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Science history and science communication: A preliminary exploration of science-history texts in *Science Pictorial* (1933–1949)

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Abstract

As one of China's oldest and most comprehensive popular-science journals, *Science Pictorial* has long been dedicated to promoting science and enhancing public scientific literacy. This paper presents a textual analysis of the science-history content in the journal from 1933 to 1949, exploring how mass media disseminated the knowledge of science history during the Republic of China era and the societal perceptions it reflected. The findings reveal that *Science Pictorial*'s approach to science history reflects an empirical view of science and a progressive view of science history embraced by science communicators. This highlights the strong sense of national crisis felt by Chinese intellectuals at the time, the broad impact of scientific thinking and their deep respect for the scientific community. From a historiographical perspective, we propose that research on science communication should consider the communicators' views on science and science history, as well as the ideological motivations and social forces shaping these views. This approach enables us to tackle more fundamental questions, such as why we conduct science communication and what we should communicate. We also suggest that science communicators should not only disseminate scientific knowledge but also account for the historical and cultural contexts of science. Ideally, they should develop a strong foundation in the historiography of science to help build a comprehensive framework for science communication.

Keywords

Science Pictorial, history of science, science communication, historiography of science

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1. Introduction

Traditional science popularization in China has largely focused on the dissemination of scientific knowledge while placing less emphasis on the history of science. However, the history of science does more than trace the generation, development and evolution of scientific knowledge, and thus help the public develop a deeper understanding of science and its essence, methods and values. Furthermore, it can reveal the close relationship between science and society, demonstrating how science shapes our social environment and, in turn, how society promotes scientific development. This interplay deepens the public's understanding of the dynamic between science and society, making the history of science an essential part of science communication. To promote the research on science popularization in China, this paper incorporates the perspective of the historiography of science, examining how modern Chinese intellectuals and mass media understood and communicated science history and how societal factors influenced these efforts through an analysis of *Science Pictorial*'s portrayal of science history during the Republic of China era. Through such an analysis, the paper also explores the theoretical significance of the historiography of science in science communication.

During the 1920s and 1930s, China experienced a peak in scientific movement, with a growing societal demand for science. During this period, a wave of popular-science periodicals emerged, providing an important platform for science popularization. The Science Society of China, one of the country's earliest private academic organizations, played an active role in this movement, contributing to both the spread of scientific knowledge and the dissemination of the spirit of science. The founding of *Science Pictorial* was a key initiative by the Science Society of China. Established in Shanghai in August 1933 by Yang Xiaoshu and his colleagues, it has continued to publish to this day and stands as China's oldest and most influential popular-science journal. In its early years, *Science Pictorial* attracted contributions from prominent scientists, establishing its reputation as an authoritative voice in popular science. Wang Jiliang, then president of the Science Society of China, wrote in the foreword of the journal's first issue:

> The main purpose of founding *Science Pictorial* is to bring general scientific knowledge and news to the public. We hope to introduce to people the latest scientific inventions, facts, phenomena, applications, theories and fun games from around the world in simple words as well as clear and meaningful illustrations or photos. (Wang, 1933)

Notably, the journal included the history of science and technology as part of its content and even organized a catalogue of popular-science articles under the category of the 'history of science' (and technology). From its inception in 1933 to the founding of the People's Republic of China in 1949, *Science Pictorial* catalogued its articles by category in the last issue of each volume. In total, 198 articles were identified as 'history of science'. These articles can be broadly grouped into four main categories: (1) scientists, inventors and scientific discoveries (68 articles), which presented the life stories and achievements of historical figures in science and technology through literary forms such as biographies and eulogies; (2) technological inventions and products (74 articles), which covered the history of technological inventions such as the telegraph and photography and the development processes of products like bicycles and glass; (3) scientific institutions and general science history (15 articles), focusing on the history of science and technology societies and scientific achievements across centuries; and (4) science news and recent developments (33 articles), which reported on research institutions, societies, journals and industrial exhibitions. The remaining eight articles, which covered topics such as 'the origin of language', 'the story of cats' and 'mummies over four thousand years', focused more on the humanities, history and archaeology, yet were also classified as 'history of science'.

Through analysing these articles and their illustrations, we gain insight into how *Science Pictorial* promoted the history of science during this era, as well as how science and its history were perceived by science communicators at the time. These observations also provide inspiration for modern science popularization efforts in China.

