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Blockchain Media: Reflections on the Vision and Path of Journalism Development in the Post-Print Era

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

Abstract

Blockchain media is the product of disruptive reshaping that blockchain technology has brought to journalism, primarily focusing on three major sectors: news production, media operations, and news governance, thereby presenting new opportunities for journalism development within the process of media convergence. Grounded in the fundamental principles and core mechanisms of blockchain technology, this paper elucidates the formation of decentralized news network platforms, the construction of digital copyright repositories, and the establishment of online rumor prevention systems. Building upon this foundation, it conducts a critical reflection on the pathways for future applications of blockchain media, aiming to generate new research perspectives and considerations for the future development of journalism.

Full Text

Special Feature: Blockchain Topic

Blockchain Media: Reflections on the Development Vision and Pathways for Journalism

Abstract: Blockchain media represents a product of the disruptive reshaping of journalism by blockchain technology, primarily exerting influence across three domains: news production, media operations, and news governance, thereby creating new opportunities for journalism development amid media convergence. Based on the fundamental principles and core mechanisms of blockchain technology, this article examines the formation of decentralized news networks, the construction of digital copyright repositories, and the establishment of rumor protection systems. Building upon this foundation, the paper reflects on future application pathways for blockchain media, aiming to generate new research perspectives and critical thinking for the future development of journalism.

Keywords: Blockchain media; Journalism; Decentralization; News governance

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The year 2015 marked a period of deep restructuring for the internet finance industry, bringing blockchain technology into public view. By 2018, following its emergence as another "golden window" after the "sharing economy," blockchain began extending into finance, healthcare, transportation, insurance, logistics, and other sectors, presenting historic opportunities for journalism development. Blockchain has now become one of the most popular concepts across global industries. According to the "2018 China Blockchain Industry White Paper" released by the Ministry of Industry and Information Technology, China's blockchain industry is experiencing rapid growth. As the media industry embraces blockchain, technology-driven journalism development will exhibit new characteristics, trends, and visions.

To trace its origins, what exactly is "blockchain"? In 2008, Satoshi Nakamoto first introduced the concept in "Bitcoin: A Peer-to-Peer Electronic Cash System." After extensive development, blockchain has evolved primarily as a "decentralized" "value transmission network," serving as an underlying architecture of open distributed ledger technology, with Bitcoin representing one of its most prominent large-scale applications.

The value reconstruction of journalism by blockchain technology manifests in three key aspects. First, in news production, it establishes decentralized newsrooms that disperse communication power and form news crowdfunding mechanisms. Second, it ensures data authenticity to combat fake news and govern the news ecosystem. Third, it disrupts media operations by creating new business models through "tokens" as a novel reward mechanism. Four core blockchain technologies—distributed ledgers, asymmetric encryption authorization, consensus mechanisms, and smart contracts—offer promising visions and limitless possibilities for the development of news production, news governance, and media operations.

1. News Production: Establishing News Databases and Forming Decentralized Network Journalism

In the social media era, news production primarily occurs through platforms like Weibo, WeChat, and various news apps, where users possess bottom-up news production power and can independently publish comments and share content. However, core power remains concentrated in the hands of a few media organizations, and the strong commercial nature of social media platforms themselves still represents a centralized product. Research indicates that Google and Facebook currently control the vast majority of the digital advertising market, and their dominant position is unlikely to change in the short term. Although artificial intelligence has become common in news operations, with robot writing

embraced by many media outlets and algorithmic distribution reshaping journalism, rapid generation, intelligent distribution, and viral propagation create problems of information power inequality and "information cocoons" that even AI cannot resolve.

In *Blockchain: Blueprint for a New Economy*, author Melanie Swan argues that blockchain is a decentralized transaction ledger that provides technical support for payments, decentralized exchanges, token acquisition and expenditure, becoming a typical example of decentralized technology. When blockchain technology collides with journalism to form "blockchain for news," it may offer solutions to these numerous challenges.

During the transformation of traditional mainstream media, blockchain media' s value reconstruction manifests in several ways. First, leveraging their inherent advantages in authority and credibility, traditional mainstream media can establish collectively-maintained news databases on top of news content to transmit value and build trust. Second, news databases built on blockchain networks can use algorithmic technology to foster consensus among users. By utilizing blockchain' s core technologies of "traceability" and "consensus mechanisms," news timeliness and accuracy can be further enhanced, thereby improving the effectiveness and impact of news dissemination and forming a fully decentralized news network platform. For traditional mainstream media, blockchain technology may become another pathway for transformation and development, potentially enabling "corner overtaking" in the race with new media. Snip, as an entirely new decentralized news platform covering various types of news reports, is a community-based news website. Although its content is personalized for each user through open-source news algorithms, the platform has no editors, allowing users to select content according to their preferences. This completely transparent and decentralized setup prevents any individual or organization from becoming an arbiter of truth and shields the platform from biases of mainstream media channels. Blockchain-enabled news platforms are gradually beginning to play a role in news production processes.

