A reconsideration on telling good stories about Chinese scientists and shaping the exemplary image of scientists amid the anti-pandemic campaign

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Abstract
Shaping Chinese scientists’ positive social image is imperative to promote the spirit of scientists and scientific innovation. This paper studies the historical evolution and current situation of Chinese scientists’ social image and analyses the necessary elements for telling good stories about Chinese scientists. By introducing various work on shaping scientists’ image against the current background of anti-pandemic combat and the social influence of that work, the paper also explores how to tell the stories of scientists well in the post-pandemic era. Such research is significant for guiding further implementation of the Opinions on Further Promoting the Spirit of Scientists and Academic Integrity, telling good stories about scientists and establishing their good image. It is also meaningful in creating a scientific culture that advocates science, respects scientists and encourages scientific innovation.

Keywords
Anti-pandemic, scientific culture, scientists’ image, scientists’ stories, the spirit of scientists

1. Introduction
The impact of the COVID-19 pandemic has directed increasing attention towards scientists, whose personal images and views often have a great impact on public opinion. General Secretary Xi Jinping gave an in-depth explanation of the meaning of vigorously promoting the spirit of scientists at a symposium of scientists held on 11 September 2020. He noted that ‘Scientific achievements cannot be made without spiritual support, and the spirit of scientists is a valuable wealth accumulated by S&T (science and technology) workers in their long-term practice.’ Against this background, the social responsibility and value of scientists is an important research topic worthy of study by scholars from various fields, such as innovation policy, innovative culture, science communication and education. Exploring the spirit

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of scientists based on real and vivid cases, shaping a positive image of scientists among the public and guiding people in recognising, understanding and learning about good qualities of scientists combine to form the foundation for developing an innovation-driven nation.

Although countries around the world differ in their strategies for science communication, most of them regard shaping the social image of scientists as an important task. In a country’s innovation ecosystem, public understanding of science does not mean scientific knowledge and methodology only, but also includes a general understanding of scientists and their work and a full knowledge of the certainty and uncertainty of science. Only in that way can the public offer strong support for national S&T undertakings with a rational attitude (Carding and Farmelo, 1997; Chittenden, 2004).

In modern times, Chinese scientists have gone through several stages of great historical changes, shouldering the missions of saving, serving, building and strengthening the country, and thus forming a unique scientific temper that integrates the scientific spirit and a commitment to serving the nation. Therefore, in order to tell stories about Chinese scientists and establish their image against the unique background of Chinese society, we should explore the historical evolution of their social image, analyse the main factors affecting that image and understand the significance of establishing that image for the construction of scientific culture. All this contributes to the further promotion of scientists’ spirit in accordance with national strategy and public demand and the formation of a fertile environment for scientific innovation.

2. The evolution and present status of Chinese scientists’ social image

Zhan Yan, Hao Junting and other scholars made extensive studies of the development of research on scientists’ image in China and abroad, pointing out that China is still in her infancy in this field of research, and more diversified research is on the rise (Hao and Zhan, 2016; Zhan et al., 2014, 2015). Wang Fenyu, Zhao Yandong, He Guangxi and other scholars summarised the progress of related international research. Based on data analysis, they produced much empirical research on the public’s perception of the image of Chinese scientists and made suggestions for establishing a positive image of scientists (He et al., 2008; He and Wang, 2009; He and Zhao, 2011). Zhao Lei and Liu Bing selected scientists’ portraits for an empirical study involving primary school students, demonstrating how the presence of such portraits could contribute to students’ understanding of scientists (Zhao and Liu, 2009). Zhang Zhengyan, Wang Chenghua and Wu Xinchun, among others, analysed the stereotype of scientists in the public eye and made suggestions for improving that image among teenagers (He and Zhu, 2014; Wang, 2014; Wu and Ji, 2012; Zhang, 2011). In the research of Christidou et al. (2016) on the visual image of scientists in the eyes of American and Greek teenagers and the research of Meyer et al. (2018) on African students, visual research methods were used to analyse a large number of scientists’ portraits drawn by children, which provided a new way of thinking for the study of scientists’ public image.