2. *Science Pictorial* and its perception and dissemination of science and science history

As some scholars have noted, 'In the context of social discourse, the pictorial serves as a visual medium for the construction of social functions and provides an important vehicle for the formation and establishment of scientific concepts. What it represents is the position and purpose of the communicator' (Qiu, 2023). *Science Pictorial*'s popular-science articles in the 'history of science' category also reflect the perspectives and communication goals of its authors regarding science and science history. By analysing these texts, we can better understand the viewpoints held by these communicators and the ideas they intended to convey, offering insight into how Chinese intellectuals during the Republic of China period viewed science and its history.

2.1 Perception and dissemination of science

Science Pictorial covers a wide range of topics in the history of science, from the origins of ancient knowledge to cutting-edge modern technology. This broad scope not only provides readers with a wealth of scientific information but also helps them develop a comprehensive understanding of science's progression. By highlighting major events and figures in science history, the authors aim to deepen readers' appreciation of science and its role in society.

First, *Science Pictorial* brings historical figures in science and technology to life through vivid descriptions and illustrations, presenting them as models of admirable character and outstanding achievements. For example, Xi (1937) described Edison as 'having achieved the highest success in experimental science with his extraordinary spirit and perseverance, from which all of humanity has benefited'. Another article narrates Edison's story through a series of images, portraying him as curious, persistent, innovative and dedicated to his craft (Anonymous, 1947). Similarly, Sun (1938) used photos and captions of Madame Curie and her daughter Irène Joliot-Curie in the lab, portraying Madame Curie's dedication and passion for scientific research. One image shows the intense steam from the refining pot in an early radium extraction experiment, with Madame Curie working intently in the background. The accompanying caption explains that the initial solution contained 500,000 parts of barium to one part of radium, and that more than 23 iterations were required to yield radium salt, containing about 90% radium. This account highlights the Curies' relentless dedication and meticulous attitude to scientific research. The article also features other images related to scientific instruments, experimental results and principles, helping readers understand the experimental process and principles of extracting the element radium, and popularizing the experimental culture of science while recapping Madame Curie's achievements. These articles communicate important values and qualities of the scientific and technological community, such as unyielding perseverance, courage to innovate, selfless dedication, passion for science, and rigorous scientific attitude. It shows that in the eyes of communicators at the time, science, as a venture exploring the unknown, is essentially a challenging endeavour. It is not only a simple pursuit of knowledge but also a challenge to the limits of human intelligence and perseverance. Moreover, the main activities of scientific research mostly take place in laboratories, a world filled with instruments, reagents and endless data. Here, scientists immerse themselves in experiments and theoretical derivations day after day, year after year, facing countless failures and setbacks. Yet, it is their relentless spirit that forms the cornerstone of scientific progress.

Second, the history of science is rich with examples of questioning and challenging established theories. By sharing stories of prominent figures and groundbreaking discoveries, *Science Pictorial* encourages readers to think critically and question conventional wisdom. For example, an article about Einstein states: 'In 1905, Einstein's theory of relativity was published for the first time, overturning the Newtonian doctrine that had been believed by everyone for two hundred years, causing a great shock in the scientific community' (Yu, 1933). Another article on American astronomer Langley mentions: 'He did not believe in the theories about flying of his time, and considered most of them unreliable' (Zhi Zun, 1935). An article on Galileo

describes his support for the Copernican theory despite facing religious trial, accompanied by an image of his interrogation (Wang, 1938). The widespread circulation of such stories indicates the communicators' strong endorsement of the spirit of scientific criticism and questioning during that period. In their view, science is an endeavour characterized by innovation and challenge. Both scientists and the general public need to develop a critical thinking, rather than blindly follow the authority, and dare to question and challenge traditional concepts, thereby obtaining scientific truth through rigorous scientific methods such as scientific experiments and data analysis.

Lastly, science communicators at the time saw science not only as a challenging endeavour that requires critical thinking and innovative spirit but also as a noble pursuit for the greater good. This ideal is evident in articles emphasizing the selfless contributions of scientific figures and the societal value of technological advancements. Among the popular-science articles about scientific figures, many describe their selfless dedication to humanity, emphasizing the positive value of science they have brought into play. For example, Liu (1949) presented Pasteur's stories by focusing on his contributions to humanity through science and his resistance to the militarization of scientific discoveries. By contrast, articles on technological inventions and products, such as penicillin, radio and sewing machines, often emphasize the constant evolution of technology and its practical contributions to medicine and industry. Some articles also introduce scientific methods and thinking styles from different periods, illustrated with demonstration pictures that convey messages like 'technology is the application of science' and 'science is beneficial to industry'. For example, Ji (1933) explained how the centrifugal creamer, which was developed in a lab, merged scientific knowledge and experimental observation with industrial needs, and thus promoted societal and industrial progress. Xin Jun (1941a) discussed the role of the metallurgical microscope in advancing steel metallurgy. In the eyes of the authors of these articles, technology reflects the practical application of scientific knowledge, and technological development is closely dependent on scientific progress and breakthroughs.

