The Influence of Philosophy of Technology on Journalism and Communication Studies: A CiteSpace-Based Bibliometric Analysis (Post-print)

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

Abstract

【Purpose】 In the volatile new media era where emerging technologies continuously arise, the consequent new problems urgently need to be clarified, and how the journalism and communication field can leverage philosophical theories to achieve research innovation is worth exploring.

【Method】 This article utilizes the data processing software Citespace 6.1 (R2) to map relevant research in the domestic field of philosophy of technology from January 1, 2011 to September 30, 2022, exploring what applications journalism and communication research has made of philosophy of technology theory over the past 11 years and what impact the development of philosophy of technology domestically has had on the journalism and communication field.

【Results】 From three aspects—annual publication volume, keyword clustering, and emergent nodes—the article finds that with the deepening of domestic philosophy of technology research, the journalism and communication field has benefited considerably from it.

【Conclusion】 In the new media era of continuously evolving technology, philosophy of technology theory is of great significance for the journalism and communication field to achieve breakthroughs in its own discipline.

Full Text

Analyzing the Influence of Philosophy of Technology on Journalism and Communication Studies: A Bibliometric Study Based on Citespace

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Abstract: [Purpose] In the turbulent new media era, emerging technologies proliferate endlessly, bringing forth new problems that demand clarification. How the field of journalism and communication can leverage philosophical theories to achieve research innovation warrants exploration. [Method] This study employs the data processing software Citespace 6.1 (R2) to systematically examine relevant domestic research in philosophy of technology from January 1, 2011, to September 30, 2022, investigating how journalism and communication research has applied philosophy of technology theory over these eleven years and how the development of philosophy of technology domestically has influenced the journalism and communication field. [Results] Through analysis of annual publication volume, keyword clustering, and burst nodes, the study finds that journalism and communication has benefited considerably from the deepening of domestic philosophy of technology research. [Conclusion] In the new media era of continuous technological renewal, philosophy of technology theory holds significant importance for journalism and communication to achieve disciplinary breakthroughs.

Keywords: Journalism and communication; Philosophy of technology; Citespace; Theoretical application; Technology

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As society continues to develop, science and technology evolve with each passing day. While technology brings enormous convenience to modern life, it also generates a series of new problems. People' s attitudes toward technology have shifted from simple to complex, and technology increasingly perplexes us: Is technology solving problems or creating more? What is the relationship between technology and humanity? How should humans examine technology? Consequently, many scholars have begun focusing on philosophy of technology, conducting continuous theoretical research and critical reflection on technological development, exploring technology-related issues from a philosophical perspective. Philosophy of technology attempts to interpret contemporary phenomena based on human life practices and technology. Domestic research in philosophy of technology has a long history and has now permeated various fields, including journalism and communication. This article systematically examines relevant research in philosophy of technology from January 1, 2011, to September 30, 2022, using Citespace 6.1 (R3) software to analyze research emphases and trends during this period, exploring the influence of philosophy of technology on journalism and communication from a philosophical perspective.

[Figure 1: see original paper] Annual Publication Volume of Domestic Philosophy of Technology Research

1. Annual Publication Volume Analysis

Annual publication volume corresponds to research activity in a field. As shown in Figure 1, over the eleven years from 2011 to 2022, domestic philosophy of technology research maintained relatively stable output, with approximately 150 articles published annually. Notably, 2016 marked the first surge, with 182 publications. That year, American scientists first detected gravitational waves, confirming the final prediction of general relativity—a landmark event that allowed natural sciences to "break the circle" domestically. Meanwhile, the world's largest single-aperture radio telescope, "FAST," was established in Guizhou. Simultaneously, computer and electronic technology advanced rapidly: AlphaGo defeated Lee Sedol in Go, becoming the first AI robot to defeat a world Go champion; big data technology matured, with stream data processing becoming a trend that significantly improved data storage time. These major natural science discoveries and leapfrog developments in computer technology created a favorable external environment for domestic philosophy of technology research and propelled the application of philosophy of technology theory in journalism and communication studies.

