# 5G Technology Empowerment and the Reconstruction of Television News Industry Formats from the Perspective of Media Determinism in the Post-Print Era

**Authors:** Zhou Heqiang

**Date:** 2023-10-08T00:00:00+00:00

## Abstract

In the Intelligent Media Era, applications represented by information technologies such as 5G, big data, cloud computing, artificial intelligence, Internet of Things, and VR have driven the transformation and reconstruction of the current television news industry format. This paper adopts "Media Determinism"as its research perspective, employing descriptive and exploratory research methods combined with relevant cases to discuss the driving and empowerment of communication media by information technology in the Intelligent Media Era, reveal the reshaping of the television news media environment by information technology and the innovation of information technology throughout the entire production process of television news media, and propose relevant development strategies for the reconstruction of the television news industry format in the Intelligent Media Era. Television news media driven by 5G technology will usher in unprecedented opportunities and development.

## Full Text

## Preamble

**"Media Determinism" Perspective: 5G Technology Empowerment and the Reconstruction of Television News Industry Formats**
Guangzhou Huashang College, Guangzhou, Guangdong 511300

**Abstract:** In the era of intelligent media, applications driven by information technologies such as 5G, big data, cloud computing, artificial intelligence, the Internet of Things, and VR have catalyzed the transformation and reconstruction of the current television news industry format. From the perspective of "media determinism," this paper employs descriptive and exploratory research methods

combined with relevant case studies to discuss how information technologies drive and empower communication media in the intelligent media era, revealing their reshaping of the television news media environment and their innovation throughout the entire production process of television news. It further proposes development strategies for reconstructing the television news industry format in the intelligent media era. Television news media driven by 5G technology will usher in unprecedented opportunities and development.

**Keywords:** media determinism; 5G technology; television news; scenario-based; immersive experience; videoization

**Classification Code:** G206
**Document Code:** A
**Article ID:** 1671-0134(2021)11-058-04
**DOI:** 10.19483/j.cnki.11-4653/n.2021.11.017

**Citation Format:** Zhou Heqiang. "Media Determinism" Perspective: 5G Technology Empowerment and the Reconstruction of Television News Industry Formats [J]. China Media Technology, 2021(11): 58-60, 54.

**Funding:** This paper represents partial achievements of the provincial/ministerial-level research project "Research on the Innovative Development of Guangzhou's Film Industry Under the 5G Background" under the Guangzhou Philosophy and Social Sciences Development "14th Five-Year Plan"2021 Joint Construction Program (Project No.: 2021GZGJ296). It is also a partial achievement of the 2020 Guangzhou Huashang College Internal Mentorship Research Project "Research on Development Strategy of the Film and Television Industry from the 5G Perspective" (Project No.: 2020HSDS13), the 2020 Guangzhou Huashang College "Campus Quality Engineering" Construction Project "Film and Television Special Effects" (Project No.: HS2020ZLGC22), and is funded by Guangzhou Huashang College.

## 1. Examining: Information Technology "Determinism" in the Intelligent Media Era

In December 2020, the National Radio and Television Administration issued the "Implementation and Upgrade Plan for Radio and Television Technology Iteration," a policy that more forcefully propelled television news toward 5G-powered ultra-high-definition development and application deployment. From a panoramic, broad-view perspective examining the developmental history of human civilization and information technology transformation, we can draw a clear and definitive conclusion: media technology innovation is the most important force driving changes in human social relations and media transformation. Media determinism (also known as media technological determinism) posits that mainstream, ubiquitous media technology constitutes a decisive force that determines human action and the way humans understand the world.

As the preeminent theorist of "media determinism," the renowned communication scholar Marshall McLuhan argued in his classic magnum opus *Understanding Media: The Extensions of Man* that the truly valuable information is the medium itself, not the content and information presented in various historical periods. This is his famous assertion that "the medium is the message." He further stated that "without understanding the role of communication media, it is impossible to understand social and cultural transformation." Information technology innovation is the material force behind major transformations in communication media, and communication media technology can effectively reduce social labor time expenditure, enhance productivity and social labor efficiency, improve and promote social relations, reduce human physical labor intensity, and liberate humans from heavy labor.

Although media interactivity began to emerge in the internet era, prompting many scholars to criticize absolute "media determinism," the significant role of media technology cannot be ignored under any circumstances. 5G technology in the intelligent media era possesses the distinctive characteristics of "high bandwidth, broad connectivity, and low latency," and the traditional television media field will be among the first to benefit from its integration and convergence.