On the whole, there is much literature on the social image of scientists. Researchers study the recipients of scientific communication, analysing the concrete or abstract image of scientists in the eyes of specific social groups; or explore methodologies, summarising the commonalities and trends in research on scientists in China and abroad; or discuss the practical meaning of such research, making suggestions for improving scientists’ social image. Despite many useful and relevant approaches in that research, there is often inadequate consideration of the social background in which scientists live, especially the specific historical context in which they grew up, as well as their specific social responsibility and contribution to national history, which naturally has a great impact on the social image of scientists.

2.1 Scientists’ image and social responsibility

Throughout history, the image of scientists has always been closely related to their social responsibilities. This is especially true of Chinese scientists, who view themselves as undertaking a great social responsibility in the context of their work. Telling
good stories about scientists is a necessary means to establish their social image and thus to promote and publicise the spirit of Chinese scientists. That is also the expected result within S&T circles and in society at large.

Establishing the image of scientists is a process of publicising the spirit of scientists—their socially responsible quality and other characteristics—by telling stories among the public. Since the May Fourth Movement, which began in 1919, the social responsibilities undertaken by Chinese scientists have changed with the times and become the objective basis for establishing the image of scientists. That image has been reshaped continuously through scientists’ inheritance of those qualities, and the content of scientists’ stories has been enriched in that development. The importance of telling those stories has also increased.

2.2 The historical evolution of Chinese scientists’ social responsibilities

Chinese scientists’ social responsibilities have evolved through the following stages (Wang et al., 2019).

In the early stage, the social responsibility of scientists was to introduce and develop science. Before the founding of the People’s Republic of China, science, as one of the important weapons introduced by the New Culture Movement, assumed the heavy burden of saving the nation. Intellectuals hoped to dedicate themselves to the country by means of their devotion to science. They hoped to start and develop the scientific endeavour in China by organising scientific societies, and thus left a rich spiritual and cultural heritage for Chinese science. Taking Science and New Youth as its main positions, the New Culture Movement introduced science to China, making this the first time the scientific spirit was extensively discussed and promoted (Wu, 1997). The Communist Party of China (CPC) invited representatives from S&T circles to the Chinese People’s Political Consultative Conference on the eve of the founding of the People’s Republic of China. In August 1950, the All-China Congress of Natural Science Workers established the All-China Federation of Natural Science Societies and the All-China Association for Science Popularization. The founding of those organisations constituted a milestone for the academic community with Chinese characteristics under the leadership of the CPC. International conferences and exchanges provided a platform for Chinese academics to go global and display a positive image of Chinese scientists (Editorial Committee of Contemporary China Book Series, 1994).

After China’s reform and opening-up, the social responsibility of scientists was expressed in the statements that ‘S&T are productive forces’ and ‘economic construction depends on S&T’. At the National Science Conference in 1978, Deng Xiaoping put forward the far-reaching conclusions that S&T were productive forces, and that the key to the ‘four modernisations’ was S&T modernisation. In 1980, the government proposed the strategic policy that economic construction must proceed by relying on S&T, and that S&T work must be economy-oriented. Thus, the concept of development from science to technology and from technology to economic production was established. On 13 March 1985, the government issued the Decision of the CPC Central Committee on the Reform of the S&T System, which was the prelude to comprehensive S&T reform. During this period, scientists shoulder the responsibility of developing S&T to support national economic construction, shifting their focus from using science to save and serve the country to using it to build the country.

The implementation of the strategy of rejuvenating the country through science and education enabled scientists to take on new historical missions. On 6 May 1995, the CPC Central Committee issued the Decision on Accelerating S&T Progress, in which that strategy was put forward. Its implementation promoted a change in scientific outlook, raising the issue of strengthening national innovation to a priority directly related to the fate of the nation. Hence, science began to be seen as an important part of spiritual civilisation. Besides scientific research, enhancing the country’s S&T strength, promoting scientific education and cultivating talent for scientific development were also the responsibilities of scientists. In this sense, the strategy of rejuvenating the country through science and education accelerated S&T productivity and strengthened the connection between
S&T and the economy, between independent R&D (research and development) and the introduction of advanced technologies, and between the natural sciences and the social sciences. It was also effective in improving the scientific literacy of citizens and national economic strength and endowed scientists with more social responsibilities (Deng, 2008).

