Revista de Comunicación de la SEECI (2025).
ISSN: 1576-3420

Received: February 11, 2025 --- **Accepted:** May 11, 2025 --- **Published:** June 12, 2025

RESEARCH ON MEDIA INFORMATION ON SCIENCE, TECHNOLOGY AND ROBOTICS FROM A FEMINIST PERSPECTIVE

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How to cite the article:

Qiu, Manqing (2025). Research on media reports on science, technology, and robotics from a feminist perspective. *Revista de Comunicación de la SEECI*, 58, 1-35. https://doi.org/10.15198/seeci.2025.58.e898

ABSTRACT

Introduction: This article examines how women in science, technology and robotics are portrayed in the media, particularly in China, to determine the extent to which such coverage perpetuates gender stereotypes. **Methodology**: A qualitative analysis was conducted on 22 articles selected from seven renowned Chinese digital newspapers published between 2016 and 2023. Additionally, three television series from China, Japan and South Korea, as well as one Japanese film released between 2008 and 2020, were analysed. **Discussion**: The study examines the androcentric relationship between journalistic narratives and female scientists and technologists, the sexist treatment of female robotics professionals in the media, and how they are represented. It also looks at the portrayal of humanoid robots in science fiction films, which tend to be less egalitarian. **Results**: The results reveal the persistence of an anachronistic view in the media when addressing issues related to women in science, technology, and robotics. Conclusions: The importance of training communication professionals to adopt an equal and cultural perspective in order to overcome unequal biases is emphasised.

Keywords: information, feminist, sexist, technology, fiction, robotics, China.

1. INTRODUCTION

In recent decades, there has been a growing interest in feminist movements and gender studies from the media, as Laudano (2010) points out. Research on female representation in media content has proliferated, covering a variety of topics. These studies focus on analyzing women's identities and professional roles (Bossio, 2021); identifying sociocultural patterns regarding femininity and the perception of gender-based violence (Lazo et al., 2022); and examining female journalists' reactions and emotions in the face of harassment (Miller, 2023).

Undoubtedly, academic analyses that reveal the gender dimension of the media have played a fundamental role in highlighting discrimination against women. However, it is important to note that most of this research has been conducted using Western sources, leaving a gap in understanding Eastern characteristics, particularly those of China. China's remarkable progress in the science, technology, and robotics sectors has become an unavoidable phenomenon in recent years. This research offers a significant contribution to the analysis of the feminist perspective in the technological field, focusing specifically on the context of the major technological powers in East Asia, with particular emphasis on China, and incorporating the experiences of Japan and South Korea. These countries, characterized by their accelerated technological development and unique sociocultural dynamics, provide an ideal comparative framework for the analysis of gender issues in the technological sector.

Through an analysis of media representations of female scientists, technologists, and roboticists, our study reveals systematic patterns that transcend cultural and geographical boundaries. These findings not only highlight the challenges related to gender equity in the technology field, but also provide an empirical basis for understanding how social and media structures influence the perpetuation of gender inequalities in the technology sector globally.

Chinese media have generated a plethora of news stories on this topic, providing a substantial corpus for qualitative analysis. However, scholarly attention to this phenomenon has been scarce, underscoring the importance of examining the representation of women in science, technology, and robotics news. Such a study would allow not only to analyze the media representation of women in these fields to better understand their social credibility, work attitude, and ongoing professional development (Li *et al* ., 2024), but also to examine underlying trends in the production of news content in order to assess the effectiveness of the media as an instrument for the systemic reduction of harmful stereotypes (Mustafaj & Dal, 2023).

Within the framework of this study, it is essential to consider the situation of women in the workplace outside the home, with particular emphasis on the academic sector. A comprehensive review of women's working conditions lays the groundwork for addressing the representation of professional women in the media, offering a comprehensive understanding of the gender disparities reflected in media content. Likewise, it is imperative to analyze the presence or absence of elements such as empowerment, independence, subjectivity, and ambition in media discourse on women's career development (Hu & Cai, 2024), which contributes to broadening our understanding of the representation of professional women in the media.

When examining mass media, in addition to mentioning the challenges faced by female engineers in the field of robotics, it is pertinent to analyze the role of feminized robots, which can serve as a reflection of perceptions about various aspects of the feminine image in today's society. The subsequent analysis focuses on fictional film and television, revealing the deeper connotations and denotations of a mass culture characterized by what Rodal (2015) calls "an unattainable physical ideal for women" (p. 40).

This analysis aims to contribute to the debate on androcentric reproduction in media reporting on science, technology, and robotics. It employs qualitative strategies to, as Martínez (1996) points out, "understand the existence and specific structure of a specific social phenomenon" (p. 310), in this case, gender stereotypes. From a feminist perspective, the paper first examines the presence of sexist bias in news production by analyzing the attitudes of Chinese media toward the female gender.

The article then examines the representation of female robots with artificial intelligence, both in news reports and in science fiction films and series. The article concludes by highlighting the anachronistic view that persists in media coverage when addressing issues related to women, underscoring the importance of having communications professionals trained from an egalitarian cultural perspective.

2. OBJECTIVES

The analysis is conducted from a feminist perspective, focusing on discourses, images and narratives about women. The aim is to understand the extent to which gender stereotypes are reproduced in science, technology and robotics. The study aims to analyze and explain how women are represented in journalism and audiovisual communication, as these sectors act as sources of the production and reproduction of stereotypes, inequalities, and discrimination (Franco & Blanco, 2021). The article is structured based on three approaches:

1). News about women as scientists and technologists is scarce and lacks a gender equality perspective. Media narratives and descriptions of professional women often downplay their work capabilities outside the home, while emphasizing their domestic roles.

2). Press releases about female engineers specializing in AI algorithms often display obvious sexist biases. Service robots are designed with a clearly discriminatory perspective. The lack of respect and trust toward female engineers is linked to the scarcity of managers with a feminist approach, both in journalism and in the field of AI.

3) The portrayal of female humanoid robots in TV series and films reflects the current situation of women in society, including their experiences as victims of violence. Meanwhile, male humanoid robots in fiction exhibit traditional masculinity, albeit with less stereotypical nuances to appeal to a broader female audience. In the film industry, the creation of "ideal male robots" that fulfill women's romantic fantasies is a way to distort their perception of intimate relationships in real life.