### 1.1 Information Technology Empowerment and Media Environment Reshaping in the Intelligent Media Era

First, media communication carriers have become more diversified. In the intelligent media era of ubiquitous connectivity, any powered device may become a component and entry point for network interconnection. In June 2021, Huawei officially released HarmonyOS 2.0, a distributed cross-screen operating system for the era of ubiquitous connectivity that can interconnect smartphones, computers, tablets, watches, glasses, speakers, VR devices, vehicle systems, smart screens, and multiple terminals, thereby opening channels for the future integrated application and development of television news media. This enables "future television news to be intelligently pushed according to each individual' s needs and preferences, truly achieving 'one face for a thousand people' ." [1]

Second, the entire communication process has become more enriched. In the intelligent media era, particularly under 5G technology, the number of various smart wearable devices and sensors has multiplied, and data collection has grown exponentially, making human reception of news information more abundant. The human body, its accessories, and the surrounding environment can all feed information back to smart terminals, which can automatically refine news communication details based on this information. Various smart wearable devices and industrial intelligent application equipment will integrate and apply advanced technologies such as 5G, and applications like "Media Brain" and virtual intelligent synthetic anchors in news positions will greatly enrich the television news industry format.

Third, the sense of presence and participation in media communication has

been enhanced. Information growing at an exponential rate surrounds us daily, yet rarely generates immediate visual presence. Various mobile terminal device sensors, positioning systems, big data, mobile social media, content recommendation algorithms, and other technologies will, with the assistance of 5G communication and quantum communication technologies, further enhance the interactivity of television news and improve the sense of presence and user participation. Virtual reality technology can transform content communication methods into scenario-based communication methods. This means television news media can more deeply expand the value of on-site reporting and break through the current dilemmas faced by traditional media. Particularly with the arrival of the metaverse era, VR/AR and other virtual reality technologies will bring disruptive technological transformation to the television news industry, enabling news content to "break through existing 2D presentation methods of sound, images, and text to provide users with 3D effects of being on-site." [2] Undoubtedly, VR/AR virtual reality will accelerate the development of television news' s inherent pattern in current news communication media, and panoramic immersive television news experiences will fully satisfy audience viewing demands.

Finally, advanced media technology has made television news distribution more efficient. Traditional television news media' s collection, production, and distribution suffer from poor flexibility and timeliness. The application of AI and blockchain technology will greatly promote quality and efficiency improvements in television news distribution. The perfect fusion of content algorithmic recommendation and platform editorial review will enable news users to receive precise and high-quality news pushes, thereby helping television news media establish its own news traffic pool and achieve better communication effects in the fierce competition of the intelligent media era.

### 1.2 Information Technology Innovating the Full Production Process of Television News

Under the drive of intelligent media era technologies, television news will achieve full-process intelligence and automation from collection and production to distribution, with more creative work links becoming open and absorbed. This will further reduce the consumption and investment of repetitive and inefficient human and financial resources, optimize the allocation of various resources in the television news industry format, and eliminate the need for television news practitioners to carry heavy equipment for street interviews or race against time daily to quickly understand massive amounts of recent events and distill the essential from the trivial for in-depth analysis.

First, advanced media technology has made television news collection more precise. Although mobile internet news already dominates people' s daily reading and viewing, television news' s credibility and authoritative status in policy guidance, public opinion, and crisis management remain irreplaceable. However, from another perspective, traditional television news media mostly rely on man-

ual collection of footage, data compilation, and editing production, which are clearly inadequate in terms of timeliness, completeness, and accuracy. Against the backdrop of 5G networks, web crawler tools and other aids can be used more efficiently to help television journalists complete the combing, capturing, and processing of news activities and massive amounts of internet data and key value information. Artificial intelligence and content recommendation algorithms can also be utilized for precise information pushing and visual news information analysis and processing. Television journalists or news centers can also use big data to understand development patterns and trends of events and identify hot topics of recent interest. Currently, some television media have already used big data from themselves or relevant institutions for similar news production methods to plan thought-provoking works. In the future, television news workers will only need to input planning scheme data into databases, and when they arrive at work the next day, they can receive high-definition videos collected by smart cameras in their email and social software, with these videos already intelligently classified and preliminarily edited, generating more than a dozen topic selections close to hot spots. Television news practitioners only need to select the most suitable topic and add their own creativity for modification and sublimation.

