Analysis of Media Transformation and Post-print Impact under 5G Technology

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Abstract

The advent of 5G technology has transformed media morphology, exerting profound influences on daily life, altering behavioral patterns, and fostering tighter connections among individuals as well as between humans and objects. This paper expounds upon the impact of communication technology evolution on media morphology, the effects of media forms under 5G technology on the communication environment, and the transformation and implications of media within the 5G technological context. It is hoped that this will shape a novel and compelling media environment, prompting audiences to reflect upon media transformation.

Full Text

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Analysis of Media Transformation and Impact Under 5G Technology

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Abstract: Under 5G technology, the form of media has undergone significant changes, profoundly affecting people' s daily lives and behavioral patterns while strengthening connections between individuals and between humans and objects. This paper examines the influence of communication technology development on media forms, the impact of media forms under 5G technology on the communication environment, and the broader transformations and effects of media in the 5G era. The aim is to contribute to shaping a new and engaging media environment that prompts audiences to reflect on ongoing media transformations.

Keywords: 5G Technology; Media Form; Internet of Things; Content Production; Short Video

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The development of communication technology influences media forms, which in turn affects the communication environment. In this context, human perception of the external world is extended, enabling communication between people and their surroundings. Information acquisition methods expand, and media presentation forms gain new vitality through 5G technology applications, creating a new paradigm of universal connectivity where everything serves as a medium. Simultaneously, these developments satisfy individualized needs and introduce new forms of entertainment to people' s lives, work, and learning, demonstrating the unprecedented transformations that information technology brings to human existence.

1. The Impact of Communication Technology Development on Media Forms

As communication technology continues to innovate, modern media is experiencing explosive growth. Research reports indicate that by the end of 2018, the number of mobile internet users in China had reached 817 million, with 98.6% using mobile phones to access the internet [1]. Short video platforms such as Kuaishou and Douyin represent typical examples of this media evolution. With technological advancement, modern media has demonstrated new forms. The emergence of 5G technology presents opportunities for industrial development and transformation across society. Characterized by low latency and high speed, 5G technology can be actively utilized in numerous fields including healthcare, automotive, media, and logistics. Driven by 5G, AR and VR technologies will be deployed on a large scale in news reporting and other domains. The rise of the Internet of Things has tightened connections between humans and objects, enabling comprehensive monitoring and connectivity while increasing interactivity. This has created new communication paradigms: human-object communication, interpersonal communication, and object-object communication.

2. The Impact of Media Forms Under 5G Technology on the Communication Environment

Human perception of the external world can be enhanced through technological progress. The arrival of the 5G era has transformed media forms, consequently revolutionizing how people perceive their environment. As Professor Yu Guoming states: "The Internet of Everything further elevates the interconnection between people and between humans and the world to the physiological and psychological level. With expanded boundaries, enriched elements, and a more

ecological structure, this will facilitate a revolutionary reconstruction of communication studies" [2]. The 5G era has given rise to immersive communication environments, with large-scale applications of VR, AR, and live broadcasting enabling more intuitive experiences of scenes. High-definition screens provide audiences with a sense of presence. Furthermore, IoT development represents the most distinctive feature of media form transformation, with the state of universal connectivity supported by 5G technology.

3. Media Transformation and Impact in the 5G Technology Context

3.1 The Re-strengthening of "The Medium is the Extension of Man"

"The medium is the extension of man" posits that media extend human senses and sensory capabilities, comprehensively enhancing visual, auditory, and tactile abilities. However, understanding this concept should not be limited to the physical dimension of the body; psychological factors such as human emotions and consciousness must also be considered, expanding media development from the realm of physical media to psychological media. With the continuous development of China' s information science and technology, a pattern of universal connectivity has gradually emerged [3]. In this framework, various signals related to human psychology, physiology, and emotions can be connected through media. In the internet-driven information age, changes and fluctuations in people's physical conditions and emotions can be recorded, with sensors transmitting this data through algorithms to integrate individuals with the external world. Sensing elements on human bodies or objects are widely used as terminals to maintain connection with the outside world, and the era of universal connectivity ushered in by 5G technology provides the foundation for realizing this vision. Sensors have become a new medium through which the external world perceives humans. Unlike traditional media, they can collect data on brainwaves, heartbeat, and emotional states, using data analysis to reveal psychological characteristics and facilitate communication and connection between humans and their environment, achieving extension from the behavioral level to the physiological and psychological levels.

This new perceptual medium gradually deepens understanding of users, facilitating comprehension of user states at the physiological information level to provide more precise services. Moreover, this perceptual medium serves as an important pathway for self-communication and self-perception. Accurate data obtained through sensors can be utilized by external media devices as reference for action and daily judgment. It also expands human cognition of the external world, providing leverage points for external exploration of humans and enhancing the depth of inquiry. The 5G era has strengthened the concept of the medium as an extension of man, creating new media connected to human inner worlds and achieving deep integration between humans and their environment, while positively influencing media' s own transformation.

3.2 Transformation of Media Presentation Forms

The arrival of the 5G era has significantly transformed media presentation forms, with immersive, family-oriented, and shared models becoming predominant. First, immersive interaction methods demonstrate increasingly strong audience demand for network interactivity. In 2019, "immersive journalism" debuted in Two Sessions coverage, leveraging 5G technology and VR/AR capabilities through data visualization and intelligent experiences to create a sense of presence for audiences. Examples include CCTV.com' s "Panoramic Immersive View of the Report" and People' s Daily' s "AR View of the Two Sessions," which used immersive approaches to help audiences receive information and satisfy personalized needs.