The establishment of a scientific outlook on development brought great changes in the views of Chinese scientists. In particular historical periods, the introduction of science was a means to shift cultural mentalities. Now that some achievements have been made in S&T innovation and science popularisation, combining the fine traditions of Chinese culture with science is more reasonable than mere scientism. The scientific outlook on development helped Chinese scientists to establish a sense of respect for the laws of nature and pay attention to the principles of scientific development. As a result, the unique spiritual temperament possessed by Chinese scientists began to shift from the national spirit of developing the country to the rational and empirical spirit of science. Therefore, S&T development promoted by Chinese scientists was no longer a political or economic slogan or an empty requirement, but represented an understanding of and a respect for science.

The implementation of the strategy of innovation-driven economic growth promoted the spirit of scientists in China. The strategy has been in place since the 18th CPC National Congress. It incorporates ecological civilisation into the Five-point Strategy (promoting economic, political, cultural, social and environmental progress in a coordinated way) and has accelerated the transformation of the relationship between S&T and the economy from one characterised by ‘facing, relying on and serving’ to one of ‘integrating, supporting and leading’. It has also enriched the meaning of the spirit of scientists by taking innovation as the primary driving force of development (Xi, 2017). As the Chinese people’s understanding of science deepens, the attention paid to scientists has reached an unprecedented height. The social image of scientists comes from their accumulated shouldering of historical responsibilities and develops in continuously meeting the needs of the new era. Therefore, considering the needs of the current era when telling stories about scientists is important in the construction of the Chinese scientific culture. In 2019, the Chinese Government issued the Opinions on Further Promoting the Spirit of Scientists and Academic Integrity, which provides guidance for telling good stories about scientists and shaping a good social image of scientists in the contemporary era.

As a bridge connecting the government and scientists, the China Association for Science and Technology (CAST) has made important contributions in uniting and leading scientists to assume social responsibilities and establishing their social image. This was borne out by the establishment of the All-China Federation of Natural Science Societies and the All-China Association for Science Popularization in 1950, the establishment of CAST in 1958, the National Science Conference in 1978, which initiated the ‘Spring of Science’, and the implementation of the Data Collection Project on the Academic Growth of Senior Scientists (DCPS). In 2020, a nationwide survey was conducted by the National Academy of Innovation Strategy of CAST on the attitude and morality of S&T workers. It showed that S&T workers hold the scientific spirit in high regard, but there was still room for improvement in their activities. Against the background of the anti-pandemic campaign, the mission of telling good stories about scientists and establishing their social image is becoming all the more prominent. Scientists should learn from the past and think about what should be done in the future, while inheriting the good qualities of their predecessors.

3. Necessary elements for telling good stories about Chinese scientists

A summary of the spirit of scientists presented in the ‘two bombs and one satellite’ project, the westward movement of Jiaotong University (now Xi’an Jiaotong University, which moved from Shanghai to Xi’an in 1956) and the manned space programme could contribute to a better understanding of the spirit of scientists today, which involves new situations, challenges and reforms and constitutes precious spiritual wealth of the Chinese nation. In the
vast history of science, Chinese scientists achieved a series of important scientific accomplishments and also produced a large number of impressive works sparkling with their spiritual temperament. Those far-reaching achievements have not only guided China’s S&T innovations but have also inspired many people. The *Opinions on Further Promoting the Spirit of Scientists and Academic Integrity* suggested the core elements of scientists’ spirit: patriotism, innovation, truth-seeking, dedication, cooperation and education. That is a concise expression of contemporary Chinese scientists’ spirit.