The second peak occurred in 2021, reaching 190 articles, though substantial growth had already begun in 2020. This must be considered in light of the special factor of the COVID-19 pandemic, which profoundly impacted all aspects of public social activity. Practical problems spurred solutions, and demands for technological development rose sharply. Consequently, revolutionary technologies like 5G brought dramatic changes to people's lives, while algorithms, big data, artificial intelligence, VR/AR, wearable devices, and IoT technology also matured. In February 2016, Hu Yiqing and Zhang Jingyan published "A Critique of Functionalist Media View: Revisiting Uses and Gratifications Theory," which drew on Heidegger's philosophy of technology to deeply critique the functionalist media view embedded in uses and gratifications theory. They argued that the proposition that humans possess agency in using media is entirely false: media technology's "enframing" first constrains all human needs; second, uses and gratifications theory, like a "stimulus-response" model, confines communication research to the descriptive level of phenomena and functions; finally, the theory ignores media technology's development and reconstruction of audiences, causing communication studies to lose its disciplinary uniqueness. In the same month, Mao Zhangqing and Hu Yongzhao published "Hu Yiqing: Rediscovering Communication Studies—Starting from Heidegger's Philosophy of Technology," further exploring Hu Yiqing's understanding and reflection on Heidegger's philosophy of technology. Scholars represented by Hu Yiqing first sparked a small wave of philosophy of technology research in journalism and communication, which gradually spread to education, economics, and natural sciences, ultimately forming the first peak in philosophy of technology research

in 2016.

At the beginning of 2021, Shi Wen and Chen Changfeng reviewed five frontier themes extracted from Chinese and English academic papers on artificial intelligence from 2020, including: algorithms and information personalization, intelligent entities as communicators, algorithm-mediated society, algorithmic temporality, and algorithmic ethics. This article, published early in 2021, continued the 2020 philosophy of technology research wave while simultaneously launching a new wave of research in the field. As Ihde (1993) stated: "In this closing period of the twentieth century, the primary symbols of technology transfer are not the steel axes and plows of the nineteenth century, but radios and televisions." These words remain relevant today. Analysis of these two publication surges reveals that all fields are influenced by technological innovation, with media—journalism and communication—being the foremost to perceive these changes.

2. Keyword Clustering Analysis

Article keywords condense research themes and directions. Analyzing keywords from multiple articles can reveal research hotspots and trends in a specific field during a particular period. Using Citespace for co-occurrence analysis and selecting keyword categories yields the keyword clustering map shown in Figure 2. The top ten cluster labels display philosophy of technology, technology, empirical turn, philosophy, Mitcham, Verbeek, Mumford, Stiegler, existence, and Habermas. Further mining of the clustering map and refining relevant clusters produces Table 1, the keyword co-occurrence cluster table. The table shows that over the past eleven years, domestic philosophy of technology research has concentrated on eight scholars: Heidegger, Marx, Feenberg, Mitcham, Verbeek, Mumford, Stiegler, and Habermas. These scholars' ideas have not only been deeply studied in philosophy of technology but also widely introduced and applied in journalism and communication.

[Figure 2: see original paper] Keyword Clustering Map of Domestic Philosophy of Technology Research

2.1 Heidegger (Martin Heidegger)

As a representative figure in philosophy of technology, Heidegger proposed that society' s essence is technology and social progress is actually technological progress. Technology' s essence is "enframing," and modern technology is a mode of revealing through which humans relentlessly challenge nature. Journalism and communication has benefited considerably from Heidegger' s philosophy of technology. As previously mentioned, Hu Yiqing believes that Heidegger' s critique and reflection on technological instrumentalism serve as a warning for communication technology research to properly grasp the mutually constitutive relationship between technology and humanity. Traditional functionalist technology-guided communication research is no longer suited to contemporary

trends; the journalism and communication field should establish connections with philosophy to 重塑 disciplinary creativity.

2.2 Marx (Karl Marx)

Marx provided a unique perspective for philosophy of technology research. From a historical materialist viewpoint, he saw technology' s transformative role in productive forces and production relations while critiquing technology' s alienation of humans in Western capitalist societies. In journalism and communication, Marxism has two research traditions: first, Marxist political practice research; second, Marxist critical theory research. Marxist technology critique theory focuses on political economy, combining technology with political economy to form technological political critique and technological economic critique. Wu Jing and Ying Wu examined the interactive process connecting communication technology with political-economic practices, ideological struggles, and social reality, addressing the absence of technological politics and communication technology critique in Marxist journalism studies.

2.3 Feenberg (Andrew Feenberg)

As the fourth-generation flag-bearer of the Frankfurt School, Feenberg inherited traditional social critical theory, combined substantivism and constructivism, and creatively introduced the concept of "technical code,"supplemented by "two-level instrumentalization theory" to construct his own critical theory framework. His technological design thinking provides a deeper understanding of humans and technology. Li Zhimin studied Feenberg' s dualistic interpretation of computer technology—control and communication—examining his new understanding of this communication technology. He believes that in the new media era, media research should focus on concrete experiences of users and examine the relationship between new communication technology, humans, and society, thus Feenberg' s thinking offers a new reference framework for how to view and use communication technology in today' s new communication environment.