2. Media Operations: Constructing Digital Copyright Repositories and Enabling Copyright Tracking and Protection

The digital age has brought persistent pain points to copyright protection in media operations, including rampant digital piracy, mismatches between creators' output and revenue, and costly copyright registration processes. Effectively protecting digital works has become a critical concern. In traditional copyright protection, registration is time-consuming and expensive, creating significant obstacles. Applying blockchain technology to copyright protection can correct and curb issues such as online infringement, dissemination chaos, and output-revenue mismatches, fundamentally transforming the digital copyright landscape. In June 2017, the inaugural National Press Copyright Conference proposed establishing a "China Digital Blockchain Copyright Alliance." In July 2018, Baidu announced "Totem," an original image service platform based on blockchain

technology that builds a full-chain copyright service platform covering image production, ownership deposit, distribution, monetization, infringement monitoring, and rights protection. Internationally, blockchain has seen numerous applications in entertainment, photo management, and VR copyright protection, providing valuable experience for China' s digital copyright protection efforts (see Table 1).

Blockchain technology can facilitate digital copyright protection primarily based on three characteristics: decentralization, immutability, and smart contracts. First, leveraging decentralization, digital copyright repositories can be established on the foundation of massive news resource databases. Blockchain enables data source tracing, transaction recording, and automatic revenue calculation for digital works, resolving the output-revenue mismatch for original creators. Second, blockchain's immutability preserves all electronic transactions, enabling massive cross-platform coexistence. The deposit process using digital signatures, similar to timestamps, performs hash operations on digital content and stores the hash values and content summaries on the blockchain. This algorithm-based deposit process avoids the time-consuming drawbacks of traditional copyright protection and facilitates copyright confirmation services. Third, smart contract technology explicitly stipulates all terms in copyright transactions and automatically executes copyright authorization and payment, avoiding the cumbersome processes and high costs of traditional rights protection while ensuring creators' revenue and facilitating rights protection services. Based on these three aspects, blockchain application in copyright protection optimizes the integrated "confirmation-authorization-protection" copyright circulation process, gradually achieving the ultimate goal of "confirmation upon creation, authorization upon use, and protection upon discovery," thereby empowering copyright protection in the digital economy era.

3. News Governance: Forming Interchain Co-governance and Establishing a Network Rumor Protection System

Since mass communication entered the internet era, the proliferation of self-media has caused serious communication disorder, flooding us with fake news and ushering in a "post-truth era." Issues of communication 失控 (loss of control), defense failure, and governance dysfunction in this post-truth era have gradually plunged journalism into crisis. Blockchain media may become a crucial leverage point for news ecosystem governance in the post-truth era, providing technical support for journalistic objectivity, particularly through encoding and verifying content when media organizations obtain news leads, thereby ensuring the authenticity of sources, images, and videos. The Future Today Institute predicted in its "2018 Media Industry Technology Trends Report" that "a news public ledger may emerge—a network system for exchanging credible news and filtering out fake news." This news public ledger primarily combats fake news through blockchain' s three characteristics of "data traceability," "information immutability," and "consensus mechanisms." Through a 全民参与记账 (mass par-

ticipatory accounting) approach, data from every participant in news activities is recorded in this large ledger across three stages: initial, middle, and late phases of information dissemination. In the initial recording stage, the recorder' s identity and other information are simultaneously logged in the news public ledger. If published information proves false, blockchain data tracing can identify the information source, helping curb large-scale dissemination from the source. In the middle stage, if malicious tampering occurs during propagation, blockchain' s immutability feature can directly locate the modified block and view the alteration records. Since hash values are difficult to calculate manually, blockchain media increases the production and dissemination costs of fake news, reducing its occurrence rate. In the later stage, blockchain' s consensus mechanism performs information verification on the news public ledger, enabling the discovery of discrepancies or data inconsistencies through comprehensive record examination, thereby enhancing news credibility.