3.1 The patriotic spirit of loving the country and the people

In June 1955, the United States Department of Defense submitted a memorandum to President Eisenhower, analysing Chinese scientists who studied in the United States and who had requested to return to China. It noted that, among the 5000 Chinese students who had studied in the United States since World War II, 110 people had gained S&T knowledge that could pose a threat to the country’s national security, and that Qian Xuesen and Wang Dawei’s research involved highly confidential national defence plans, so they should not be allowed to leave the country. In August 1955, the Chinese and the American sides began an ambassadorial talk, negotiating about the return of civilians of both sides to their respective countries. On 8 August, Wang Bingnan, ambassador of the Chinese side, provided evidence of Qian’s detention by the US authorities and demanded that the US government revoke the ban on Qian’s departure. On 13 August, the Department of Defense withdrew its objection to the release of Qian and Wang. On 10 September, China released 12 American pilots who had been detained during the Korean War. Soon after, Qian received notice that he could leave the US and immediately purchased a ticket on American President Lines’ SS *President Cleveland*, which was to set sail on 17 September (Cheng and Liu, 2015; Figure 1). Qian’s scientific contributions and great achievements are well documented, but his patriotic spirit was more valuable, especially when in a foreign land and during a troubled time.

Figure 1. Qian Xuesen and his family on board SS *President Cleveland*, 17 September 1955. Source: The picture is from CCTV-10’s China Industrial Archives Exhibition, ‘Five Years to Return to China, Ten Years to Develop Two Bombs. Qian Xuesen—A Scientist of the People’. It is now part of a collection in the DCPS database.

3.2 The spirit of innovation

Tu Youyou won the Lasker Clinical Medical Research Award—the highest award in the clinical medicine field—in September 2011. That made her the first Chinese person to win that honour. Four years later, she won the Nobel Prize in Physiology or Medicine (Figure 2), becoming the first Chinese scientist to win a Nobel Prize in science. Inspired by records of *Artemisia annua*’s use in the traditional Chinese medicine book *Zhou Hou Bei Ji Fang* (Handbook of Prescriptions for Emergencies), Tu discovered the antimalarial substance *qinghaosu*, later known as artemisinin, which is used to treat malaria and could save millions of lives all over the world. As a product of innovative research, artemisinin developed by Tu’s team showed uncertain
efficacy during the research process, which almost led to its abandonment. However, Tu’s innovative spirit and her persistence in research despite difficulties was strong support for the team to work hard and make new progress. Thus, the problem could finally be solved (Zhang et al., 2017).

3.3 The spirit of seeking truth and rigorous scholarship

Zhu Kezhen became the president of Zhejiang University in April 1936, and the Anti-Japanese War broke out in 1937. In an effort to preserve Chinese culture, the university began an arduous eight-year journey and moved to the west. Affected by the war, it moved three times after 11 November 1937 and finally settled in Meltan, Guizhou Province, in January 1940, staying there until June 1946 (Zheng, 2012). In such a turbulent time, Zhu Kezhen required the students to ‘have the habits of distinguishing right from wrong, contemplating gains and losses, thinking meticulously and refusing to follow blindly’ (Zhi, 2015). Thus, under his leadership, Zhejiang University carried out scientific research, enhanced its disciplines, nurtured an effective educational style and produced many talented students (Figure 3).
The university took ‘seeking truth’ as its motto, emphasising that the spirit of ‘seeking truth’ is a kind of courage to ‘go through all difficulties and risk everything for true knowledge’, and that one must have a strict scientific attitude: first, not blindly following or agreeing, only asking about what is right and wrong, regardless of personal gains; second, not being arbitrary or arrogant; third, being dedicated to seeking truth from facts (Dai and Liu, 2019).