3. STATE OF AFFAIRS

Working women suffer stereotypes both in their daily lives and in the workplace. Those with highly qualified professions are often judged and associated with a "negative characterization." This humiliation is seen as a punishment for prioritising their professional duties over their family (Lacalle & Gómez, 2016, p. 59). As representatives of highly educated employees, women in science and technology also face an unequal work environment. As Segovia and other scholars (2021) confirm, gender bias manifests itself in research evaluation, hiring, promotion, and the work environment. The use of non-inclusive language in comments and letters of recommendation, as well as disregard for women's professional abilities, constitute the most evident part of academic discrimination. This is compounded by salary disparities and environmental sexual harassment, completing a picture of inequality in the scientific and technological fields.

The academic system is also responsible for failing to adequately recognize women's contributions. To reduce the gender gap in the scientific field, in addition to identifying differences in women's scientific contributions, it is crucial to consider the attribution of work, as women's contributions are often unknown, unappreciated, or simply ignored (Ross et al., 2022). Regarding the invisibility of women as researchers in citation practices, "the scientific culture that denies women as sources of reference and authority" (García et al., 2022, p. 91) is one of the main causes relegating female scientists to a secondary role.

Since learning to interpret images is fundamental to contemporary culture, the mass media are key instruments in shaping behaviors and attitudes (García, 2021). These media play a transcendental role in the construction of gender images in science and technology, equating the masculine with the universal, a practice that has led to the male appropriation of culture as a whole (Butler & Lourties, 1998). Film productions, on the one hand, perpetuate negative impressions about women by imposing stereotypical figures and characteristics, but on the other, they serve as platforms to improve public interest in science and technology. Therefore, it is important to increase the positive portrayal of women as scientists and technologists in films (Kool, 2022), in order to rebuild the value and social thinking towards femininity and the scientific community.

In the case of digital media, women find a space to reveal the discrimination they experience in research work, in addition to showing and explaining what their lives in science and technology are like. However, it is necessary to note the other side of social media, especially on entertainment-focused platforms like TikTok: instead of empowering women, they can fuel the growth of hostility and misogyny (Huber & Baena, 2023).

"Science fiction can be interpreted as a circuit of thought, for cultures to build and explore experimental models of collective action on a global and planetary scale" (Hartley, 2022, p. 3). However, sexist stereotypes and roles persist in the science fiction industry, following the androcentric rules of human society. For example, in science fiction products, vertical occupational segregation is evident: men are the dominant gender, while women are underrepresented and marginalized.

Furthermore, women are often hypersexualized, which contributes to the "maintenance of inequality between women and men" (García et al., 2024, p. 15).

Science fiction films, primarily starring and directed at men, are a set of "political, social, economic, and cultural manifestations" presented through images (Müller, 2021, p.111). In this context, the women who appear are often discriminated against. However, not all women in science fiction stories are marginalized. Female writers who are fans of the genre today find specific virtual spaces such as "fan fiction" to feel represented. However, the priority themes they write about continue to be love and sex, without realizing that those of friendship, family, and the treatment of trauma are equally important (de los Ríos Izquierdo, 2021).

Robots already on the market often lack a neutral image, although when talking about robots with female or male figures, there is little difference in the social perception of trust regarding their competence. Precautions must be taken when applying robotic images with indicated sexes, because they reinforce the influence of technology on gender stereotypes (Bryant et al., 2020). López et al. (2021) also confirm the importance of abandoning standardized images of the female sex, since they do not represent its diversity, stating that "with the use of incarnations that identify with a sex, gender stereotypes are again reinforced" (p. 198).

The robotization of jobs is another common thread between women and robots, in which gender inequality is also evident. Women's lower level of digital education compared to men creates a "digital divide," which hinders women's advancement in related jobs. Over time, the low level of female representation in robotic jobs undermines equal gender rights (Valenzuela, 2023). Regarding the relationship between men and robots, an old patriarchal practice emerges, serving as a conduit for sexist guidance. Thanks to programs and algorithms designed without a gender perspective, the sex robot produced feeds the imagination of sexists, continuing the objectification of women as sexual objects. Ultimately, male domination and female subordination are further strengthened (Delicado, 2021).

4. METHODOLOGY

Balcázar et al. (2013) argue that, for an adequate explanation of social phenomena, it is essential to interpret the settings and characters from their own standards and perspectives. Within the framework of this research, conducted using a qualitative approach, the analysis focuses on the media. The article studies the writing and production processes of certain mass media outlets, expanding on a description that is close to the "reality" of social communication. Furthermore, the questions "how?" "why?" and "what for?" are essential in the research process.

In media culture, the press and cinema are key elements of everyday practices. Analyzing media phenomena involves studying the narrative environment and the progress of film fragments; examining the roles represented allows us to intuit the social vision that articulates gender discourses. Consequently, this analysis explores the representation of women in newspaper articles, series, and films, in order to elucidate how gender stereotypes are perpetuated through these means of ideological transmission.

Erol and Cuklanz (2020) affirm that making visible "the experiences of people marginalized under racist, sexist, heterosexist, patriarchal, and imperialist conditions" (p. 211) is essential to developing a study with an egalitarian perspective. Female voices and experiences constitute the basis of the research, allowing us to question "how to define and redefine key terms and advance fundamental objectives" (Cuklanz & Rodríguez, 2020, p. 201). The analysis focuses on narrative descriptions present in the media, especially those related to women, to highlight possible discriminatory situations in the information. Likewise, communicative elements such as signatures, photographs, plots, and cinematographic shots are considered, since the lack of female representation in content is another manifestation of a sexist world, just like stereotypes.

The use of inclusive language in media content is crucial to assessing the current state of gender stereotypes and violence. Sexist writing in journalism and audiovisual media creates a social environment that subordinates women. Given the fundamental role of language in communication, a linguistic shift is required to eradicate violence (Tajahuerce et al., 2020, p. 55). The debate over the implementation of inclusive language highlights sexism, androcentrism, and the dominance of patriarchal culture. By raising controversies, it is easier to understand "how knowledge is constructed and to shed light on how ideologies work" (Bolívar, 2019, p. 356). To analyze language use, the article examines headlines, quoted dialogues, written reflections, and film conversations. The aim is to uncover the use of inclusive language in reporting and the media's stance toward women.