2.2 Understanding and communication of the history of science and technology

Science-history articles in *Science Pictorial* introduce the trajectory of scientific development and highlight science's achievements across various historical stages. Through these articles, the authors have presented a historical view that 'science is continuously advancing and constantly driving societal progress'.

First, the history of science is seen as a history of ongoing progress. This view is often reflected in articles that trace scientific development over extended periods. For example, Xin Jun (1941b) started his narrative in the fifteenth century and covered key milestones such as Copernicus's heliocentric theory, Vesalius's anatomy, Galileo's physics, Kepler's astronomy, Boyle's gas theory, Harvey's blood circulation theory, Newton's law of universal gravitation, and the establishment of the Royal Society in London and the French Academy of Sciences. Meng (1941) discussed advancements in geography, biology and chemistry during the eighteenth century and introduced developments in chemistry and biology in the nineteenth century, with brief mentions of geology, physics and astronomy. These articles convey the message that the history of science is a process of relentless advancement, with scientists' empirical spirit—validating theories through experimentation—acting as a central force in this progress. Furthermore, scientific experiments demand reproducibility, meaning that other scientists should be able to replicate them under the same conditions and obtain similar results. This requirement ensures the objectivity and reliability of scientific knowledge. For example, Xin Jun (1941c) stated in his article that 'As modern science requires, the sole scientific method mandates that theories be extracted from empirical evidence and subsequently confirmed through experimental validation. This approach tightens the bond between theoretical knowledge and practical application, rendering scientific insights not only relevant but also tangibly applicable'. He also notes that 'Scientists began to publish the results of their work in specialized journals, not only announcing their conclusions but also reporting in detail all the facts and experimental methods upon which they were based. This allows

other scientists to review the facts, replicate the experiments, and scrutinize the reliability of any conclusion. These practices are indeed much more advanced than the scientific methods of ancient times'. These articles suggest that scientific progress is the result of scientists' diligent efforts over generations, each building on the knowledge established by their predecessors according to rigorous, objective standards.

Second, the history of science and technology reflects a close interaction with society. Some articles illustrate how advances in science and technology have propelled society forward. For example, Wang (1934) observed that 'Among the inventions that have contributed to the world culture, the steam engine's contribution is the greatest. It not only revolutionized manufacturing in factories and transportation on land but also facilitated maritime traffic, enabling people to cross the oceans without relying on wind and water currents, thus connecting countries that were isolated in the past'. Xin Jun (1940) also mentioned the profound impact of the steam engine on industrial inventions and production, which in turn spurred social progress and improved people's daily lives: 'The steam engine has been prevalent in land and sea transportation, industrial manufacturing and other areas for nearly a century. The happiness enjoyed by humanity has increased immeasurably as a result'. Some other articles address the social issues that arose alongside the industrial revolution, such as declining wages and job availability for workers due to automation, as well as the exploitation of female and child labour, which intensified class conflicts. Nevertheless, the authors maintain that 'machines save people time and energy, allowing them to engage in cultural activities and physical self-improvement with their extra time. The oppression of workers and the evils of class struggle are due to the imperfections of the social system, not the fault of machines themselves' (Chen, 1941).

In the view of Chinese intellectuals at the time, technological development and the industrial revolution contributed to economic growth and social progress, and improved people's lives. Although technology and technological products (i.e., machine) also intensified social inequality, they were inherently neutral, with class conflict primarily stemming from systemic social issues. In that period when China faced social upheaval and external threats, people recognized that lagging behind would invite exploitation and that scientific and technological advancement was crucial for national sovereignty and societal development. In other words, China needed science and technology to protect itself and modernize. As Yang (1936) observed: All the advanced weapons of modern warfare are products of laboratories. Modern warfare is not merely a military conflict between nations but a scientific contest. War readiness depends on the activities of scientific laboratories and manufacturing facilities in peacetime. Only through resource independence and self-sufficiency can a nation free itself from the threats of enemy domination.