3.4 Disinterest in fame and fortune and dedication to research

Jiaotong University (originally named Nanyang College) was founded in Shanghai in 1896. It launched a higher engineering education programme in 1906, making it the first to start such programmes in modern China. It was renamed as Jiaotong University in 1921. In 1956, in response to the strategy of developing national defence industry in northwest China and the call of the CPC Central Committee and the State Council, the university moved from Shanghai to Xi’an (Figure 4) and was renamed Xi’an Jiaotong University in 1959. After moving to Xi’an, all teachers and students of the university carried out teaching and scientific research under constrained conditions. Many professors and experts even gave up their superior living conditions and sold their houses in Shanghai. They devoted themselves to the construction and development of the university for the rest of their lives. The scientists’ spirit during the move, construction and development of the university can be described as the ‘westward movement spirit’, which takes national interest, selfless dedication, promoting good traditions and hard work as its core values.¹

3.5 Collaborative spirit

In the face of the strained international situation in the 1950s and 1960s, the first generation of the CPC Central Committee, with Comrade Mao Zedong at its core, made the strategic decision to independently develop missiles, nuclear bombs and satellites in what was known as the ‘two bombs and one satellite’ project in order to maintain national security and world peace. A large number of outstanding scientists and technologists committed themselves to the project. They successfully launched the first self-developed missile in just 4 years, and soon after completed the R&D on the ‘two bombs and one satellite’ (Figure 5). Those achievements attracted worldwide attention and demonstrated the collaborative spirit of Chinese scientists in a united and cooperative effort to overcome difficulties (Bai, 2001).

3.6 Willingness to help and encourage students

Bing Zhi, a founding member of the journal Science and the China Zoological Society, turned out a large number of talented people for China’s biology field during his decades of teaching. He provided direct or indirect guidance for more than 1,000 students majoring in different specialties. Among them, dozens developed into experts. He was strict with his students, especially with those who were older and more accomplished. Influenced by him, many students inherited his diligence and persistence and became famous experts, including Wang Jiaji, Wu Xianwen and Yang Weiyi, among others, who were the backbone of the field of education and S&T in China.² Bing became a model for scientific educationalists (Figure 6).
The main factors affecting scientists’ social image can be examined from the following four aspects.

4.1 Social backgrounds

In ancient China, farming was the main means of living, and scientific development was concentrated in agriculture, medicine, astronomy and mathematics. The spirit and image of scientists was characterised by simplicity and benefiting others. Later, with the introduction of Western natural science and the development of China’s scientific system, scientists with Western scientific knowledge provided a strong contrast with the old Chinese environment in both their dress and their thinking. They presented a patriotic image characterized by diligence, dedication to the scientific cause and determination to save the country through science. When the scientific knowledge supported by the theoretical system of modern Western natural science was gradually accepted by the public, scientists shouldered more and more important social responsibilities.

After the founding of the People’s Republic of China, scientists’ image was changed in line with the major policies of each period, from the primary stages of socialist transformation and industrialisation, to the ‘Spring of Science’, to the transition period of reform and opening-up and socialist construction, all the way...
to the new period of socialist construction and the special period of fighting against the COVID-19 pandemic. Scientists showed a sense of responsibility to promote S&T development and promote the country onto the world stage, presenting an image of courageous innovation and selfless dedication, sacrificing individual benefits for the national interest and keeping up to date with the times.

4.2 The importance attached by the government to scientists

Scientists are a professional group, so their social image is closely related to the attention paid to them by the government. For example, Qian Xuesen and Chen Jingrun overcame difficulties with support from the government and finally made outstanding contributions to the development of S&T, peace and prosperity of China. At the same time, they established the social image of patriotism, dedication, professionalism and truth-seeking. The Chinese Government always attaches great importance to scientists. As General Secretary Xi Jinping has pointed out, all levels of party committees and governments should give support and care to academicians in terms of politics, work and life and encourage retired academicians to continue in their roles. He expressed the hope that retired academicians would continue to provide suggestions for national development and contribute wisdom for S&T progress when their physical condition permits. Attaching importance to scientists and S&T workers at the national level, as well as promoting scientists’ social status, rewarding and commending outstanding scientists and scientific achievements, and creating a social atmosphere in which scientists are respected and popularised have important impacts on the formation of scientists’ social image.