2.4 Mitcham (Carl Mitcham)

Mitcham is a renowned contemporary engineering technology philosophy researcher specializing in engineering technology ethics and humanistic technology issues. His philosophy of technology involves another major transformation after the empirical turn in the field—the ethical turn. He divides technology into four types: technology as artifact, technology as knowledge, technology as activity, and technology as volition. Taking television as an example: television as a machine device belongs to technology as artifact; skills for using television belong to technology as knowledge; television' s production, design, operation, and maintenance belong to technology as activity; and media power holders exporting values through television belong to technology as volition. In journalism and communication, Mitcham' s philosophy of technology can still be applied to

understand old and new media, though currently few domestic journalism and communication studies have researched or applied his ideas.

2.5 Verbeek (Peter-Paul Verbeek)

Verbeek inherits Latour's "actor-network theory," viewing technological artifacts as moral agents and ethical evaluation objects similar to humans, and proposes the concept of "moral materialization"—injecting moral norms into technological artifacts during the design phase. He integrates the empirical turn and ethical turn in philosophy of technology since the 1980s, combining descriptive and critical dimensions to guide the field' s third turn. In journalism and communication, can emerging media technologies undergo moral evaluation? Artificial intelligence' s learning and simulation of human emotions is maturing; big data news delivery continues to solidify "information cocoons" ; and biometric technologies like fingerprint, pupil, and facial recognition increasingly erode personal information security. In the current context of constantly updating media technology, Verbeek' s philosophy of technology theory clearly has applications in journalism and communication.

2.6 Mumford (Lewis Mumford)

When facing problems created by technology, Mumford proposed the concept of mind priority, believing humanity ranks above tools—minding is greater than making. Therefore, he was not concerned about social traps created by modern technology, believing that as long as human nature and mental power are reactivated, people can escape technological dilemmas. He also distinguished between "machine" (referring to mechanical devices) and "the machine" (referring to mechanical concepts and institutions), summarizing the latter as the megamachine. He emphasized the role of mind, advocating a return to organic living to escape the megamachine or megatechnology dilemma. Mumford has deep connections with journalism and communication, profoundly influencing the Chicago School and media ecology school. He recognized communication technology' s role in human civilization history, insisting on ecological ethics and cultural balance to achieve harmony between humans, technology, and the environment.

2.7 Stiegler (Bernard Stiegler)

Stiegler believes humans have been a "deficient being" from their origin, which determines that humans must have technology as a "prosthesis" from the beginning, forming a "human-technology" structure and prosthetic existence to survive. Technology has a dual nature—it is both poison and antidote for modern society. He also breaks through Husserl' s two-level retention (primary retention as subjective experience, secondary retention as subjective memory) to propose tertiary retention—external technological artifacts. In the new media and big data era, Stiegler warns that human subjects have completely yielded to technological objects, becoming digital masses. Such powerful technology critique and

media critique refocuses attention on the loss of subjectivity and technological dilemmas brought by scientific progress in contemporary society.

2.8 Habermas (Jurgen Habermas)

Habermas affirms technology' s enormous value to human society, pioneering the explicit proposition that science and technology constitute the primary productive force. Simultaneously, he critically examines the negative impacts of science and technology on people. In his theory of communicative action, technology also belongs to the category of communicative action, thus technology necessarily exists within the dialectical relationship between social systems and personal systems, inevitably bearing human "interests" or values. He believes science and technology alienation manifests in two aspects: first, technology alienates humans into slaves of machines; second, technology itself alienates into a new invisible ideology that legitimates domination. However, Habermas' s theory has flaws: first, it exaggerates the negative effects of science and technology themselves, viewing science and technology as the key to understanding all problems and only critiquing science and technology themselves while ignoring external factors causing science and technology alienation; second, he fails to apply social constructivism to social existence, stopping at the level of social ideology and actually strengthening technological essentialism. Journalism and communication' s application of Habermas' s technology view is not uncommon, and when his critique shifts from "instrumental rationality" to "communicative rationality," the perspective of media critique also transforms accordingly.

Domestic Philosophy of Technology Keyword Co-occurrence Cluster Table

3. Burst Node Analysis

Burst keywords reflect a field' s research evolution, and visual analysis of burst nodes can clearly perceive the field's cutting-edge dynamics. Running Citespace produces the burst vocabulary map shown in Figure 3. The figure reveals 25 burst nodes in domestic philosophy of technology research from 2011 to 2022. Early-stage research from 2011 to 2013 included cutting-edge topics such as cultural turn, philosophy of science, essence, empirical turn, existence, engineering philosophy, McLuhan, and humanism. Mid-stage research from 2013 to 2016 included nature, technological rationality, essence of technology, vocational education, technological value, big data, and paradigm. Recent research from 2017 to 2022 has included media technology, technological risk, artificial intelligence, Engels, moral materialization, structure, body, artifacts, function, and Verbeek.