3. The social background and ideological roots of *Science Pictorial*'s perception and dissemination of science and science history

Constructivism argues that 'reality and knowledge are both socially constructed, not by individuals alone, but through collective construction. We have such constructions because we acquire knowledge, experiences and ideological origins from our communities' (Xu, 2006). In other words, our understanding of the world is not innate; it is shaped through social interaction, negotiation and dialogue. Each person interprets the world in their own way, with their understanding shaped by the socio-cultural environment and community in which they engage. The selection of science history content in *Science Pictorial*, as well as the perspectives of its communicators on science and science history, are rooted in specific social factors and are closely tied to the societal context of the time.

3.1 National salvation through science and industry

Since the Opium War, modern China endured long periods of oppression and exploitation by Western powers. Scholar-officials and intellectuals who recognized this situation early on committed

themselves to finding ways to rescue the nation from crisis and pursue modernization. As early as the nineteenth century, in response to Western aggression and the corruption and incompetence of the Qing government, some visionaries turned to advanced science and technology from the West, hoping to save their country through science. Among them, Lin Zexu was a prominent figure who championed the slogan 'Learn from the enemy's superior techniques to control the enemy', becoming the first in modern Chinese history to explicitly advocate using Western science and technology for national salvation. Wei Yuan furthered Lin's ideas, promoting 'Learn the barbarians' superior techniques to control the barbarians', and detailing Western science and technology in his book *Illustrated Treatise on the Maritime Kingdoms*. With the rise of the Self-Strengthening Movement and the introduction of Western scientific literature, some intellectuals began to deepen their understanding of science, moving beyond material aspects to explore theoretical dimensions. During the Hundred Days' Reform, reformist thinkers actively promoted science as a means of national salvation and conducted various science communication activities. With the introduction of the term 'science' to China and Yan Fu's strong advocacy, the idea of 'saving the nation through knowledge acquisition' began to take shape. In the early twentieth century, Kang Youwei promoted the notion of 'national salvation through science', marking the rise of science as a tool for national survival. During the Xinhai Revolution, numerous societies and periodicals promoted science vigorously, and overseas students advocated for national salvation through science, greatly accelerating the national salvation movement. The Science Society of China and its journal *Science* provided a stable platform for advancing this mission (Zhu, 2006).

As the founding community of *Science Pictorial*, the Science Society of China functioned as a scientific community. Unlike previous advocates for science, most of its members were students who had returned from abroad with strong scientific backgrounds and a deep understanding of Western scientific culture and societal development. The founders of the society included Hu Mingfu, Zhao Yuanren, Zhou Ren, Bing Zhi, Zhang Yuanshan, Guo Tanxian, Jin Bangzheng, Ren Hongjun and Yang Quan, among others. They established the journal *Scienc*e in 1915, aiming to advance science and promote industrial growth (Yang, 1935a). In August 1933, *Science Pictorial* was founded as a companion to *Science* to support efforts in making scientific knowledge more accessible to the public. The magazine aimed to bring scientific understanding to broader audiences, including youth, through engaging visual content. It not only introduced scientific concepts for practical application in daily life but also aimed to cultivate future generations of scientific talent. At the same time, communicators could use *Science Pictorial* to promote the ideals of national salvation through science and industry, instilling patriotism in the public and emphasizing the critical role of scientific and industrial development in securing the nation's future. For example, zoologist Bing Zhi (1934) wrote, 'Although there are many reasons for China's poverty and weakness today, the underdevelopment of science is among the most important'. Anatomist Lu Yudao (1934a) also stated, 'All our nationals who are dedicated to the revival of our nation should quickly engage in scientific research. All scientists who have conducted research should quickly sacrifice a part of their time to conduct research for the revival of our nation, so that one or several generations later, our nation may once again hold its head high'. Other scholars also highlighted that science is not only linked to national strength but also closely connected to people's everyday lives. For example, Cheng (1933) noted, 'Today's science uses rigorous methods to organize the complex world of phenomena into a body of precise knowledge. This body of precise knowledge can illuminate our life's path, address environmental challenges, enrich our existence and enhance human empowerment'. Only by popularizing scientific knowledge and making it accessible among people can the slogan 'national salvation through science' have a meaningful impact. Moreover, these scholars also believed scientific research to be the foundation of technological innovation, with researchers contributing to social development and national strength. For example, Yang (1935b) argued, 'Practicality is one of the purposes of science, and research is the tool to achieve this purpose'. Lu (1934b) similarly urged, 'The present