Second, advanced media technology has made television news production more timely. In the intelligent media era, the full integration and development of big data, artificial intelligence, cloud computing, and 5G will greatly reduce television news production costs and improve the work efficiency of television news practitioners. At the same time, "with the assistance of other new media means, television news programs can serve as the main base camp, while emerging communication platforms can be used as traffic-driving means to preview news content in advance and create topics and attention." [3] Network crawlers, recommendation algorithms, and data mapping can all be preset in advance, and important news data can be intelligently obtained and retained. The advance installation of intelligent camera equipment participating in live news broadcasts will become the norm for television news. On the evening of September 25, 2021, during the "Meng Wanzhou' s Return to the Motherland" event, CCTV News, The Paper, and China News Network all preset and installed cameras at Shenzhen Bao' an International Airport for comprehensive, delay-free live broadcasting, reporting, and commentary, becoming a collective and historic event of national and public concern, participation, and observation, and making the Meng Wanzhou incident a microcosm of China' s unprecedented changes in a century.

In some unpopular events at the 2021 Tokyo Olympics, CCTV and other television news media let AI algorithmic robots take over news reporting tasks and completely canceled special correspondents, reducing unnecessary costs while greatly improving news timeliness and accuracy. On May 21, 2021, when a 6.4-magnitude earthquake occurred in Yangbi County, Dali Prefecture, Yunnan Province, the earthquake information broadcasting robot system developed by the China Earthquake Networks Center automatically determined and indepen-

dently broadcasted numbers and images in just 15 seconds, enabling many local residents to receive nearly synchronous early warning information not only on earthquake warning apps, Xinhua News Agency client, and smart home products but also on television screens as news information carriers at home, providing more valuable news information for television news media to quickly present the true face of the news and carry out disaster relief work.

Finally, advanced media technology has made television news distribution more efficient. Traditional television news media' s collection, production, and distribution suffer from poor flexibility and timeliness. The application of AI and blockchain technology will greatly promote quality and efficiency improvements in television news distribution. The "Media Brain • MAGIC Short Video Intelligent Production Platform,"jointly released by Xinhua News Agency and Alibaba in December 2018, can generate hundreds of short videos within seconds or tens of seconds during major events such as the World Cup and China International Import Expo. This enables algorithmically processed materials to be stored in a "warehouse" like parts for on-demand use, allowing television news production to operate like an industrial assembly line for efficient production and distribution. The perfect fusion of content algorithmic recommendation and platform editorial review will enable news users to receive precise and high-quality news pushes, thereby helping television news media establish its own news traffic pool and achieve better communication effects in the fierce competition of the intelligent media era.

## 2. Opportunities: Strategies for Reconstructing Television News Industry Formats in the Intelligent Media Era

McLuhan believed that as a cultural and social scale, media subtly determines people' s thinking and behavior patterns. Meyrowitz, another scholar of media determinism, argued that when media changes, the information system also changes accordingly, and media' s determining role and influence on human behavior extend from the social environment to individual, specific daily social communication. For television news media, the ability to enhance "scenario adaptation" is an important transformation direction for obtaining operating profits and maintaining industry market share in the intelligent media era. 5G technology will affect all mobile internet application businesses, and the mobile and social application of television news media must continue to strengthen. With the advent of the metaverse era, television news media should focus more on transitioning toward "ultra-video"formats such as VR/AR virtual reality and immersive experiences. At the same time, to adapt to the needs of the fingertip and swipe-screen era, news information should shift toward video-based presentation methods and thinking modes to effectively satisfy the highly fragmented viewing needs of television news media users, enabling them to conveniently and easily obtain the most core information in a short time. Only by seizing the opportunities granted by the intelligent media era and adopting new measures and strategies can traditional television news media achieve the reconstruction

of new industry formats.

### 2.1 Expanding Diversified Scenario-Based Construction of Television News

In the intelligent media era and under the 5G network background, many application scenarios such as e-commerce, payment, transportation, medical care, and provident funds will integrate with various terminals of television news media. The expansion of communication scenarios means that the value created by television news media has also been expanded. Currently, national-level media and local media differ in their performance and innovation in "scenario adaptation" due to different policies, living environments, markets, and target audience positioning. The future development focus of television news media is to be customer-centered and strive to understand the individual needs of different users in specific scenarios when constructing and providing various services and content. Local television news media have considerable potential in this regard, but they must also maintain appropriate adaptation to avoid excessive commercialization and improper handling of commercial activities.

The overall interface of the CCTV News client is clean and refreshing, with no more scenarios except for news information and individual implanted advertisements. However, Yangshipin has shopping scenarios such as member zones and points malls, but as "sticky user" shopping scenarios, they cannot be purchased directly without membership or points, and their commercial considerations and value are relatively limited. Local television news media are more proactive and aggressive in "scenario adaptation." The Touch News App, known as "the first Bay Area information service terminal,"not only has a points mall but also opens up service scenarios for people' s livelihoods, including hotlines for public voices, government services, welfare activities, epidemic prevention, as well as life services such as provident funds, social security and medical insurance, entry-exit services, housing, household registration, elderly care, and transportation. The scenario adaptation of The Paper is even richer, also setting up a "Pengpai Good Products" WeChat mini-program that not only processes Pengpai membership cards but also offers annual cards and various promotional activities such as discounts, point multipliers, and coupon giveaways. Even without membership or points, users can still shop online through WeChat Pay, making it not much different from other commercial shopping platforms.