4.3 Public expectations of scientists

In the past, the impression that scientists left on the public was usually one of a poker-faced stereotype, mainly characterised by a simple appearance, poverty, hardship, obscurity, sacrifice of personal happiness, disinterest in personal gains or losses and willingness to be a small screw in a big machine. However, with increasingly deep public understanding of scientists, the contemporary public’s expectations are shifting. The image of scientists is becoming one of using knowledge to gain wealth, realising the value of their lives, standing in the spotlight, serving and winning honour for the country, facing the microphone and communicating with the public. As important participants in scientific undertakings, scientists are being paid more and more attention by the public. As the public deepens its understanding of and participation in science, the desire to understand scientists is on the increase. Thus, a more vivid, comprehensive and truthful image of scientists is becoming the public expectation.

4.4 Channels for disseminating information related to scientists

The shaping of scientists’ social image goes hand in hand with the dissemination of scientists’ work, and so cannot happen without exposure through different communication forms, channels and structures, including diversified forms such as texts, videos and interactive programmes; multiple channels, such as paper media, television and the internet; different types of communicators, such as traditional media, new media and self-operated media; various perspectives for telling scientists’ stories, such as the nation, the scientist group and individual scientists; and expanding the scope of dissemination to meet the needs of various groups.

It is the diversity of communicators, means, channels, media, perspectives and audiences that increases public desire for information about scientists. Thus, the public has a better understanding of scientists’ image and also higher expectations.

5. Shaping of scientists’ image in the context of the anti-pandemic campaign

Affected by the COVID-19 pandemic in 2020, S&T workers are faced with great challenges in fighting the pandemic, especially those in the medical and health fields, who face much pressure and bear much responsibility. The pandemic poses great challenges in timely and accurately reporting scientists’ work
but is a good opportunity to publicise the spirit of scientists and establish a good image of scientists. CAST seized that opportunity and has generated an excellent social response.

5.1 Efforts made by CAST in establishing scientists’ image during the pandemic

In early 2020, in the face of the sudden outbreak of COVID-19, the National Academy of Innovation Strategy of CAST established a communication matrix for Chinese scientists, aiming to use various media channels and forms to tell the stories of scientists fighting the pandemic. The matrix consists of platforms such as WeChat, Toutiao, Douyin and Baijiahao. By the end of September 2020, a total of 3609 posts about nearly 900 scientists had been published on those platforms, including many original pieces of writing.

To publicise the spirit of anti-pandemic scientists and display their image, CAST put forward four initiatives asking scientists and technologists to join the fight against the pandemic. Moreover, it followed the instructions of General Secretary Xi Jinping and the requirements of the central government, in both thoughts and actions, at all stages of pandemic prevention and control, and thus contributed to the success of Chinese efforts to eliminate the virus. Specifically, the efforts made by CAST included organising an online meeting of the DCPS Expert Committee to discuss data collection for the prevention and control of COVID-19; carrying out a colourful National S&T Workers Day publicity campaign on 30 May after General Secretary Xi Jinping issued a letter to encourage S&T workers across the country; and holding the Second Forum on Chinese Scientific Culture, focusing on the theme ‘The Anti-pandemic Campaign and the Construction of Scientific Culture’.

5.2 Positive consequences of image-building efforts during the pandemic

The successful operation of the communication matrix produced some positive consequences and promoted Chinese scientists’ social image. Multi-way communication provided various channels for the public to learn about scientists’ stories. Views of and clicks on all kinds of original articles, videos and other media were high, indicating the public’s strong interest in scientists. As an academic conference, the Second Forum on Chinese Scientific Culture attracted more than 2 million viewers online, and the keynote speech by Academician Huai Jinpeng alone had more than 500,000 viewers. On the new media platform Chinese Scientists, a total of 2249 articles were published, with a total reading count of 33.513 million and a total of 64,886 fans. Among the original articles about public health, ‘He discovered a method of inhibiting the fusion of SARS virus with cells in 2003’ was read more than 910,000 times (Figure 7) and ‘Academician Wen Yumei: There has never been a virus in history that has been able to bring down the people of a country’ was read 560,000 times. Among the original videos about public health, ‘Wang Chen: A low-key advocate of shelter hospitals’ scooped a total of 1.781 million broadcasts, along with 219,000 likes, comments and

![Figure 7. The article ‘He discovered a method of inhibiting the fusion of SARS virus with cells in 2003’. Source: WeChat official account of Chinese Scientist.](image-url)
shares. On the Weibo platform, ‘The development of science in China and I’ received nearly 10 million readings, and ‘A benevolent doctor helps the vast masses: Wang Zhenyi’ generated thousands of discussions and engendered heartfelt praise for the older generation of scientists.