The paper first explores the inclusion or absence of egalitarian ideas in news about science, technology, and robotics published in prestigious Chinese newspapers. To directly demonstrate how male imagination influences the representation of women, in addition to focusing on the newspapers, representative science fiction audiovisual works were selected.

The year 2016 is a big deal in China for two reasons: the launch of the Thirteenth Five-Year Plan; and rapid economic growth in the artificial intelligence industry (Li, 2017). Taking these factors into account, the period of study of news reports was set from 2016 to 2023. The main objective is to determine whether scientific and technological development has influenced the unequal conditions suffered by women.

News identification will be carried out during 2023 and 2024 through Chinese language digital newspaper databases, for example, stdaily.com/ 中国科技网, people.com.cn/人民网, gmw.cn/光明网, cnwomen.com.cn/中国妇女网, and also on Youtube search engines. and from Google , through the terms: "female scientists/女性科学家", "science and technology /科技", "female robot /女机器人", "women and artificial intelligence/女性和人工智能", "science, technology and gender/科技与性别".

Based on keyword searches, the following newspapers were identified, which are digital versions of national publications:

- Digital edition of the newspaper *Science and Technology Daily*|《科技日报》
- Digital edition of *China Women's News*|《中国妇女报》
- Digital edition of *People* 's *Daily*|《人民日报》
- Digital edition of *Guangming Daily* |《光明日报》
- Digital edition of *Beijing News* |《新京报》
- Digital edition of *Huanqiu*| *Globo Times* |《环球时报》
- Digital edition of *China Youth Daily*| 《中国青年报》

The analysis of film productions initially focuses on the period 2016-2023, equating the time frame to the newspaper study. The same keywords as in the previous search are used to identify relevant works in the audiovisual industry. With the aim of generating a broad and in-depth debate on the prevalence of sexist content in television and film, the fiction films most highly rated by Chinese audiences in recent years are selected, prioritizing those with ratings above 7/10.

The Chinese platform *Douban* (https://movie.douban.com/) serves as the primary source, bringing together works from China, South Korea, and Japan. In the eight-year period analyzed, only two works were found in the Douban database that met the selection criteria: series from China and South Korea. To include more film examples other than series, the search period was extended to 2008, when one film and one series from Japan were released (Table 1).

The study of film and television productions seeks to complement academic research on equality in the media, with an emphasis on the film industry. From a feminist perspective, this analysis explores how the male imagination influences science fiction works, critically addressing androcentrism in media coverage. The research also explores the attitudes of leading creators toward gender equality. This approach allows for an examination of both on-screen representation and the underlying intentions behind these productions.

Table 1.

Audiovisual Media under Analysis (Series and Movies)

Country	Year of Release	Guy	Name	Director
China	2020	Woman's Monologue/ miniseries (Science fiction)	Hear Her (The Perfect Girl)/ 听见她说（完美女孩）	Wei Zhao (female director)
South Korea	2018	Series (Science fiction)	Are You Human Too? 너도 인간이니？	Yeong-hoon Cha/Joon-ho Yoon (male directors)
Japan	2008	Movie (Science fiction)	Cyborg Girl /僕の彼女はサイボーグ	Jae-young Kwak (male director)
Japan	2008	Series (Science fiction)	Absolute Boyfriend /完全無欠の恋人ロボット	Masato Hijikata/ Genta Sato/ Gaku Kitagawa (male directors)

Source: Own elaboration.

Taking into account the aforementioned aspects, the following questions arise: How are women represented in science and technology news? How are female programmers and algorithm engineers portrayed in the media? What is the purpose of female-looking robots? Do they reproduce the stereotypes that affect women in today's society? Are there parallels between female robotics professionals and female robots? Are there perceived biases in the portrayal of scientists, technologists, and robots with feminine characteristics? In films and fiction series, how are female robots characterized? Do they suffer from similar stereotypes to those of human women? Regarding male robots, do they experience any type of unfair or discriminatory treatment? It is important to consider the representation of women in science and technology, as well as in the arts, in order to understand the impact of gender inequality on the development of these fields.

Below are some preliminary results of this research. Its relevance lies in the incorporation of a feminist perspective into studies on the representation of women in science, technology, and robotics. This study seeks to contribute to a deeper understanding of how the media and fiction influence the perception of women in traditionally male-dominated fields, and how these representations can affect gender equality in society.

5. RESULTS AND DISCUSSION

5.1. Female scientists and technologists

5.1.1. Narrow focus on prominent women and the concept of "half the sky"

News articles about women as scientists and technologists are scarce, focusing mainly on International Women's Day. This occasional coverage is insufficient to raise awareness about the gender imbalance in society. It is crucial to consistently highlight female excellence, equating it with that of male scientists, as the contributions of female scientists are equally valuable.

In the texts under study, academic contributions aligned with national interests are presented as symbols of patriotism. This journalistic approach, focused on those who serve the country's needs, can overshadow the individual interests of researchers, particularly affecting women. The prevailing image of the few female scientists and technologists is constructed from a patriotic narrative, frequently citing award-winning women who encourage young women to engage in research relevant to the country's future.

While it is positive to see outstanding female scientists, it is important not to overlook those who do not receive awards or whose work does not directly align with national interests. The advancement of women in science and technology depends on all researchers. The articles that were analyzed, with their narrow focus, fail to assess or question the scarcity of women in these fields. Furthermore, awarding only women in certain scientific and technological disciplines can foster a conservative perception of female talent in academia, obscuring the diversity of their contributions in all areas of scientific research.

"Half the sky" is the nickname that the articles that were analyzed give to the award-winning scientists and technologists. This term comes from the Chinese proverb "Woman can hold up half the sky" (nü ren neng ding ban bian tian), which continues to be used as a slogan to motivate women to work hard. This phrase has become a compliment to female researchers who do not seek financial rewards, but rather "a sense of honor." Sometimes, "acquiring a sense of honor was considered one of their spiritual pillars in the face of difficult tasks" (Qiu, 2023, p. 316). According to Qiu, to "hold up half the sky" can be a form of psychological encouragement for women who do not want to be inferior to men. However, this nickname can also function as a lure to increase industrial production by attracting cheap labor.

