

From PGC to UGC to AIGC: Change of content paradigm

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Abstract. This research focuses on the rise of AIGC (Artificial Intelligence-Generated Content) in the content industry. With its efficient data processing and content creativity, AIGC has become an important driving force in the field of content production. Through comparative analysis before and after the introduction of the 'ERNIE Bot' in The Paper, this study explores how AIGC affects and reconstructs the content industry. The study found that AIGC technology significantly improved the efficiency of news production, optimized the path of content creation, made the content more accurate and personalized. The Paper uses 'ERNIE Bot' technology to not only improve the efficiency of content review but also to better understand audience preferences. However, the application of AIGC technology also brings challenges. The study also points out that the development of AIGC technology relies on the support of algorithms, meta-universes and blockchain technology, while also sparking discussions on intellectual property, copyright, ethics and other issues. Overall, the wide application of AIGC technology is profoundly changing the ecology of the content industry and journalism, providing new opportunities for content innovation and development. However, while enjoying the convenience brought by technology, it is also necessary to prudently deal with its potential risks and challenges.

1 Introduction

With the explosive popularity and widespread discussion of ChatGPT, generative artificial intelligence has become another new vane of the digital society. In the WEB3.0 stage supported by blockchain, artificial intelligence and other basic technologies, the content production model of AIGC was proposed. Some scholars believe that this will lead to the content market again being biased toward the professional side, which is a manifestation of redistribution. The AIGC content revolution has transferred the right to define content from professionals to ordinary people, and now it has returned to the professional dimension again, but this time it is the robot that decides what content is [1]. Content is not only the object of today's cultural production and consumption, but also a kind of industrial logic, economic paradigm and social system, and a general concept that was named after the emergence of the Internet [1]. At present, with the development of media technology and the drastic change in communication ecology, the connotation and extension of "content" are further extended

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[1], and the traditional "content" paradigm is no longer sufficient to support the expansion of the media industry territory and the play of roles and functions under the wave of generative AI [2]. This study aims to sort out the context and summarize the experience of PGC, UGC and PUGC, the product of their combination, and explore the possibility of AIGC's content reconstruction as well as the crisis and choice hidden behind technological empowerment through the differences before and after the introduction of 'ERNIE Bot' in The paper.

2 Literature review

AIGC shows the strong strength of artificial intelligence technology in the field of content generation with its technical characteristics such as data magnification, content creativity, cross-modal fusion and cognitive interaction. The evolution of Internet form, the transformation of content production mode, the upgrading of human-computer interaction mode and the transformation of network resource organization provide the basic conditions for the development of AIGC [3]. Content production has gone through stages of development from PGC, UGC, and PUGC to AIGC, and each stage has seen advancements in terms of people involved, amount and richness of content, AI capabilities, and more. Content production mode and supply structure are constantly changing, and artificial intelligence has become an important force in content production, improving production efficiency and creation quality [4]. Under the new paradigm, content production is no longer limited by the traditional centralized platform but can achieve more free and flexible production and dissemination through decentralized means, further enriching the content ecology of WEB3.0 [5].

In the Web1.0 era, Internet content was mainly generated by professionals, with high quality but also high cost and limited quantity. In the era of Web 2.0, user interaction has become possible, mass users become content creators, and the amount of content is growing rapidly, and the cost is low, but the quality is uneven. However, user-generated content has a profound impact on user behavior and value co-creation [6]. UGC and PUGC generate personalized content through Internet platforms, but they are susceptible to group pressure and result in the homogenization of content [5]. AIGC achieves personalized content production through intelligent identification and data capture, which mostly avoids homogenization. The content generated by AIGC has rapidly penetrated the knowledge expression space, challenging PGC and UGC and becoming one of the important subjects of content production [6]. Lan Peng [7] pointed out that in the era of intelligent communication, the machine becomes the main body of communication, which is the most essential feature and involves three new human-machine relationships: human-machine collaboration, human-machine communication and human-machine symbiosis. Human-machine collaboration not only affects the content industry but also gradually affects People's Daily survival. AIGC technology promotes human-machine collaboration to penetrate individual life [7] and promotes the trend of knowledge transformation from dissemination to exchange, realizing human-machine two-way intelligence, and improving the frequency and effect of knowledge exchange [6].