moment offers a prime opportunity for pure scientists to serve their nation. Should they achieve an invention capable of rescuing the country from dire situations akin to Pasteur's groundbreaking discovery of microorganisms, they will have not only earned society's esteem but will also contribute to an enhanced societal appreciation for pure science, thereby indirectly promoting the field'. Additionally, Zhang (1934) observed that 'Currently, our nation is confronted with external threats from foreign powers and internal pressures of economic collapse. To navigate this critical juncture, we must commit to self-strengthening and solidifying our foundations. The key to this lies in harnessing scientific research to bolster industrial production, thereby securing a state of self-sufficiency and autonomy'.

Given modern China's unique social background and the Science Society of China's role as a scientists' community, and inspired by the call for national salvation through scientific and industrial advancement, *Science Pictorial* not only disseminated pure scientific knowledge but also featured popular-science articles in its 'history of science' section. These articles introduced and promoted the spirit, temperament and noble character of scientists, highlighted science's innovative and public nature, and demonstrated its progressiveness and social impact through historical examples. They also underscored the significance of technological innovation, guiding people to recognize the feasibility of achieving national salvation through science and industry.

3.2 The 'science-metaphysics debate' and scientific rationalism

On a deeper level, science is not merely a material force or social endeavour; it also represents a cultural type distinct from traditional Chinese culture. A decade before *Science Pictorial* was founded, China's intellectual class, while promoting national salvation through science, began contemplating science's profound connotations and its ideological and cultural implications. The New Culture Movement introduced democracy and science to the Chinese public, fuelling a revolutionary transformation in societal thinking. At the time, science and democracy were entrusted with the heavy responsibility of national salvation and enlightenment, displacing China's traditional cultural values. As one slogan declared, 'To support democracy, one must oppose Confucianism, ritual law, chastity, old ethics and old politics. To support science, one must oppose old art and old religion. To support both democracy and science, one must oppose the nation's cultural essence and old literature' (Chen, 1919). However, as some intellectuals observed the state of European society after World War I, they realized science's limitations and questioned whether we should fully embrace scientific culture and discard traditional culture, and whether science could address ideological issues such as the outlook on life. This led to the famous 'science-metaphysics debate' (Zhang, 2007).

The founders and authors of *Science Pictorial* were firmly rooted in the 'science faction', and they were undoubtedly advocates of science. Many members of the Science Society of China, such as Ding Wenjiang, Ren Hongjun, Tang Yue and Wang Xinggong, were directly involved in the 'science-metaphysics debate'. They actively publishing articles to emphsize the significance of science in shaping worldviews and driving social progress—a view that continued well past the founding of *Science Pictorial*. Through the journal, members of the Science Society of China and popular-science authors continued to disseminate a scientific outlook on life to the public.

On the one hand, they stressed science's importance for national rejuvenation by examining the history of science. Many articles explored the history of Western science, focusing on Western scientists and scientific achievements since the Renaissance and highlighting the unique systems of concepts and methodologies that Western science had developed. Of course, they did not ignore the achievements of ancient Chinese science, especially the Four Great Inventions, and their impact on human progress. Yet, they also lamented the stagnation of scientific and technological development in modern China, which had left the nation vulnerable to exploitation. Whether examining Western science history or ancient Chinese contributions, their ultimate goal was to inspire national confidence and encourage the pursuit of salvation and rejuvenation through science. As Lu Yudao noted:

> However, the Chinese nation is not dead, and the call for national rejuvenation is getting strong. There are political revolutions and cultural movements, not only aiming to 'resurrect the dead and give flesh to the bones', but also wanting to restore the status of an excellent nation. If such an ambition is to be realized, our people must value reason over emotion, recognize science over metaphysics, and engage in practical scientific work for the rejuvenation of the nation. (Lu, 1934a)

On the other hand, by publishing popular-science articles, communicators further clarified the guiding role of science for people, emphasizing that 'as long as one works with the scientific spirit, his/her career will never fundamentally fail, and there will always be achievements. However, scientific spirit alone is not enough, and the application of scientific methods is also required' (Cao, 1933). In other words, if individuals maintain a scientific spirit and apply scientific methods, they can achieve successful careers and fulfilling lives. To this end, it is necessary to 'infiltrate the essence of science into the cells of the people, so that all their traditional anti-scientific thoughts are also squeezed out of their minds and replaced with a new scientific view. This would be our greatest success'; only when there is scientification of the people, can our country achieve scientification, and only when 'the goal of a scientific China is realized, can there be hope for the rejuvenation of the Chinese nation' (Cheng, 1933). For any individual, nation, or even humanity, science must also become a belief. As Cai (1933) observed, 'If we believe in science, and consistently pursue research and invention, then the golden world of the future would beat our wildest imagination. Let us all make our utmost efforts toward that end'.