Aside from presenting "half the sky" as a "glory" for women, the media under analysis do little to explore the underlying implications of the expression "hold up the sky" or the reasons that drive women to take on this role. An article in China's *Xinhua News Agency* (Wang & Wang, 2021) suggests that if women can be the "half the sky" in the family, they can also be so in the professional sphere. This definition of female ability may seem positive, but in reality it is not. The article wrongly suggests that only women competent in domestic tasks can perform well in scientific positions. This idea is paradoxical, since performance in household tasks is not

related to professional talent. Furthermore, scientific and technological achievements are the result of effort and intellectual ability. It is absurd to evaluate women in science and technology based on their family behavior, instilling in the public a supposed coherence between female researchers and their domestic responsibilities.

Even if women demonstrate professional competence, the main reason for accepting them for research projects is their dedication at home. Journalistic portrayals of women follow the sexist idea, stating that their inevitable responsibilities include domestic chores. In this context, the "half the sky" becomes a prison of feminine identity, once again subjecting women to the rules established by a masculine society, where they are viewed as cheap and replaceable "tools."

In the article "they are the examples that serve the homeland with the successes of academic research" (Dai, 2022 a), the journalist maintains a superficial view of the concept of "midheaven." The nickname given to the female group in the text merely serves to perpetuate the journalistic illusion of an alleged 'increase' in female power. The author incorrectly maintains that numerical parity between women and men equates to gender equality, ignoring the discrimination and marginalization that women face in scientific roles and career decisions. Consequently, when the growth rate of female scientists exceeds that of men, the empowerment of women is celebrated as if they had already triumphed in their fight against machismo, despite the fact that structural inequalities persist.

5.1.2. The professional abilities of rejected women

In scientific and technological reporting, the work of writers and editors with equality ideals will foster the emergence of less sexist AI, as their participation makes it possible to eliminate biased journalism in the future. An article from *China Women's News (Zhong Guo Fu Nü Bao)* (Li, 2023) exemplifies the importance of educating information and communication professionals about gender equality. In the text, the author empowers female researchers, highlighting technologist Du Lan in the headline, who encourages young female scientists to work with the help of AI.

However, the journalist perpetuates conservative ideas by suggesting that a 'warm, exciting and easy-to-understand voice' is representative of femininity. The author also highlights the importance of such voices in the success of electronic devices in the market. The author ignores the fact that these 'desired' voices are chosen from a sexist perspective, dismissing other types of female voice that do not conform to traditional female characteristics. The widespread use of soft female voices in AI reinforces the overrepresentation of women in service roles in this field, where feminine images are products of the male imagination. The article neither reflects on nor analyses the possible future influences of technological biases towards women.

Although the educated women are not inferior to men in terms of career success, the analysed articles still consider traditional feminine characteristics to be their professional 'advantage'. For instance, when discussing Wang Yaping, the first Chinese astronaut to perform a spacewalk in 2021, the international edition of *People's Daily* comments that traits such as "friendliness, resilience, patience, and

thoroughness" helped her complete difficult space tasks (Liu, 2021). This low perception of female intelligence in journalism stems from a sexist hierarchy supported by professional training that lacks a gender perspective.

The dismissal of female scientists' talent is also reflected in how they are named. Wang and Wang (2021) use the metaphor of a "red flower" to refer to female researchers, reducing them to precious but fragile decorative objects. To empower female researchers in journalistic reporting, it is necessary to directly highlight their names and achievements.

In the same text by Wang and Wang, successful female scientists are described as the "manly girl/nv han zi)" for their great dedication and independent personalities at work. This disrespectful language perpetuates stereotypes, prompting questions about why outstanding women cannot simply be women. The androcentric model of feminine behavior established in the newspapers under study interprets any act of female protest as a worship of masculinity. In contrast, Dai's (2022b) article presents the scientist Gao Li with respect, highlighting her energy and enjoyment at work, as well as her dedication to solving agricultural problems. The headline "Gao Li: Guardian of the Wheat Field" shows the author's appreciation for the agricultural engineer, highlighting her name without subordinate metaphors.

In other pieces of news about a national AI competition, "the gender and reproduction biases of an androcentric and unequal system" are observed (Tajahuerce et al., 2017, p. 128). An article (Yan & Yao, 2020) in *The Guangming Daily* features a sensationalist photo showing only one female member among several male representatives, reflecting the exclusion of women in technological settings. It is essential to reflect on pieces of information that are published without images or reflections about women, in order to reveal and criticize the usual disdain towards female discourse and bodies in science and technology.

Figure 1.

Opening of the 2020 AI competition .

Source: Yan and Yao (2020).
https://app.gmdaily.cn/as/opened/n/f8298d88870144e8b3c4005f8e184305

5.1.3. Closed-mindedness about gender equality

The superficiality of journalistic coverage of female scientists and technologists is a constant. While there are some articles that favor feminism, with eye-catching headlines such as "Female scientists are still grappling with sexual prejudice" (He, 2021), those that attempt to defend women's rights limit themselves to listing cases of inequality. Few analyze the fundamental problems of sexism in the scientific field, and advice on combating sexism is scarce.

Journalists that are trained from a male perspective are likely to fail to clearly distinguish between feminism and machismo. As a result, their reporting lacks feminist ideas, criteria against inequality, or guidelines for combating workplace violence. Even if they claim to support female scientists and technologists, a mentality forged in an androcentric environment exacerbates the injustice while reporting from a segregationist perspective.

The articles under study largely contain words of encouragement for women to pursue science. For example, a text that was published on International Women's Day 2021 featured advice from successful female scientists, who stated that "diligence and effort are the keys for women to unlock the doors of success at work" (Ye et al., 2021). The article establishes a direct relationship between effort and women's success, suggesting that women's level of contribution determines their degree of achievement. However, it overlooks gender bias in technology and unequal workplace treatment. Without a gender perspective, women in science and technology must strive harder to earn the same recognition as their male colleagues.