In May 2017, the blockchain-based anti-fake news platform The World News.net project launched and has since become the world's largest decentralized news aggregator. The project primarily obtains the most objective information globally for free through this decentralized aggregation. All collected content is stored in distributed, unrelated databases, then analyzed by self-learning neural networks that automatically identify, delete, or modify content and assign appropriate ratings to media sources: reliable, suspicious, or unreliable. Additionally, the Google ad browser plugin Adblock Plus is currently using blockchain technology to classify and verify news. By adding a "passion project" plugin to the Chrome browser, it categorizes credible news on websites. If a news source is credible, the browser displays a green checkmark on its icon; if not credible, a blue smiley face pattern appears. Blockchain technology is expected to become a powerful tool against fake news in the future, hindering the spread of false news and rumors and helping audiences escape the "post-truth era."

In August 2018, Alibaba Group Chairman Jack Ma stated in his keynote speech at the China Smart Expo in Chongqing that "the future belongs not to internet companies, but to companies that effectively use new internet technologies." Over the past two years, as a new wave of emerging technology, blockchain has first knocked on the door of the financial industry, followed by deep practice and exploration across various sectors. Some scholars even argue that while people are still discussing artificial intelligence and virtual reality, blockchain represents the most disruptive revolutionary technology of the post-internet era. According to Research and Markets, the global blockchain market will reach $13.96 billion by 2022, with a compound annual growth rate of 42.8% between 2017 and 2022. However, blockchain technology has only recently entered China, and whether it can stand atop this new technological wave and bring tremendous changes to human society' s politics, economy, culture, and daily life remains to be seen. For journalism currently in transition, the emergence of "blockchain media" undoubtedly brings a glimmer of hope to the transformation and development of the media industry.

In April 2018, Tencent Cloud released its Blockchain TBaaS product white paper, comprehensively elaborating its vision for building a blockchain-plus ecosystem and committing to providing a production-grade, financial-grade consortium blockchain platform. In July 2018, LeEco' s subsidiary "Lerong Zhixin," the entity behind Super TV, jointly launched the "One Chain Box" smart hardware with "One Chain Technology," aiming to create a new product combining traditional set-top box functions with blockchain mining capabilities. These moves in the media industry indicate that the integration of blockchain technology and media is accelerating.

For any new technology to take root and bear fruit in a particular field, it must undergo continuous exploration and overcome practical obstacles. While blockchain technology constructs grand visions for various industries, it also introduces certain security risks. Due to weak security awareness among some blockchain information service providers, malicious actors have exploited the technology to disseminate illegal and harmful information, threatening national cybersecurity and damaging the legitimate rights of organizations and citizens. In early 2019, to advance cybersecurity management, promote the healthy development of blockchain information services, and prevent security risks, the Cyberspace Administration of China explicitly stipulated the information security management responsibilities of blockchain information service providers and addressed issues related to the healthy development of blockchain technology services and information service security risks, issuing the "Regulations on the Management of Blockchain Information Services."

The release of these regulations not only provides an effective legal basis for the provision, use, and management of blockchain information services in China but also raises several critical questions about the future development of "blockchain media" in the country. First, achieving complete decentralization in journalism remains an idealistic hypothesis, yet could blockchain, with decentralization as its core feature, paradoxically create commercially-oriented centralization in news production processes? Second, will blockchain reduce communication efficiency while enhancing news security and credibility? The integration of blockchain technology with news platforms requires supporting regulatory systems and legal frameworks; otherwise, it may spawn phenomena of false content disguised under technological pretenses. However, excessive regulation may also hinder the development of blockchain media, leaving the search for balance between technology and institutions an ongoing exploration. For media fields with weaker information security and anti-tampering requirements but stronger demands for review mechanisms, the complete integration of decentralization-focused blockchain technology with the media industry remains fraught with uncertainties. Nevertheless, amidst the grand process of media convergence, only by continuously promoting technology-supported integration and transformation can we establish a new information consumption market and bring new market opportunities and transformation prospects to traditional journalism. "Blockchain media" provides new thinking and opportunities for media industry operations within this convergence process, holding the potential to disruptively

reshape the existing internet information dissemination landscape and become a new technological frontier for saving journalism from crisis. We hold optimistic expectations and visions for its future.

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Funding: This research was supported by the Key Project of Humanities and Social Sciences Research of Chongqing Municipal Education Commission, "Research on Online Phenomena of Public Skepticism from the Perspective of Government Social Opinion Governance" (Approval No. 18SKGH060); and the Major Entrusted Project of Chongqing Social Science Planning, "Research on Countermeasures for Strengthening Internet Thinking to Promote Precision in Government Social Governance" (Approval No. 2016ZDWT25).

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