5.3 Reasons for the positive consequences

The main reasons why the stories mentioned above could garner an enthusiastic response from the public could be the timing, content, narrative style and intrinsic value of the stories.

First, in timing its communications, CAST seized the opportunity provided by the pandemic when the public had an urgent demand for scientific information, making a quick and accurate response by communicating science in the emergency so as to promote confidence in efforts to fight the pandemic. On the one hand, CAST published relevant scientific research results and authoritative popular science content to meet the needs of the public for scientific information. Thus, rumours were effectively dispelled by proper reporting of science. On the other hand, CAST made contributions in promoting public understanding of and participation in science, demonstrating the power of S&T, cultivating society’s scientific rationality, leading the public to develop a healthy and scientific lifestyle and promoting the progress of social civilisation.

Second, in deciding what was to be communicated, scientists’ anti-pandemic stories were compatible with the expectations of the public. In line with the traditional image of scientists loving, saving and serving the country, S&T workers worked at the front line and cooperated with each other in tackling scientific problems in the fight against the pandemic. Their efforts had widespread influence and provided excellent material for telling stories about scientists in the context of the anti-pandemic campaign. Their work was also consistent with the public’s expectations of scientists during the pandemic: being socially responsible and courageous in overcoming difficulties.

Third, in terms of expressive style, most communications carried the vivid image of scientists who are just as much flesh and blood as ordinary people. A full and three-dimensional image of scientists was created through diversified media platforms and information carriers. With an equal narrative style, scientists were no longer far from the public and could cry and worry like everyone else. This made the public image of scientists more authentic and shortened the distance between scientists and the public.

Fourth, in terms of the core values communicated, scientists’ patriotic and innovative spirit in the new era were highlighted in telling stories of scientists, which triggered strong resonance with the public. COVID-19 not only posed a challenge to scientists, but was also a test of public health, information dissemination, macro-controls and other social factors. To fight against large-scale disasters, it is necessary to convey accurate knowledge and touching stories in time, but the spirit of scientists is also necessary. At the urgent moment when scientists were working overtime to fight against the virus and look for solutions, reasonable understanding of scientific research was the most powerful support that society could offer them.

6. Some thoughts on telling good stories about scientists in the post-pandemic era

The core of the scientists’ image lies in the social responsibilities that they shoulder in any given era, and telling good stories about scientists is a necessary means of shaping their social image. A good social image of scientists is not only an important part of building a scientific culture, but also a cultural vehicle carrying the spirit of scientists (Ren, 2020). Figure 8 shows the relationship between shaping the social image of scientists and the construction of scientific culture.

At present, unprecedented attention is being paid to the construction of scientific culture in China, and remarkable achievements have been made in science communication and science education through strenuous efforts. That has laid the foundation for strengthening the scientific culture through telling stories about scientists. On the basis of the excellent achievements during the pandemic, it is still
necessary to focus efforts in the following areas in the post-pandemic era.

6.1 Tell scientists’ stories that reflect the spirit of the times

A review of the evolution of scientists’ image reveals that scientists have become representative figures, as their qualities match the spirit and needs of the times. The purpose of telling scientists’ stories is to reflect the social values in different periods, exploring information of the times implied in the stories and guiding public opinions. As General Secretary Xi Jinping has pointed out on many occasions, ‘The Chinese spirit is the spirit of the nation with patriotism at the core and the spirit of the times with reform and innovation at the core’. Thus, when telling scientists’ stories, only by focusing on the spirit of the times and finding the points reflecting scientists’ personalities can we show the individuality of each scientist and their love for the country and present a general picture of the times. Two good examples are the stories of Yu Min and Huang Xuhua, who are winners of the Medal of the Republic. Both Yu and Huang are scientists who have made outstanding contributions to China’s nuclear weapons and nuclear submarine programmes. They have had little time to be with their families. Huang has been unable to return to his home town for 30 consecutive years, and did not have the chance to see his father for the last time at his father’s deathbed. Although they are indebted to their families, they feel no regrets. As Yu put it, ‘The humiliating life of mine as one of the conquered people in my childhood has left me with a painful memory. The Chinese nation does not bully others; nor can it be bullied by others. And nuclear weapons are a means of safeguarding. Such a national feeling has been the driving force for my research.’ Huang also said, ‘Loyalty to the country is the greatest filial piety to parents.’