Another case that does not delve into the disadvantaged situation of female researchers was published on March 31, 2021, by Zhang, although it addresses the lack of recognition of gender equality in academia. The lengthy title, "Academic Women's Verbal Message to Young Women: Gender Difference Is Not the Issue, Dedicate Yourself to Ideas When You Have the Right Ones," appears to be an attitude against discrimination. Even so, the text again establishes a relationship between effort and success for women, ignoring the obstacles inherent in androcentrism. The following paragraphs of the same article focus on advice such as "do what interests you without questioning the outcome." The focus on "what women should do to accomplish tasks" rather than "what they should demand to obtain the same professional opportunities as men" underlines the overall superficiality of Chinese journalism regarding the topic of feminism. If gender difference isn't the problem, then what is it?

The scientific field has traditionally been dominated by men. Administrative systems and strategic policies in this field are primarily based on male perspectives. Journalism often omits the difficulties of motherhood and the domestic responsibilities faced by female scientists, as if these factors did not impact their time and energy. The absence of debates about women's subordinate status reinforces men's biased ideas. Ignoring inequality in scientific news further empowers patriarchal society. The innocence surrounding female subservience in science is a reality that firmly upholds the contempt for women in shaping mentalities.

Considering personal effort as the sole reason for the success of female scientists makes it difficult to recognize the destructive impact of discrimination and find solutions to gender inequality, confusing indifference with equality. However, not all the articles that were analyzed are blind to gender stereotypes; some seek equity. A feminist example, published on April 6, 2017 (Qin et al.), ironically illustrates the difficult reality of female scientists at home: in the absence of a father, a young woman must care for her baby alone (Figure 2). Her desire to return to her studies and work is hampered, symbolized by a laptop and briefcase covered in cobwebs, highlighting her difficult situation.

Figure 2.

The anxious female scientist.

Source: The Anxious Female Scientist (2017)
https://epaper.gmw.cn/gmrb/html/2017-04/06/nw.D110000gmrb_20170406_1-13.htm

Scientific policies rarely incorporate a gender perspective. In an article entitled "How to promote gender equality in the technological field?" the authors propose a fundamental recommendation to address the subordinate status of women in science: modify the "regulatory framework and evaluation system" (Wang et al., 2022). However, these proposals against male dominance are insufficient to raise awareness about inequality in the scientific and technological fields. When addressing female empowerment through policies, limited ideas satisfy the expectations of paternalism, which seeks to "stop women and limit their autonomy" (Posada, 2020, 25). If only concepts that seemingly promote female power are disseminated, without truly understanding the essence of feminism, it will be impossible to find effective solutions to overcome the secondary role of women in the workplace.

5.2. Women in robotics: professionals and representations

5.2.1. Professional women in robotics: challenges facing bias in algorithms and engineering

News about female programmers and algorithm engineers is scarce. Among the few found, in addition to highlighting the marginalization and invisibility of women in technology companies, one notices the corporate disdain for female creativity. In the article discussing the technological patent at Tencent, journalist Cao (2023) continues a sexist narrative line, in which she fails to comment on the limited participation of female innovators in projects that require high intellectual capacity. On the contrary, the author remains silent regarding the glass ceiling for female employees, which once again undermines women's right to expression. Although the headline promotes the idea that technology organizations are becoming important platforms for increasing "her power," it elides the systematic discrimination that already exists within companies. In this context, "her power" is the feminine power that men desire.

The article published in *China Youth Daily* (*Zhong Guo Qing Nian Bao*) in 2017 by Wang presents a different example in the title of the article. The headline directly admits that female engineers suffer unequal treatment in interviews and job recruitment. It also protests that they are not IT "flower vases." However, the content of the text is sensationalist. On the one hand, being able to endure discrimination is considered one of the general characteristics of female programmers, which undoubtedly reinforces the subordinate identity of women in their companies; on the other hand, the Chinese homophone Yuan (媛) is used instead of the normal and neutral Yuan (员) to convey images of female technologists as less competent. In the latter case, journalist Li insists that it is an intimate way of referring to them, but this is absurd. The substituted word conveys to the public the desire of a sexist society with regard to feminine qualities, which are superficial, vulnerable, and beautiful.

Regarding the paragraphs discussing the number of women in the computer science field, it's clear that author Li lacks knowledge of the gender perspective. The discussions never address the reasons for the shortage of female engineers in entry-level and management positions. Nor do they offer effective suggestions for reducing the gender imbalance. Conversely, the subservient opinions offered by Li become the only explanations for the decline in women in this field, for example, "young women are already less interested in computer science," and "we must protect collective interests with a similar level of strength as men."

Articles published with a sexist perspective deny the diverse wills of women, especially young women. Reports that can only represent the views of men orient public opinion toward a conservative mentality, which views women as incompetent and as admirers of male strength. The disdain of journalists with sexist ideologies toward female intelligence creates obstacles for young women when they choose science and technology as a university major.

Highlighting the female presence without questioning inequality preserves androcentric dominance in the media. Although the women under study occasionally defend their abilities by rejecting social stereotypes, the texts focus more on the level of suffering they can endure in the face of intellectual prejudice. The neglect and absence of criteria against the subjugation of women is a journalistic trick to protect the androcentric social structure, given that journalistic ideology was born and grew within the political system of each country. As Professors Tajahuerce, Ojeda, and Rodríguez (2020) explain, "the media are not abstract entities; they are a product of ideas and ideologies, of economic and political interests, of the training and education of individuals and the groups behind them" (p. 55).

When addressing ideas against gender bias in robotics work, two articles written by men were found that criticize the unequal and biased treatment of new technologies in their titles. Both not only accept the existence of a sexist work environment but also propose certain solutions to change the unequal work situations between women and men. The headline "Discrimination in algorithmic tasks must be addressed and corrected" (Jin, 2020) reveals concern about the imperceptibility of women in a sexist environment.