### 2.2 Optimizing Mobile Social Applications for Television News

In recent years, the trend of audiences shifting their access to television news to mobile social platforms has become very obvious. Audiences tend to obtain information from friend circles, official accounts, Weibo, and news mini-programs, and social platforms have become the main entry point for news reading. Major television news apps can generally share their news information to mainstream social platforms. At the same time, some television media apps have their own social interaction sections within their self-built platforms. For example, the

Yangshipin app has "Yangyou Circle" at the bottom of its interface; The Paper app has "Pengyou Circle" at the bottom, with social sections such as "Following," "Recommended," and "Q&A" ; and the Touch News app has "Activity Square," which includes various topic interactions, voting, guessing games, my political inquiries, reporting, and lotteries.

According to the latest report from the market research company eMarketer, due to the impact of COVID-19, television viewing time has increased, and traditional media still accounts for a high proportion; social media consumption time has grown significantly, and the usage time of smartphones, digital television, and social media has risen significantly, becoming indispensable habits in people' s lives.[4] According to CSM National Network data, during the epidemic, the viewing duration of news/current affairs programs grew prominently, with an increase of more than 45%; the overall audience size of CCTV news programs reached 1.035 billion, accounting for 82% of the market share of news programs on all satellite channels;[5] the "CCTV News" Weibo account gained 10.9 million new followers, with a maximum single-post interaction volume of 6.94 million.[5]

### 2.3 Enhancing Virtual Immersive Experiences in Television News

The arrival of the metaverse era has made virtual reality VR/AR technology continue to be the most market-potential technology and application in television news media. 5G technology provides services of "large bandwidth, low latency, and broad connectivity," which will further eliminate the dizziness caused by wearing VR helmets in the 4G era. The combination of virtual and real panoramic television news content will bring ultimate immersive viewing experiences to television news users. Audiences will "share" the entire news visual spectacle event together with television news reporters and protagonists. For example, the CCTV News client interface has a dedicated "VR" section at the bottom, with content including VR panoramas, current affairs VR, VR documentaries, and VR micro-videos, some of which use 4K+VR technology. Users wearing VR glasses will obtain more panoramic and immersive news experiences and feelings. Examples include "Panoramic View of Great Power Equipment" in "Current Affairs VR Scene" and "Checking in a Mountain Worth Over 200 Billion" in "Current Affairs 360Vlog." In the future, as VR/AR technology becomes more mature and terminals become more popularized, VR/AR television news will inevitably become the mainstream form in news reporting and communication.

### 2.4 Elevating Video-Centric Thinking in Television News Communication

Videoization is not only about converting traditional news numbers and pictures into concrete, flowing video information but also a method of news production and communication. Videoization is not just a technical means for news but a way of thinking about news. Videoization is equally applicable to televi-

sion news. The videoization of television news should enhance multi-terminal cross-screen or small-screen innovative development, integrate and apply with emerging short video platforms such as Xigua Video, Pear Video, Kuaishou, and Douyin, or build self-owned short video platforms such as CCTV' s Yangshipin. Television news media should use the new force of short videos in the media industry to expand integrated applications and innovation, enabling them to develop toward the trend of "video streaming." To this end, CCTV and various local television news outlets have opened official accounts on major short video platforms, and short videos produced and released with short video creative techniques and thinking have gradually occupied top positions in attention and viewership metrics, winning market and user favor. "Television news media in the 5G era must grasp development opportunities to transform television news toward videoization, enabling traditional news communication forms to achieve qualitative change and leap." [6]

As a classic theory of media ecology and media research effects, media determinism is by no means a simple and extreme pseudo-proposition. Taking the form of media technology itself as the dependent variable for research, it demonstrates that media technology, even if not the only important force, is absolutely the most important driving force. Communication media have their unique symbolic systems, and television news media will also imperceptibly constrain and influence people' s cognition and thinking patterns in real society. Especially in the intelligent media era, driven by 5G technology and the deep integration of news media with various advanced technologies such as artificial intelligence, cloud computing, blockchain, and VR/AR, it will profoundly affect social and industrial structural transformation. Media determinism contains considerable reasonable affirmation and must be re-examined and reflected upon. Traditional television news media will undoubtedly burst forth with greater vitality and energy under the empowerment of 5G and other technologies.

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