Through powerful knowledge reserve and generation technology, AIGC technology undertakes the work of information mining, material invocation, writing and editing in journalism, which greatly improves the production efficiency of media content and optimizes the production path. AIGC has remarkable advantages such as excellent response-ability and clear content structure, but it also has problems such as limited understanding level, and lack of creativity and expression [8]. With the widespread application of generative AI, journalists need to transform from information producers to information verifiers, bearing the heavy responsibility of verifying the authenticity of AI-generated content. Journalists should play

the main role of "checker" in human-machine coordination to ensure the truth and accuracy of news [9].

Under the impact of artificial intelligence technology, journalism faces multiple challenges, including the resolution of professional boundaries, the issue of news authenticity, and the ambiguity of copyright, which affects the legitimacy, subjectivity and function of journalism. But at the same time, AI technology will also change the underlying operation logic and production rules of journalism, give birth to new news products and forms, make news consumption more humane, and promote the deep reshaping and upgrading of journalism [10]. On February 14, 2023, as the earliest new media transformed from traditional media in China, The Paper News, a subsidiary of Shanghai Press Group, took the lead in announcing that it would become the first batch of early experience officers of Baidu's 'ERNIE Bot' [11]. In the future, The Paper News will experience the comprehensive ability of the 'ERNIE Bot' and create a whole system of content ecological artificial intelligence products and services [11]. Traditional news production mode consumes time and energy, limits the scale and speed of news production, and has difficulties in pursuing timeliness. The verification process of news sources also affects timeliness. Journalistic professionalism, while ensuring objectivity and impartiality of the news, may limit the angle and depth of reporting. In addition, news events will be screened, giving priority to stories with high news value, and considering the needs of the audience to attract readers. In this context, the efficient and accurate automatic summary function of the 'ERNIE Bot' is particularly important. It can not only quickly extract the core information of the text and generate a concise summary, to accelerate the selection and filtering process of news content, but also improve the efficiency of news media handling many news materials and reduce the burden of manual screening through automatic generation and auxiliary creation functions. At the same time, with the automated tool of 'ERNIE Bot', The Paper can conduct content review more efficiently to ensure that the content of the report is in line with social and cultural norms. The data analysis function of 'ERNIE Bot' can also help The Paper more deeply understand the audience's reading preferences and trends, to accurately adjust the reporting strategy. Therefore, the following will take The Paper News as a case study to analyze the characteristics and differences of its news production and distribution on the Weibo platform before and after its involvement in 'ERNIE Bot'.

3 Methodology

This paper will take the time node of February 25, 2023, 11 days after The Paper access to 'ERNIE Bot', to analyze the characteristics and differences of The Paper's news production and distribution on the Weibo platform before and after The Paper's involvement in 'ERNIE Bot', and analyze the changing trend and impact of the content paradigm when AIGC technology is applied to mainstream media. This study used Python tools to capture 778 Weibo posts from February 15, 2022, to February 25, 2023, and 805 Weibo posts from March 17, 2023, to April 26, 2024, respectively. In this study, Weibo links, Weibo text, publication time, number of likes, number of forwarding, number of comments, topic, title and article links were used as analysis parameters and automated tools were used to analyze and process the relationship between the data. This paper wants to explore: 1. In the two periods before and after access to the 'ERNIE Bot', contact the release time, the number of likes, the number of comments, the number of forwarding, the topic, and the title; 2. In-depth analysis and comparison of the content of the two periods before and after access to 'ERNIE Bot'. The results showed that Weibo covered different topics and was posted at different times. The number of likes, comments and forwards varies from post to post, three indicators that reflect the popularity and user engagement of The Paper's microblog. Through the in-depth analysis

of these information, we can gain insight into the communication effect of Weibo content, user interaction and social hot topics behind it.