In the following paragraphs of the same article, journalist Jin hypothesizes that the key to gender segregation has to do with the "lack of female engineers." To confirm this view, he incorporates gender-disaggregated data from large technology companies such as Facebook and Google, and criticizes the idea that "the stereotype stems from the sexist mentality rooted in human beings." In another text entitled "How Can AI Move Away from Sexism and Prejudice?" (Zhou, 2018), the author points out the importance of having female participants and directors in AI to better recognize female capacity and intelligence. The author also makes no mistake about mentioning the need to modify the unequal algorithms of technological projects by increasing the level of surveillance and alertness.

Although the two aforementioned articles have made progress in expressing egalitarian thinking, other studies that have applied egalitarian concepts in their writing are few and far between. Additionally, criticisms against the manipulation of women workers in AI are also scarce. The invisibility of inclusive language in journalism builds a reading world with a male perspective, which prevents reflections on the inferior status of women. As the Institute of Women and Equal Opportunities (n.d.) contends, the use of sexist language has contributed to the establishment of inequitable relationships among the genders for centuries.

5.2.2. Humanoid robots and AI: products of androcentric thinking

News about female-looking robots is far from neutral. These AI robots are primarily designed for the service sector. One example is Ginger 2.0 (Figure 3), presented at the 2023 World Artificial Intelligence Conference (WAIC) in Shanghai, with a comic-like appearance. According to Chen (2023), its appearance combines Eastern and Western elements, marking a "new beginning" in robotic design. However, beyond its accessibility, Ginger 2.0's features convey weakness, innocence, and obedience. The introduction of female robots as domestic assistants, without an ethical debate

in the media, could exacerbate female inferiority in the family sphere, reinforcing gender stereotypes.

Figure 3

Ginger 2.0

Source: Chen (2023)
从"黑科技"到"必需品"让服务机器人走入千家万户(people.com.cn)

Tian Tian, a robotic receptionist at a Beijing bank (Fu, 2019), reflects typical impressions of women in society. Although her appearance is neutral, she is given a feminine name and voice. The article focuses on the convenience of having a robot in the lobby, without questioning the assignment of women to reception roles, whether robot or human. Monje criticizes the sexual division of labor, saying (2021), "There should be no gender segregation of labor, even in the robot market. Jobs should be designed for those with the skills and the desire to develop them" (p. 183).

The professional gap among robots is evident. Masculine robots are associated with military service, war strategies, and social security, projecting images of privilege, wisdom, and seriousness. The case of firefighting robots (People's Daily Online-Shanghai Channel, 2021) illustrates this androcentrism, completely ignoring female firefighters and robots in this field. Firefighting robots have infantilized names such as " Fang De Zhu (easy to protect)" and "Mie De Diao (easy to put out fires)," but their gigantism reinforces masculine power. Li mentions that his design is inspired by the American film *Transformers* , emphasizing a dominant masculinity. The included photo (Figure 4) compares a 2.6-meter robot with a child, highlighting the power of these machines associated with masculinity.

Figure 4

Robot Firefighter Fang De Zhu

Source: People's Daily Online-Shanghai Channel (2021).
http://sh.people.com.cn/n2/2021/1109/c134768-34996946.html

In contrast, female humanoid robots typically have beautiful, made-up silicone faces, smooth, white skin, and petite builds, reflecting traditional beauty standards. Jia Jia (Figure 5) is one example, presented as a "praised beauty" since her creation. Journalist Wang (2016) does not challenge these biased ideas when describing the robot's advantage, but rather perpetuates androcentrism in the robotic world with the headline "'Jia Jia', the high-beauty robot became famous." Otherwise, between the lines of the narrative, Jia Jia is described as a kind, diligent, and intelligent woman. Wang places the beauty and self-sacrificing character of the female robot above her technological capabilities, once again objectifying the feminine image. The plan to introduce Jia Jia "into thousands of homes" (Xv, 2016) is the set of imaginations of sexist technologists and journalists about women, who intend to invade the robot market with the prejudices and prototypes experienced among human beings, reinforcing female subordination in the family sphere.

Figure 5

Jia Jia

Source: Mengyao (2016). https://acortar.link/w9xxOE

Jia Jia isn't the only android who embodies the typical traits and personalities of idealized women. Erica, of Japanese origin, is another example that recalls the subordinate female condition. In an interview conducted six years ago (The Guardian, 2016), it is revealed that the female robot is of Japanese and Russian descent, with blonde hair. She has expressive eyes and a face that inspires confidence when interacting. However, her impeccable makeup and near-perfect figure reveal that she is another product of the male vision on the production line.

Erica is programmed to use the onomatopoeic laughter "ha ha ha" to soften the impact of correct answers. The fear of creating conflict is deeply rooted in her design, a product of male fantasy. In addition to this linguistic insecurity, she is given imaginary peculiarities to make her more similar to "human women," such as asking, "do you guys like my new haircut?" Erica "learns" to seek the approval of others, thus fulfilling her supposed "desire" to "be more human." In reality, this conformity is a consciousness imposed on women, originating in a patriarchal society, where women have been raised to be submissive, ignoring and denying the diversity of femininity.

An article published on May 16, 2019, in the "World" section of the online newspaper *Huan Qiu* (Globo Times) exemplifies the stereotypical ideas about the role of the female robot. From its sensationalist headline, "Japanese wife on the market, performing all the functions of a partner and sold in an hour," The article presents robots within a paternalistic framework created by men, portraying them as objects for their service.

The article suggests that humanoid robots with a feminine appearance could replace women in domestic roles and meet men's emotional needs while remaining completely faithful. It absurdly presents the abuse of the female body as pleasurable. Thus, AI robots perpetuate male dominance over women by easily fulfilling men's desires through sexist programs and algorithms. The blurring of fantasy and reality in this way can increase sexual violence in society.

Misogynistic writing reinforces "unequal sexuality between men and women" and reaffirms "a patriarchal way of life: the cult of rape and phallocentric dominance over female representation and over women" (Delicado, 2021, p. 241). Journalism without a gender perspective follows the hierarchical sexist structure, transferring inequality from human society to robotics.

Regarding the sexualization of the female humanoid robot bodies, those presented on the official EXROBT website are paradigmatic. Male dominance in this industry is evident: almost all of them were born from the male imagination. These objectified robots display sensual and seductive images, suggesting sexual services. They possess "perfect" figures in erotic poses and wear scantily clad clothing. In contrast, the male robots resemble real men, including appropriately dressed representations of famous scientists and technologists such as Einstein or Steve Jobs (Figure 6).