6.2 Establish equal dialogue and encourage a moral social atmosphere

When telling their stories, scientists should talk to the public from a position of equality rather than superiority. At present, the style of communication has changed from a propaganda mode of ‘preacher versus audience’ to a mode of equal dialogue between speaker and listener. Thus, the storytelling of scientists should also change from ‘communication of meaning’ to ‘communication of values’. However, the communicator-centred view in the policy agenda has caused a gap between scientists and the public. The image of scientists should not only reflect the values of policies, but also be down to earth, close to daily life and consistent with the audience-centred view in the public agenda. Scientists’ stories should be related to hot topics that attract public attention, help to guide social values
by focusing on public needs, and be told through an objective and neutral news discourse. When talking about his view, proposed in the 1980s, that ‘typical reports will die out’, Chen Lidan said that typical reports were popular during the years of revolutions and wars and could be considered propaganda; despite the loss of their sensational effect, those styles should continue because we need models for today, and they could generate a warm and encouraging moral environment.

6.3 Use diversified narrative elements and adopt a people-oriented view in storytelling

The typical scientists’ image in mass media should not be a rigid and monotonous symbolic type, but one of ordinary people. This could be achieved by abandoning the stereotype of traditional typical reports, which is outdated in content, monotonous in form and even deliberately highbrow and divorced from everyday realities, resulting in stereotyped characters. When isolated from the public without authenticity, personality and glamour, the storytelling may give rise to a rebellious response from the audience, and thus weaken scientists’ role as models. Scientists are, first and foremost, human beings. They also have shortcomings and weaknesses. So, when telling scientists’ stories, we should not only focus on their extraordinary qualities as typical features, but also their atypical aspects as ordinary people, including their individualities, weaknesses and even hobbies. Only in this way can the image of scientists be full, truthful and credible and recognizable by the public.

6.4 Use innovative communication methods and build an all-media communication matrix

Telling scientists’ stories requires innovation in communication channels and methods, combining online and offline communication, integrating traditional and social media and adjusting the structure of communication channels flexibly and dynamically. In this regard, DCPS has established a multi-level and multi-angle communication mode incorporating online and offline, traditional and new media platforms. This mode should continue to develop in future work to publicise scientists’ spirit and shape scientists’ image.

6.5 Summing up

The importance of telling good stories about scientists can be shown in the structure of scientific culture. As shown in Figure 8, the shaping of scientists’ social image is an important part of scientific culture; the goal is to tell scientists’ stories well and to benefit from that storytelling. Building the image of scientists through stories is, in fact, disseminating the spirit of scientists. Storytelling is a means to shape scientists’ social image, and a good image is a part of scientific culture and a cultural carrier of scientists’ spirit.

Now, the pandemic continues to spread across the world and China is taking regular prevention measures. The Opinions on Further Promoting the Spirit of Scientists and Academic Integrity and the spirit of General Secretary Xi Jinping’s speech at the Scientists Symposium on 11 September 2020 are being implemented. Against this background, we should continue to tell good stories about Chinese scientists and shape an exemplary image of them.

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Notes

1. See data on the ‘westward movement spirit’ collected in DCPS database and also http://xq.xjtu.edu.cn/info/1007/4788.htm.
2. See http://www.cls.bnu.edu.cn/xiaoyoutiandi/xuezijingying/kexuejie/372.html and http://www.ihb.ac.cn/gkjj/lsyg/200909/t20090930_2533839.html.
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