authors aim to describe how fake news is being spread on Chinese social media platforms. They detected different methods of spreading misinformation, depending on the country. For example, in the Philippines, influence is channelled mainly through financial aid to legacy media. According to this source, actors in Singapore are trying to spread "ethnic Chinese sentiments" (p. 78) in society. These adapted tactics, depending on the target country and objective, are often accompanied using social bots, which diffuse common messages to disinform or support Chinese institutions (p. 92). Moreover, paid and coordinated trolls sometimes attack journalists, accusing them of "being foreign agents" (p. 93). This digital violence is intended to coerce both individuals and media organizations to reduce criticism towards the Chinese State.

The echo chamber includes studies that have investigated cross-media campaigns from both legacy media and social media. Lu & Pan (2021) conducted a research study that triangulated the propaganda apparatus of local governments with a computer-aided evaluation of 197,303 posts published by 213 public accounts on WeChat. This study describes how the communication teams were stressed by quantification figures, and they had to obtain more clicks, shares, or reactions. To do so, they often had to implement clickbait tactics (p. 36) to capture user attention. Seventy percent of the posts examined included clickbait tactics such as listicles, hyperbolic speech, typical phrases, or exclamation marks. Zhang et al. (2023) observed the diffusion of propaganda on the People's Daily - the official media of the CCP - on Weibo from 2019 to 2022. Using the "text convolutional neural network" (p. 4) algorithm, they analysed 43,259 posts before, during, and after the Covid-19 pandemic. The authors found a prevalence of soft news over hard news, meaning that this relevant official media tried to engage users by spreading positive posts. Therefore, for People's Daily, it was more important to publish topics that boosted user engagement than to inform on serious topics such as political affairs.

## 4. Conclusions

Journalism is a field that, throughout its history, has been largely dependent on technological development (Barredo, 2021). AI, as explained in the introduction, is part of a continuous progress from computer science that has been adopted and adapted by communication studies (Campos & García-Orosa, 2018). Negative aspects such as the biased selection of information sources (Broussard, 2019) or the lack of a profound narrative (Zhang, 2023) are challenges to be solved.

In the case of China, journalists face a distinctive context, where AI is considered a base for national development (Lucero, 2019), and a tool used by the government along with tactics of State control and promotion (Lu & Pan, 2021; Zhang et al., 2023). From our review, we perceive that there are symbolic residues from the offline culture which are being transferred to the online perceptions. For example, fake news typology follows a distinctive path, as there is a prevalence of topics linked to social aspects and entertainment (Wang et al., 2022), in opposition to the Western countries, where the same authors remark that disinformation is mainly related to political affairs.

But, after reading the indicated works, it was clear to us that technology access should be considered as a transformative factor of Chinese public opinion, especially when it is combined with human management (Diakopoulos, 2019; Sun et al., 2022). For instance, to avoid the strict surveillance, Chinese journalists adopted social media in order to spread information which is very difficult to publish on offline media (Hassid & Repnikova, 2016; Jian & Liu, 2018). So, AI helps journalists to manage the news overload by creating individual solutions (Biswal & Gouda, 2019). The Chinese Copyright Law protects those contents produced by the AI services, and there is previous jurisprudence which can guide that novel implementation (Kuai et al., 2022). It is also useful to implement this technology with human assistance, to expand the available sources of information (Xie & Zhao, 2014); or as part of a fact-checking strategy, to contrast figures in journalistic research (Yu & Huang, 2021). AI can also serve as a news anchor (Wang, 2021; Xue & Jin, 2022), in order to fulfil the needs of a media that, like the Internet, is open 24 hours a day.

At the same time, AI enables also the possibility to detect disinformation (Kaplan, 2020), when the process is guided by professionals. This feature can be very interesting in a country like China, where rumours are forbidden in media (Guo, 2020), and individual fact-checking requires a heavy investment of time (Xu & Gutsche, 2021), or it is not commonly performed (Wang et al., 2022), due to the link between media and political institutions and leaders. To do this, we agree with Xi & Latif (2022) that a "double gatekeeping" (p. 41) is needed, the first gatekeeping should be performed from the machine, to the sources; and the second one should be completed from a professional to the machine results.

Nevertheless, the conducted review suggests that AI is a tool that can also harm public opinion and media reputation. When implemented on online por-

tals, it can create and spread fake news (Lazer et al., 2018; Li & Scott, 2020), as the content cascades and content farms influence the sources collected by this software. This problem may explain the high volume of fake news that Chinese citizens usually receive (Tang et al., 2021), in the highly moderated context imposed by the GFW. Moreover, AI news writing can minimize journalistic creativity (Xi & Latif, 2022; Yu & Huang, 2021; Zhang, 2023), a negative factor that highlights the need for further AI development.

The goal of the Chinese State of becoming a global leader of AI in 2030 (Lucero, 2019), may be hindered by the technical challenges of implementing this technology within Chinese media outlets, which are subject to censorship and computational propaganda managed by the same State (Peidong & Lijun, 2018; Liang et al., 2021). In this regard it will be interesting if AI learns "playing in the line ball" (Xu, 2014) – that is, to play within the boundaries of censorship-, and develop possible tactics to avoid sanctions (Tang & Sampson, 2012), as the Chinese journalists have been doing in the last decades.

When adopting AI technology, media outlets have to face the lack of a clear normative corpus on how to handle sensitive aspects such as personal data (Lucero, 2019). This research also remarks on the "chaotic ambiguity" (p. 170) of the concept and application of AI in China, which is part of a cyberculture characterized by contradictory concepts (Cui & Lin, 2014). We have also identified gaps in the specialized literature regarding the relationship between AI and disinformation. These topics include self-regulated initiatives performed by AI within media outlets, the impact of AI on specialized journalism, the assessment of texts produced by AI, and the effects of echo chamber campaigns and products among the Chinese population.

Some of these phenomena are still on progress. It is also going to be interesting to what extent AI is in the future integrated within the framework of the "authoritarian participatory persuasion 2.0" (Repnikova & Fang, 2018, p. 771), and the marketization of online media (Tang & Sampson, 2012), which include a need for user involvement even on official media accounts (Zhang et al., 2023).

In conclusion, technology is bringing about a transformation in which Chinese journalists are facing some of the same problems as their Western counterparts (Hassid & Repnikova, 2016) in combating disinformation. Another observed gap suggests that media outlets with limited budgets may find it more challenging to implement AI (Yu & Huang, 2021), which is a future line of research to pursue.

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