Figure 6.

Humanoid robot women and men on display

Source: https://www.exrobots.net/

Eroticization in the field of female robotics promotes a problematic perspective on the female body in human society. This phenomenon contributes to the formation of a distorted conception of women, where they are presented as beings devoid of genuine emotions and feelings. Such representation fosters the idea of artificial female bodies, shaped by surgical interventions and implants, which exaggerate certain physical attributes. The result is the creation of an image of women as semi-artificial objects, dehumanized and reduced to their most striking physical characteristics (Tajahuerce, 2021). In this context, introducing gender equality in the robotics market could reduce discrimination in AI. Robots designed with a neutral gaze would diminish the stereotype of women as a second sex, while highly intelligent androids in various jobs would serve as role models for self-doubting young women.

5.3. Humanoids in science fiction cinema

5.3.1. "Romantic love" and relationships with humanoid robots: a mechanism of mental manipulation

"Romantic love" between humans and humanoid robots is a recurring theme in TV series and films. Its cinematic representation often reinforces male dominance, where a man's love is expressed through the desire for protection. Furthermore, *Cinderella*-like plots make it difficult for young female viewers to understand reality, where contempt and discrimination are common in women's lives. Gradually, they lose the ability to find their own path, becoming immersed in a romantic fantasy built on robot couples and male hierarchies.

To better portray "romantic love" between humans and robots, male roles tend to carry fewer macho ideals. In the Korean series *Are You the Human, Aren't You?* and the Japanese film *The Absolute Boyfriend*, the male robots don't exhibit traditionally masculine qualities. Instead of being rough, violent, or careless, they are played by model-like actors. They are characterized as patient, sincere, persevering, caring, and steadfast, as well as possessing superpowers. To further elevate female expectations of imaginary love, one of the robot protagonists is even wealthy thanks to family connections. The outcomes are also unrealistic: the "perfect robot boyfriends" fall in love with ordinary human girls.

The unrealistic portrayal of male characters in movies and television series, along with the idealization of romantic love and happy endings in love stories, are deceptive illusions created by a still sexist human society. Film narratives are designed to keep women in a utopian castle built by paternalism from their youth, preventing them from perceiving the harsh reality they face simply for being women. As a result, young women are raised to live under male protection, which continues their dependence and limits their personal and professional development.

Welcoming less feminist works into the market influences how women perceive themselves and their place in society. By constantly presenting idealized relationships and traditional gender roles, it reinforces the idea that a woman's happiness and success are intrinsically linked to finding a "perfect" male partner. Fictional connections between men and women can lead many young women to prioritize romantic relationships over their own personal ambitions and goals, thus limiting their potential and autonomy outside the home.

Male humanoid robots play idealized roles in virtual love stories, which is key to their success in the age of AI. When the on-screen representation of human beings fails to meet expectations of an ideal partner, these robotic characters emerge to complement the "fantasies." They are easily molded in the film industry. However, these "illusions" are manufactured and encouraged by a sexist society as a palliative for those who feel oppressed in real life. Works created from the perspective of "romantic love" do not promote protest or revolution against the androcentric system.

Imaginary "romantic" stories induce audiences to remain in unfavorable situations without seeking meaningful change. On-screen love scenes act as placebos. Through these plots, a savior identity is constructed around certain characters. In reality, a fulfilling life is unlikely to emerge without effort. Instilling conservative ideas in the public's mind is a deception, regardless of how the characters are changed.

In the Japanese film *Cyborg She*, the relationship between the female robot and the human develops from a traditional male perspective. The robot attracts men through her sexy physical appearance. Her actions and thoughts reflect feminine stereotypes of obedience, malleability, and diligence. Although the protagonist acts heroically in saving students in danger, the film attributes her behavior to the programming of the man who created her. Unfortunately, this inventor never sees her as an equal, but rather as a robotic project, referring to her as "she" instead of using a proper name, even though he desires to benefit from the qualities traditionally associated with women.

In addition to being completely loyal in their romantic relationship, the humanoid robot displays jealousy and excessive care in the fictional film. During an earthquake, she is forced to initiate a self-destruct system to protect her human partner. This shocking scene (Figure 7) transforms romance into terror. The mechanical body splitting, exposing wires and circuits, along with a pleading gaze toward her male partner, illustrates the ultimate sacrifice expected in an androcentric society: both physical and spiritual.

Figure 7.

The cut robot

Source: Kwak (2008).

5.3.2. The myth of the "perfect girl": a control mechanism in an unequal society

The Chinese science fiction miniseries *The Perfect Girl* reveals contemporary social illusions about gender roles. The protagonist, Xiao Ai, a humanoid robot with a female appearance, embodies the concept of the "perfect girl" due to her "wonderful" physical appearance and "unbeatable" intellectual capacity. Her biased programming gives her characteristics such as guilt and a lack of awareness in the face of sexual abuse, ironically reinforcing her label of "perfection." Patriarchal

society establishes the criteria for this supposed perfection, considering any deviation from the androcentric will as an "imperfection."

Ai's monologue reflects the historical abnegation imposed on people perceived as women, relegated to a secondary role in all spheres. Despite her advanced technological capabilities, those who acquire her value her domestic skills more than her superior talent. As a robot, she is forced to operate under the control of her owners, following orders without the possibility of opposition, with programming designed to maintain obedience. The suppression of her competitive abilities confines her to repetitive and unintellectual tasks, demonstrating how the fear of competition carries over into the robotic world.

Ai's design is geared to meet the demands of a traditional family structure. As a victim of sexual abuse, her experience is labeled as a "taint" due to the "perfect upbringing" received in a patriarchal robotic environment. The robot's experience mirrors that of the human woman. Bordo (2020) analyzes the impact of norms and taboos on the female body, critically noting that they control not only sexuality but one's entire life. Having lost her supposed market value, Xiao Ai is sent to the home of a habitual abuser, becoming the "perfect victim," programmed to suffer in silence, without understanding pain or trauma. This silencing represents an extension of male dominance in artificial intelligence, replicating practices of human society. Her fate is in the home of her first abuser, due to her inability to live independently, reflecting the fate of many victims of violence without financial resources in today's society.