4 Result

4.1 The release of Weibo before ERNIE Bot's intervention

This study found that the choice of Weibo release time before 'ERNIE Bot's intervention (from February 15, 2022, to February 25, 2023) may be related to the timeliness of news events, holidays, specific anniversaries and other factors. Some Weibo posts choose to be released shortly after major news events, and the release time of Weibo posts is often closely related to the occurrence time of social hot events. When an event occurs, The Paper will quickly release relevant micro-blogs, triggering public attention and discussion. The closer the release time is to the time of the event, the higher the number of likes, comments and forwards tend to be. Some choose to release on holidays or anniversaries, such as the Mid-Autumn Festival or during the World Cup. These periods often attract many users' attention, improving the exposure rate and transmission speed of Weibo posts. The topics of Weibo posts' content are diverse, including social news, current political hot spots, entertainment gossip, interesting life stories, etc. Weibo posts content often revolves around social hot topics, such as international political events, natural disasters, and sports competitions. Social news and current political hot topics usually have high attention and participation; Entertainment gossip Weibo posts are more likely to trigger easy discussion and sharing among users. The Paper's Weibo posts cover politics, society, science and technology, culture and other fields. High-frequency topics include "Russia-Ukraine conflict", "COVID-19 epidemic", "digital economy", "education policy", "digital economy", and "live commerce". The Paper's Weibo post headlines are often closely related to the core of the event and summarize the main points of the event through concise language. High-frequency keywords "sudden", "latest", "hot discussion", etc., reflect the urgency and attention of the event.

4.2 The release of Weibo before ERNIE Bot's intervention

After 'ERNIE Bot's intervention (March 17, 2023, to April 26, 2024), the release time of Weibo is spread over multiple times, including daily working days and weekends, and Weibo published in popular times (such as evening or weekend) is easier to attract users' attention, thus obtaining higher likes, forwards and comments. Some important events are reported in the first place, especially when emergencies occur. The Paper's Weibo content release time covers different periods from morning to late at night, reflecting the immediacy of its news and 24/7 updates. Through the analysis, it is found that micro-blogs related to hot topics such as education equity and social justice tend to get higher likes and reposts. During the period from March 17, 2023, to April 26, 2024, Weibo posts on certain topics will be found to have higher attention and communication power. Through the analysis of Weibo text, some high-frequency keywords can be summarized, such as "education", "social events", "culture and entertainment", "science and technology trends" and so on. Among them, education topics such as "universities require handwritten graduation papers" have triggered widespread discussion; Social events such as "Handan junior high school student murder case" aroused public concern on social security issues and legal ethics; Cultural and entertainment topics such as Jay Chou's concert show the prevalence of cultural industry and fan culture; Tech news topics such as "Microsoft responds to being asked to pay back taxes" reflect the current state of competition and policy regulation in the tech industry. High-frequency keywords

include "shock", "sudden", "hot discussion" and so on, these words increase the appeal of the headline, prompting users to click to read.

4.3 Comparison of Weibo Release before and after ERNIE Bot's intervention

The results of the previous two studies also have high-frequency keywords such as "school", "police" and "incident", which reflect the thematic concentration of the text content of Weibo and the hot spots of social attention. Through the analysis of these keywords, it can see the hot topics and event trends of social concern. Weibo text involving major social events and well-known figures often receives a higher number of likes, comments and reposts, thus triggering wider attention and discussion. Compared with Result 1, Result 2 May focus more on continuous reports of a certain period or a certain topic, and the release time of Weibo posts has an important impact on its communication effect. In result 2, it is found that some contents of Weibo with specific topics have higher attention and communication power and focus on in-depth reporting and analysis of a certain field or an event. High-frequency keywords may include technical or descriptive terms related to the topic, such as "investigation", "analysis", "hot topic", etc. These keywords reflect The Paper's ability in special reports and in-depth analysis, as well as its continuous attention to social hot events. By comparing results 1 and 2, after accessing 'ER NIE Bot', The Paper not only maintains timeliness but also enhances the characteristics of immediacy and updates around the clock of news. In terms of content selection, it is more inclined to report the hot topics that the audience cares about; Through the data analysis function, it can more accurately understand the audience's reading preferences and trends to adjust the reporting strategy; And enhance the appeal of the title to increase user click-through rate and read volume.

Table1. Comparison of Weibo Release before and after ERNIE Bot's intervention

Contrastterm	Before ERNIE Bot intervened (February 15,2022 Day-February 25,2023)	After ERNIE Bot's intervention(March17,2023-Apr126,2024)
Weibo release time	Related to timeliness of news events;holidays and specific commemorative days.	Scattered in multiple time periods,including weekdays and weekends,popular time periods are more attractive to users
Weibo content theme	Social news;current political hot spots; entertainment gossip; anecdotes of life,etc.	It involves hot topics such as educational equity and social justice,as well as cultural entertainment and scientific and Technological trends.
Weibo release time	Closely linked with social hot events; concentrated before and after the event.	Covers different time periods from morning till late at night,reflecting immediacy and all-weather update.
Weibo Comment; Forwarding; number of likes	It is related to there lease time; content theme, and it is higher during major events and holidays	Weibo is more likely to get high praise,forwarding and special topics during hot hours Number of comments
High frequency topic	"Russia-Ukraine conflict"; "COVID-19 epidemic" and "digital economy".	Education equity,social justice,culture and entertainment,science and technology dynamics,etc.