[Figure 3: see original paper] Burst Vocabulary Map of Domestic Philosophy of Technology Research

3.1 Early Stage (2011-2013): Introduction and Promotion

In early research, as the figure shows, theory introduction and promotion remained the main direction of domestic philosophy of technology research, a characteristic also reflected in journalism and communication' s application of philosophy of technology theory. Reviewing the journalism and communication research environment at that time, between 2011 and 2013, "new media" and "media convergence" became hot concepts, with new media platforms like Weibo and WeChat gradually maturing and competition between old and new media intensifying. The journalism and communication academic community noticed new media technologies and platforms, producing substantial research, but rarely elevating discussion to the philosophical level. Some scholars focused on philosophy of technology, such as the technological philosophies of Levinson, Mumford, and McLuhan, but most research remained at the level of abstract theoretical introduction without applying theory to specific emerging media technologies or phenomena.

3.2 Middle Stage (2013-2016): Focus on Specific Technologies

From 2013 to 2016, domestic philosophy of technology research gradually shifted toward specific technologies, grounding theory in new technological devices and phenomena in social life to deepen theoretical development through practice. Reflection on technology' s value and rationality became an academic frontier, with new technologies such as IoT, 3D printing, and big data becoming hot topics for critique. In the same period, journalism and communication scholars paid attention to these new technologies while reflecting on media technology' s functionalism and critiquing traditional communication research paradigms, which gradually became popular. In addition to the previously mentioned scholar Hu Yiqing, Pan Ji also questioned the "uses and gratifications" theory, arguing that when digital media are deeply embedded in people' s life practices, traditional theories that still view media technology as external tools face a paradigm crisis. Sun Wei, focusing on three keywords– "technology," "language," and "medium" –reflected on mainstream communication studies' theoretical presuppositions from the perspective of philosophy of technology, reconsidering the meaning of "communication" and attempting to achieve paradigm innovation in communication research. These scholars, drawing on philosophy of technology theory, critically reflected on traditional communication research paradigms, broadening the discipline' s research horizons and laying groundwork for further theoretical application and deepening.

3.3 Recent Stage (2017-2022): Specific Technologies and Ethical Issues

In the third research stage, as the figure shows, the application of domestic philosophy of technology theory has advanced further, with the relationship between technology and humans, technology ethics, and human subjectivity gradually becoming hot topics. Research on Verbeek, moral materialization, and

related themes reflects domestic philosophy of technology following international research trends, marking the third turn following the empirical turn and ethical turn that began in the 1980s. Notably, the burst term "Engels" appears in the research frontier—2020 marked the 200th anniversary of Engels' s birth, making research on Marx-Engels thought a natural trend that reflects the strong vitality and broad application of Marxist technology critique theory.

In this recent stage, "media technology" appears as a burst term for the first time, inevitably drawing mainstream domestic philosophy of technology research' s attention toward the journalism and communication field. Meanwhile, facing increasingly complex technological phenomena, the journalism and communication academic community is also turning to philosophy of technology for solutions. New technologies such as artificial intelligence, blockchain, and human-machine integration have gradually entered the entire process of journalism and communication activities, bringing new problems. Additionally, due to the impact of COVID-19 and frequent global "black swan" and "gray rhino" events, the "risk" coefficient of society and technology has increased sharply. The dilemmas faced by journalism and communication research may receive more inspiration from philosophy of technology.

Philosophy is fundamentally the discipline that guides all disciplines. The widespread application and research of philosophy of technology both stem from its own disciplinary characteristics and respond to the demands of scientific and technological progress and the trends of the times. This article systematically examines the research trajectory of domestic philosophy of technology over the past eleven years, exploring the influence of relevant theoretical ideas in the journalism and communication field from three aspects: annual publication volume, keyword clustering, and burst nodes. In the context of philosophy of technology, journalism and communication research occupies an important position, and journalism and communication scholars have benefited considerably from philosophy of technology. In the new media era of continuous technological renewal, journalism and communication studies will achieve even more breakthroughs in applying philosophy of technology theory.

References

[1] [US] Don Ihde. *Philosophy of Technology: An Introduction*. Translated by Luo Yueming and Ouyang Guangming. Shanghai: Shanghai University Press, 2017: 149.