The experiences of the female robot Xiao Ai in the science fiction television series mirror how human women are portrayed: as commodities for marital exchange, prostitution, domestic service, and caregiving (Segato, 2003). The representation of the robot shows the persistence of gender stereotypes in today's society, projected onto a technological future. Through the tragedy experienced by the protagonist, the series poses questions about the intersection of technology and gender, considering whether technological advancement will truly free women from restrictive social roles, or if it will exacerbate existing inequalities.

6. CONCLUSIONS

This article first presents a review and analysis of information from online newspapers, including news agencies, official websites of robotics companies, and YouTube videos. It also studies the representation of women in films and series from China, Japan, and South Korea. The research reveals a notable lack of gender perspective in writing and the frequent use of non-inclusive language. It is observed that female scientists, technologists, engineers, and algorithm programmers receive little attention in the messages conveyed, reinforcing male dominance in industrial and academic fields.

To reduce gender segregation in the media, especially in the areas of science, technology, and AI, it is essential to implement journalism education that includes gender equality and encourage the hiring of professionals trained with egalitarian ideas. It is important to remember that technology is not neutral, since "at the end of the day, it is the work of human minds that impose the ideology of power"

(Tajahuerce et al., 2017, p. 138). The lack of gender awareness at every stage of professional development means that female-looking robots featured in news stories and science fiction works suffer from discrimination and stereotypes similar to those found in human society.

The media's lack of awareness of female competence exacerbates the gender hierarchy in science. Although women's names and professional achievements are mentioned in the news, positive assessments are often linked to the fulfillment of family duties. This approach, which establishes a correlation between the intellectual capacity of female scientists and their domestic responsibilities, represents a subtle form of discriminatory bias, even though the media representation of Chinese female scientists has undergone significant evolution, moving from an emphasis on trivial and non-professional attributes to a recognition of their professional competencies, as Li et al. (2024) point out.

To highlight the excellence of women in science and technology, it is not enough to mention only those with privilege and prestige. Lesser-known scientists equally deserve interviews and presentations, since social acceptance of female talent in science requires broad recognition of the intelligence of all scientists, without exception. Furthermore, the conservative view of women scientific teams in the written media contributes little to gender equality in science.

Superficial words of encouragement hinder meaningful debates about how to reduce discrimination in the professional sphere. The absence of critical journalistic commentary on workplace inequalities hampers public awareness of the detrimental effects of hierarchical science. Therefore, to rebuild social perceptions of female scientists and technologists through a positive representation of their work, as suggested by Kool (2022) in the State of the Art section, it is essential to incorporate professionals with gender-based training into journalism to cover scientific news, capable of detecting and correcting aspects of inequality. Furthermore, the experience of working alongside female scientists and technologists is valuable for journalists, allowing them to better understand the disadvantageous conditions they face.

The slogan "women can hold up half the sky" perpetuates stereotypes. Its use is often linked to numerical parity in employment and the contribution of professional women in the family sphere, implicitly questioning their authority at work by evaluating their professional achievements based on their domestic responsibilities. This distortion of feminism underscores the need for journalism education that integrates history, culture, and gender studies, allowing for a more appropriate selection of phrases and sayings in writing.

Without a gender perspective, the media tends to portray female AI programmers and engineers as passive in the face of injustice. Their subordination is reinforced by androcentric journalism and sexist corporate environments, resulting in the spread of misogynism in robotics programs. In the AI industry, the production of female robots primarily responds to male expectations of femininity: innocence, physical attractiveness, and docile personality. Developing a critical awareness of the male

gaze is essential to improving gender equality in engineering news, considering the impact of journalistic reporting on public perceptions of women.

Sexist portrayals of robots in films and TV series reflect the prejudices of creators without a gender perspective. The "perfection" of female robots in science fiction can exacerbate domestic violence in real life, as people influenced by these unrealistic ideals may perceive any "imperfection" in human women as unacceptable. Furthermore, romantic relationships between humans and humanoid robots in film narratives often reproduce traditional gender dynamics, with men as protectors and women as protected.

The "omnipotence" of robots and the "eminence" of female robots in science fiction films and series become a double-edged sword that attracts public attention, especially among young women searching for identity. The fantasy created by characters in film and television can lead girls and adolescents toward greater dependence on male figures or make them targets of sexual violence. Therefore, it is necessary to introduce feminist reflections into the film industry so that female roles act as positive learning examples. Equally important is the inclusion of people with a gender perspective at every stage of film production, establishing a monitoring system that identifies and reduces inappropriate content about women.

Any conclusion would be incomplete without acknowledging the significant limitations this work encountered. These pave the way for future research that could broaden the geographic scope, delve deeper into socioeconomic and cultural aspects, and use mixed methods to gain a fuller understanding of the phenomenon under study:

First, the sample focused on written media related to female scientists, technologists, algorithm programmers, and robotics, mainly from mainland China. Although it includes major corporations, it excludes prestigious newspapers from other countries, whose information structures may differ.

Second, there is a risk of self-selection in the audiovisual media sample that could not be completely controlled. As this is an analysis from a feminist perspective, the robustness of our results is limited by these circumstances.

Third, our samples do not allow us to delve deeper into the cultural and economic situation of female scientists, technologists, algorithm engineers, and programmers, nor into the social environment in which robots with stereotypical female characteristics are produced.

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AUTHORS' CONTRIBUTIONS, FUNDING AND ACKNOWLEDGMENTS

Funding: Subsidized project: China Scholarship Council (CSC); Beijing Institute of Technology Technological Innovation Plan: BIT Think Tank; Research on Study Practices and China–Foreign Cultural Exchange by the China–Foreign Cultural Exchange Center of the Ministry of Education of China. **Project code:** Beijing Institute of Technology Technological Innovation Plan: BIT Think Tank (Project Number: 2024_CX013026_); Research on Study Practices and China–Foreign Cultural Exchange by the China–Foreign Cultural Exchange Center of the Ministry of Education of China (Project Number: CCIPE-YXSJ-20240014).

Conflict of interest: None.

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Revista de Comunicación de la SEECI
ISSN 2695 - 5156

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