Weibo title keywords	"Sudden"; "Latest"and "Hot Discussion"etc.	"shock", "sudden"and"hot topic"increase the attraction of the title
Characteristics of Weibo Report	Strong timeliness; focusing on social hot spots	Keep timeliness and enhance immediacy and all-weather updates,focusing on hot topics and in-depth reports.
Audience's reading preference and trend	Attract users through social hot spots and news events	Understand audience preferences more accurately through data analysis and adjust reporting strategies
Title attraction improvement	The title closely follows the core of the event and Summarizes the main points	Headlines are more attractive,increasing users' click-through rate and reading volume.

5 Discussion

After accessing the ‘ERNIE Bot’, The Paper’s news production and distribution on the Weibo platform has shown more timely, accurate, in-depth and interactive characteristics. These changes not only improve its communication effect and user participation but also reflect the active exploration and innovation of mainstream media in coping with the challenges of new media. AIGC not only brings about technological changes in content production and efficiency improvement but also shows great potential in the integration of digital and reality.

ChatGPT and ‘ERNIE Bot’ are regarded as landmark products of general artificial intelligence, indicating that artificial intelligence has reached or exceeded the level of ordinary humans in a wide range of fields [12]. ChatGPT and ‘ERNIE Bot’ is a natural language generation model based on deep learning, with excellent language understanding, generation and knowledge reasoning capabilities. Generative artificial intelligence has wide application potential in topic selection and drafting, content writing, editing and proofreading, typesetting and printing, etc. It can help the press enrich content production sources, reduce costs, improve efficiency, and enhance personalized service levels [13]. ChatGPT implements probabilistic language analysis and content innovation through the large language model GPT-3, which is like the way human culture is produced and challenges the original author system. ChatGPT not only has the "generativity" of cross-context operation but also shows its characteristics as "language existentialism", which brings new possibilities for human cultural production [14].

Although AIGC technology can generate a large amount of content, the quality of this content is often uneven. The application of AIGC technology also involves technical security and privacy protection. The rapid development of AIGC technology has also raised intellectual property and copyright issues, as well as some moral and ethical issues. Because AIGC technology needs to process a large amount of user data, this data may contain the user's personal privacy information. The high cost of high-quality data sets and large-scale computing power input required for large model training, and the problems of technology monopoly and algorithm bias also require attention. In the future, it is necessary to promote the decentralized development of AIGC technology, strengthen basic research and technological innovation, improve data integration and cost-effectiveness of computing power, and ensure the inclusion and security of technology [4].

AIGC's development relies on algorithms, meta-universes, and blockchain technology. The algorithm determines its generation effect, the meta-universe provides space for its development, and the blockchain technology guarantees the security of its digital assets. To discuss the future of AIGC, it is necessary to consider the integration of these technologies and the solution of existing problems. In addition, content produced by AI is fundamentally

different from content produced by humans in terms of creative process, subjectivity, creativity, emotional expression, and ethics. While AI technology has potential and advantages in the field of content creation, human creators are still the dominant force in content creation.

Faced with the challenges and opportunities of AIGC technology, Yong Hu [1] proposed the necessity and path of content reconstruction, including strengthening content audit and supervision, improving content quality, and protecting original works. Guoming Yu [15] pointed out that the subject's reflection on the human-machine relationship can improve interpersonal relationships, provide new possibilities for the integrity and harmony of interpersonal relationships in modern society, build the value connection of "human-content-thing" based on scene elements, and emphasize the effective connection between the rise of individual value in future communication and the microparticle society [15]. In the future, it is also necessary to solve the problems of generative artificial intelligence in terms of experiment, instability, legitimacy and insularity, etc., to ensure its safe and effective application in governance [12].