In summary, for the authors of the science-history articles in *Science Pictorial* and the members of the Science Society of China, science was not only the foundation of material civilization but also the foundation of culture. The spirit and methodologies of science, they argued, should permeate all aspects of work, daily life and thought, extending to every area of national industry, economy and culture, ultimately becoming an essential belief. As early as the 1920s, Hu (1923) noted that the term 'science' had gained an 'unparalleled dignified status' in the hearts of the people; 'no matter those who understand or do not understand, no matter those who are conservative or innovative, no one dares to show contempt or ridicule towards it'. The inclusion of popular-science articles on science history in *Science Pictorial* vividly reflects this broader social and cultural shift.

4. Reflections on the historiography of science

The historiography of science is a branch of the discipline that studies the work of historians of science. It includes the academic history of the field, reflections on the meta-theoretical issues involved, and analyses of various historiographical approaches and methods. From the perspective of historiography, the history of science is inherently diverse, and different viewpoints can yield distinct versions of science history. This discipline can be divided into two main categories: the positivist history of science and the constructivist history of science, each characterized by different epistemological approaches. Moreover, when classified by methodological approaches, the field can be distinguished into the ideological history of science and the social history of science. From the pespecitve of science historiography, we can analyse not only historians' but also science communicators' perceptions of science and science history, along with their methodological approaches.

When we consider the scientific knowledge and historical narratives conveyed by authors as the core subject of analysis, we naturally encounter fundamental questions: What motivates these communicators to share science? What exactly do they convey? Why do they choose to interpret and present science and its history from a specific perspective using particular methods? Addressing these questions requires an in-depth examination of the historiography of science. Similar to the situation a century ago, contemporary science communication and popular-science initiatives in China predominantly focus on the dissemination of scientific knowledge and methodologies, while placing less emphasis on conveying the historical narratives and cultural dimensions underpinning science. This

tendency is rooted in the prevailing trend of scientism in modern China, which views science primarily as a tool—a means to address practical problems and promote societal advancement. Consequently, the utilitarian value of science has been disproportionately emphasized. Even though *Science Pictorial* has popularized the history of science, its perspective remains utilitarian and profit-oriented. The communicators adopt a positivist view of science, regarding the history of science as a narrative of progress, thereby promoting a form of scientism that often overlooks the historical development of science and its cultural connotations, as well as its intricate relationships with society, philosophy and religion, particularly in terms of reflections on science itself.

Today, studies on the science communication efforts of *Science Pictorial* primarily focus on its characteristics, role and effectiveness in popularizing science (Ma, 2022). Few researchers analyse this case from the science historiography perspective to explore deeper questions such as what science communication should prioritize, what it should disseminate, why it should disseminate, and the significance of such dissemination. This article represents an initial attempt in this regard. We believe that to inspire and guide future science communication, research should focus more on the perceptions of science and its history held by communicators, as well as the social context and historical factors that shape these perceptions. Examining the motivations, societal factors and theoretical foundations behind their communication efforts is essential for defining the trajectory of science communication and enhancing its depth and impact. In this context, it is especially crucial to remain vigilant and reflect on the potential pitfalls of scientism. It's important to recognize the significance of diverse interpretations of science in the realm of science communication. While we strive to enhance public scientific literacy, we must be careful not to fall into the traps of a scientism mindset.

From a practical standpoint, science communication should not only aim to popularize knowledge of science and technology and promote the spirit and methodologies of science but also focus on disseminating the history and culture of science. This approach enables the public to understand not just the results of science but also its causes, thereby fostering an appreciation of the traditions and vibrancy of science, as well as the complex relationships between science, technology and society. To achieve this goal, science communicators should cultivate a solid understanding of the historiography of science and familiarize themselves with various academic contexts and approaches to the history of science to maintain a holistic perspective. This is essential for constructing a multi-faceted and comprehensive system of science communication.

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