Family-oriented media presentation primarily refers to the return of network capabilities to television in the 5G era, gaining advantages in home viewing through high definition and strong interactivity. Educational, service-oriented, and emotional programs are well-suited for family viewing. Since young people constitute a large proportion of new media audiences, television media should capitalize on 5G technology to capture audience characteristics and create family programs suitable for all age groups. In the 5G era, television terminals will transform along the path of Internet TV (OTT TV) into information screens for smart homes, becoming playback devices for massive, diverse network media content and an important source of family happiness.

Shared media presentation forms have also gained momentum with 5G technology support. People can transfer resources from local to cloud storage, eliminating the need to purchase local software and hardware resources. This approach is simple to learn and greatly facilitates daily life. The "cloud" can connect with low-cost clients anytime and anywhere, linking powerful hardware, software, and data resources with local devices [4].

3.4 Diversification of Content Production Entities and Pluralization of Communication Entities

In the technological context of "everything is media and human-machine symbiosis," communication entities have become more pan-popularized, transforming traditional news gathering methods. For instance, the emergence and widespread application of drones can replace journalists in filming at news sites, obtaining news materials and expanding channels for rapid news acquisition. In certain special environments, this approach not only presents the full picture of news scenes to audiences but also saves manpower and material resources. Additionally, various intelligent robots have improved news production efficiency. Xinhua News Agency' s robot reporter "Kuai Bi Xiao Xin" and Tencent' s intelligent writing robot "Dreamwriter" reduce pressure on news staff and effectively diversify content production entities [6].

Machine-generated content (MGC) will become more common in the 5G era. 5G technology enables interconnection of numerous sensors, extending media

content producers to the external environment and human wearable devices. The human-machine symbiosis model will also become an important focus for news gathering and distribution. Driven by 5G technology, the external environment increasingly relies on intelligent devices, enabling information exchange between humans and their surroundings and transforming traditional communication chains where humans served as the sole information dissemination subjects. The development of 5G technology and IoT has broken traditional communication models, expanding communication scope from interpersonal transmission to interconnection between humans and the external environment [4].

In the 5G era, short videos have become the true "king of media." Leveraging advantages such as fast transmission speed and large capacity, combined with China' s high smartphone adoption rate and low internet data costs, short videos have achieved rapid development. Moreover, short videos possess strong appeal and do not require high-level textual interpretation skills from audiences, providing a way to relax under various pressures while offering an immersive experience that attracts many participants. Differences in audience age, ethnicity, region, and profession do not limit short video production or viewing. Short videos require only simple finger swiping operations, offering high convenience. To watch and create short videos, audiences simply need to download relevant apps such as Kuaishou, Douyin, or Huoshan Xiaoshipin on their smartphones to share fresh experiences or access other information, resulting in a very low entry barrier. As a novel entertainment form, short videos have attracted considerable attention from Chinese internet users, who tend to watch them during leisure time. Many mainstream media outlets have followed this trend by establishing presence on short video platforms. For example, both People' s Daily and CCTV.com have independent Douyin accounts for news production and dissemination, gradually elevating short videos' status in the media landscape.

Of course, video-based communication and scenarios were also common in the 4G era. However, 4G technology suffered from issues such as high production costs and long production cycles, requiring significant time for promotion and distribution. Software and hardware capabilities under 4G could not meet video transmission and production requirements, with latency occurring frequently. With 5G technology support, people gain enhanced VR experiences with improved audiovisual quality, immersion, and comfort. In the virtual environments created by 5G, most user needs can be satisfied, and interactivity between people and between humans and objects will continuously improve. 5G technology enables rapid and efficient transmission of images, data, and voice, expanding VR application fields. Examples such as "iQIYI VR" and "Qiyu VR" have emerged, and exploration of VR application channels will continue. The 5G era provides the foundation for short video development, enabling multidirectional interactivity and three-dimensional multidimensionality [8].

4. Reflections on the Impact of 5G Technology on Media

The application of 5G technology has brought tremendous impact and transformation to media, becoming an important force driving social development. The era of universal connectivity is approaching, with VR and AR being used on a large scale to provide unprecedented experiences. In this context, the media environment will expand from human-to-human connections to human-object connections, bringing unprecedented impact and transformation. Changes in media forms also require audiences to possess good media literacy, selection preferences, and consumption habits.

In the future, as technology becomes more advanced, new media forms will emerge and transform people' s lives. Individuals will place greater emphasis on their psychological and physiological experiences, relying on new media to satisfy personalized needs. It is important to note that many transformations triggered by 5G technology development may cause discomfort. Faced with changes in the media environment, people should actively recognize the importance of information acquisition behavior patterns, avoid inertia, and adopt proactive approaches to obtaining information. Media literacy should be emphasized, continuously improving awareness and prevention capabilities regarding risks associated with new technology applications to fully realize the practical value of 5G technology and media.

In summary, 5G technology development has driven media form transformation. Propelled by 5G technology, the era of "everything is media" is emerging, with immersive, shared, and family-oriented interaction becoming part of people' s learning and daily lives. Short videos will become the mainstream medium, continuously strengthening the concept of "the medium as the extension of man" and enhancing the diversity of content production entities. People should accurately grasp the direction of media transformation driven by 5G technology, establish media literacy, and improve information productivity.

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Note: Figure translations are in progress. See original paper for figures.