[2] Hu Yiqing and Zhang Jingyan. "A Critique of Functionalist Media View: Revisiting Uses and Gratifications Theory." *Journalism University*, 2016(1): 44-50+86+147.

[3] Mao Zhangqing and Hu Yongzhao. "Hu Yiqing: Rediscovering Communication Studies–Starting from Heidegger's Philosophy of Technology." *International Press*, 2016(2): 170-176.

[4] Shi Wen and Chen Changfeng. "Information Personalization and Intelligent Entities as Communicators: A Review of Intelligent Communication Research in 2020." *Shanghai Journalism Review*, 2021(1): 25-34.

[5] [US] Don Ihde. *Philosophy of Technology: An Introduction*. Translated by Luo Yueming and Ouyang Guangming. Shanghai: Shanghai University Press, 2017: 138.

[6] An Weifu. "Toward Social Constructivism: The Technological Ideas of Heidegger, Habermas, and Feenberg." *Science Technology and Dialectics*, 2002(6): 33-36.

[7] Mao Zhangqing and Hu Yongzhao. "Hu Yiqing: Rediscovering Communication Studies—Starting from Heidegger's Philosophy of Technology." *International Press*, 2016(2): 170-176.

[8] Li Sanhu. "An Analysis of Marx' s Philosophy of Technology." *Science Technology and Dialectics*, 1998(1): 30-34.

[9] Wu Jing and Ying Wu. "Toward Digital Socialism: Marxist Critique of Communication Technology from an Industrialization Perspective." *Global Media Journal*, 2021(3): 3-22.

[10] An Weifu. "Toward Social Constructivism: The Technological Ideas of Heidegger, Habermas, and Feenberg." *Science Technology and Dialectics*, 2002(6): 33-36.

[11] Li Zhimin. "From 'Control Tool' to 'Communication Medium' : On the New Generation Frankfurt School Scholar Feenberg' s View of Communication Technology." *International Press*, 2017(3): 74-90.

[12] Tian Pengying. "From Philosophy of Technology to the Ethical Turn in Technology: A Review of Carl Mitcham' s Philosophy of Technology." *Philosophical Trends*, 2005(4): 60-64.

[13] Ren Yufeng and Luo Chaohui. "Interpretation of Mitcham' s Conceptual Framework of Technology Typology." *Science Technology and Dialectics*, 2006(6): 75-77+99+111.

[14] Chen Fan and Jia Lumeng. "Analysis of New Trends in Technology Ethics: A Review of Verbeek' s 'Moral Materialization' ." *Studies in Philosophy of Science and Technology*, 2015(6): 45-50.

[15] Wu Guosheng. "Lewis Mumford' s Philosophy of Technology." *Peking University Journal (Philosophy and Social Sciences)*, 2007(6): 30-35.

[16] Wang Hua. " 'The Bright World Seen Through Glass' : Lewis Mumford' s Communication Thought and Its Disciplinary Value." *International Press*, 2012(11): 6-11.

[17] Guo Xiaohui. "The Structure of Human Nature from the Perspective of Technology Phenomenology: A Review of Stiegler' s Philosophy of Technology."

Studies in Dialectics of Nature, 2009(7): 37-42.

[18] Wang Qingjie. "Technology and Time: From Heidegger to Stiegler." *Philosophical Analysis*, 2022(5): 142-150+199.

[19] Song Dexiao. "The 'Othering' of the Subject: A Perspective on Contemporary Western Media Critique Theory." *Gansu Social Sciences*, 2022(2): 20-27.

[20] An Weifu. "Toward Social Constructivism: The Technological Ideas of Heidegger, Habermas, and Feenberg." *Science Technology and Dialectics*, 2002(6): 33-36.

[21] An Weifu. "Viewing Philosophy of Science, Philosophy of Technology, and Social Philosophy from Social Constructivism." *Studies in Dialectics of Nature*, 2002(12): 36-39.

[22] Lian Shuixing and Mei Qionglin. "The Turn in Media Critique: From 'Instrumental Rationality' to 'Communicative Rationality' —On Habermas' s Media Critique Theory." *Social Science Research*, 2010(5): 184-187.

[23] Pan Ji. "Restoring the 'Living' Relationship Between Humans and Technology: A Reflection on 'Uses and Gratifications' Theory." *International Press*, 2016(9): 75-85.

[24] Sun Wei. "From New Media to New Communication: Reflections on Communication Research Based on Philosophy of Technology." *Jinan Journal (Philosophy and Social Sciences)*, 2016(1): 66-75+131.

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(Editor: Zhang Xiaojing)

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