6 Conclusion

AIGC technology is profoundly changing content production and journalism, reshaping the content ecology and news consumption patterns of the digital society. This study analyzes how AIGC technology is ushering in a new era of content production, with the evolution from PGC, and UGC to AIGC demonstrating significant advances in artificial intelligence in the field of content generation. AIGC not only improves production efficiency, but also promotes the personalization and diversity of content, but it also faces challenges in understanding and creativity. Under the impact of AIGC technology, journalism is experiencing the dissolution of professional boundaries and the test of news authenticity, but it also ushered in new development opportunities. This study reveals the potential of AIGC technology to reshape the content market and journalism, providing an important reference for future content production and distribution. The significance of this study lies in the in-depth analysis of the impact of AIGC technology on content production and journalism, providing theoretical support and practical guidance for understanding the change of content ecology in the digital era, and helping to promote the innovation and development of content industry and journalism.

References

- [1] Hu Yong, Liu Chunyi. UGC is Not Finished, AIGC Has Come: Retrospection, Rethinking and Reconstruction of "Content" . *Contemporary Communication*.**05**,4-14.(2023)
- [2] Yu Guoming, Li fan. The Revolution of Content Paradigm: Eco-level Evolution of Content Production Under The Wave of Generative AI. *The press*.**07**, 23-30 (2023).
- [3] Li B Y, Bai Yun, Zhan X N, et al. Technical Characteristics and Morphological Evolution of Artificial Intelligence-Generated Content (AIGC) . *Library and Information Knowledge*.**40**,66-74(2023).DOI: 10.13366/j.dik.2023.01.066.
- [4] Cai Jinjin. The Influence of AIGC On The All-media Production and Communication System and Its Countermeasures. *The media*.**10**,16-20(2023).
- [5] Guo Quanzhong, Yuan Bolin. Organic Integration of AIGC and WEB3.0: A New Paradigm For Meta-universe Content Production [J]. *Southern Media Research*.**01**, 36-47(2023).

- [6] Liu Zhifeng, Wu Yaping, Wang Jimin. The Impact of Artificial Intelligence-generated Content Technology on Knowledge Production and Dissemination . *Journal of Intelligence*. **07**,42123-130(2023). DOI:10. 3969 /j. issn. 1002-1965. 2023. 07. 018
- [7] Peng Lan. Perspective and Prospect of Intelligent Communication and Human-machine Relationship From ChatGPT . *Journalism Bimonthly*.**04**, 1-16+119(2023).DOI: 10.20050/j.cnki.xwdx.2023.04.005.
- [8] Zhang Lanshan, Tang Huiting. AIGC: The New Revolution of Media Content Creation . *China Television*.**05**, 94-100(2023).
- [9] Chen Lidan, Rong Xueyan. From ChatGPT to Sora: Rethinking On Strengthening Journalism Professional Consciousness Under The Wave of Generative AI [J/OL]. *Journalism Lovers*: 1-10(2024).
- [10] Zheng Manning. Journalism under Artificial Intelligence Technology: Evolution, Turn and Response:——New Thinking Based on ChatGPT. *Chinese Editorials*.**04**, 35-40(2023).
- [11] Radio and Television Headlines. 117 Media Organizations Officially Announce Access to Baidu's ERNIE Bot', 'AI+ Radio and Television' Strategic Transformation or Will Take An Important Step. <http://www.fjrtv.net/3g/folder8600/2023-02-22/4747703.html>, viewed in 2024-06-25.
- [12] He Zhe, Zeng Runxi, Qin Wei, et al. The Social Impact and Governance of New Generation Artificial Intelligence Technologies Such as ChatGPT [J]. *E-Government*.**04**, 2-24(2023).DOI: 10.16582/j.cnki.dzzw.2023.04.001.
- [13] Xu Jinghong, Zhang Rukun. Application of ChatGPT in Editing and Publishing Industry: Opportunities, Challenges and Countermeasures . *Chinese Editorials*.**05**, (2023):116-122.
- [14] Deng Jianguo. Probability and Feedback: The Intelligent Principle of ChatGPT and the Co-creation of Human-machine Content . *Social Sciences in Nanjing*.**03**, (2023):86-94+142.DOI: 10.15937/j.cnki.issn1001-8263.2023.03.009.
- [15] Yu Guoming, Chen Siyu. Human-machine Relationship vs. Interpersonal Relationship: A New Paradigm in the AIGC era . *Educational Media Research*.**03**, (2024): 42-46.DOI: 10.19400/j.cnki.cn10-1407/g2.20240412.001.