Telling China’s story through reports on major manned space activities: A case study of the coverage of Shenzhou spacecraft in Chinese and Western media

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Abstract
The Shenzhou spacecraft have been independently developed by China, and the country has complete intellectual property rights to this technology. The spacecraft are examples of China’s achievements in space technology, are representative of the country having reached or surpassed international technological standards for third-generation manned spacecraft, and have garnered widespread interest among international media and audiences. Our study found that there are many differences between Chinese and Western media in their coverage of this major topic. China’s reporting system on this issue is well established but still has room for improvement. Western media have considered both positive and negative angles when reporting on this issue, and that deserves attention. In these circumstances, it is important for China to improve its communicators, communication content, information release mechanisms, narrative style and response mechanism through targeted measures, such as cultivating new communicators, developing new content and minimizing cultural discounts in cross-cultural communication in order to enhance China’s voice on the world stage.

Keywords
Shenzhou spacecraft, national image, media

1. Introduction
As an important symbol of China’s scientific and technological capabilities and its overall national strength, major manned space activities have received considerable attention from people all
over the country and the world. In recent years, space-related reports in China have grown in both quantity and quality. They have helped shape China’s image as an innovative and enterprising country and have showcased its outstanding achievements in science and technology communication as well as international communication. The complex and fluid international context offers both opportunities and challenges. The reporting system and response mechanism for China’s major manned space activities need to be further improved.

1.1 Manned space activities are intended for international communication

China’s manned space programme was approved by the government on 21 September 1992. The Standing Committee of the Political Bureau of the CPC Central Committee approved a three-step strategy for the implementation of the programme. Step 1 consisted of launching a manned spacecraft to lay the foundations for an experimental manned spacecraft project and conducting space application experiments. Step 2 involved achieving breakthroughs in key technologies for extravehicular activity and rendezvous and docking, and launching a space lab for short-term applications involving humans in space. Step 3 involved building space stations for large-scale and long-term manned space applications.

The Shenzhou spacecraft were independently developed by China, and the country has complete intellectual property rights to this technology. They have reached or surpassed the international technological standards for third-generation manned spacecraft. Since the successful launch of Shenzhou-1 in 1999, China has sent 13 Shenzhou spacecraft and three Tiangong space stations into space (as of January 2022). This is an example of the country’s achievements in manned space activities. China’s major manned space activities have attracted considerable attention from people all around the world in recent years. This offers a promising opportunity and a workable platform for shaping China’s positive image in the international community.

At the 30th group study session of the Political Bureau of the CPC Central Committee, General Secretary Xi Jinping stressed that telling a good Chinese story, making China’s voice heard and showing the world a real, multidimensional and comprehensive picture of the country is an important task for building China’s capacity for international communication. We should recognize the importance and necessity of strengthening and improving international communication in today’s world, make efforts to build up our capacity for international communication and gain an international voice that matches China’s comprehensive national strength and global status, thus creating a favourable external environment for China’s reform, development and stability and promoting the building of a community with a shared future for humankind.

Among the new symbols of China’s national image that have emerged in recent years, scientific and technological progress is undoubtedly the brightest and most suitable one for communication because it not only meets the developmental requirements and the realities of the country but also matches the expectation of and conditions for recognition by overseas audiences. A 2019 report on China’s national image (Yu et al., 2020) shows growing recognition of China’s capabilities in science, technology and innovation (STI). The recognition of scientific and technological inventions as elements of Chinese culture has also increased. A total of 68% of overseas respondents in the report believed that China was strong in STI, and the figure was more than 80% in developing countries. Among specific areas of China’s scientific and technological achievements, high-speed rail remained the technology with the highest recognition among respondents (44%), and manned space technology (23%) was in third place. This shows that China’s achievements in manned space technology are becoming an important hallmark of the country’s scientific and technological image and have the important mission of facilitating international communication. The construction of a new, complete and modernized system for international communication about manned space activities is an important issue that requires more attention from the Chinese media because it can improve symbolism used in national image building while demonstrating the country’s capability in STI.

1.2 Literature review

Media reports play a role in shaping a country’s national image. Media workers in China are also
committed to promoting the country’s image in science and technology by innovating in the content and form of aerospace news and have explored many patterns of communication.

Scholars have also researched recent narratives of China’s aerospace story offered by Chinese and Western media. Wang and Zhang (2021) noted that China’s communication practice on aerospace matters has received extensive attention from the overseas media, the public and professional institutions, and that relevant experience has been accumulated in the construction of a discourse system and a narrative system for international communication, but that there is room for improvement. The role of video (including TV programmes and vlogs) in telling China’s aerospace story has been approved by a growing number of people (Ma and Wan, 2021; Zeng, 2018).

Printed media are also an important research topic for scholars. For example, Der Spiegel, a weekly newspaper of Germany, focused on the achievements of China’s aerospace industry in 2020. It adopted a fair and objective attitude in its reports and affirmed China’s position in the manned aerospace industry (Jiang, 2021). At the same time, Western media are vigilant about China’s emphasis on aerospace development. Compared with Chinese media, the image of China presented by Western media is mostly negative, and has been described as ‘the Persuaded, the Criticized, the Labeled, the Contained, the Punished, the Helped, and the Praised’ (Tang, 2021). This is closely representative of the international situation and Sino–US relations. The problem is more prominent in certain areas, such as the economy, trade and COVID-19. From the perspective of audience analysis, a study examined the effectiveness of eight aspects of China’s national brands by gathering the public’s views on China through Q&As on social media (such as Quora.com), including (1) history, (2) place, (3) language, (4) political and economic systems, (5) culture, (6) people, (7) infrastructure and (8) social institutions (He et al., 2020). The results show that a ‘country with an ancient civilization’ is still the major impression of China among overseas audiences, and this has become an adverse factor in reconstructing its image as a modern country.

Most previous research in this area focused only on either Chinese or Western media reports, and no comparative study of the coverage of Chinese aerospace affairs by Chinese and Western media had been conducted. Therefore, we conducted such a study.

2. Research design

2.1 Research methodology

Our research analysed the content and texts of reports on the Shenzhou spacecraft carried in mainstream Chinese and Western media. We chose the People’s Daily, one of the most influential mainstream newspapers in China, as representative of Chinese media. It is circulated internationally and has a worldwide readership. We examined news reports published in the People’s Daily with ‘Shenzhou’ in their titles to determine how the spacecraft were covered by Chinese media in the international arena. We analysed the weaknesses and strengths of China’s international communication and the narrative of the Chinese story about this matter.

We chose The New York Times in the United States and The Times in the United Kingdom as representative of Western media and examined the number of Shenzhou-related reports in those two authoritative international newspapers and the themes of the reports.

By analysing and comparing reports in mainstream Chinese and Western media, we aimed to discern the similarities and differences in their coverage of space activities, explore the current situation and problems encountered by the Chinese media in telling the Chinese story and conveying the Chinese message, and provide opinions, suggestions and recommendations on how to enhance China’s international communication capability and tell a better Chinese story.

2.2 Sample selection

To select texts, we searched all Shenzhou-related reports in the above-mentioned newspapers published from 1 January 1999 to 31 December 2021. We used the People’s Daily’s graphic database (1946–2021) and the LexisNexis global news database with the keyword ‘Shenzhou’ and manually checked the relevance of the samples. In the coding process, we removed duplicate items and news
reports that were not related to Shenzhou and manned space missions and identified 450 reports on the subject: 359 reports with the term ‘Shenzhou’ in the title from the People’s Daily, 29 reports from The Times, and 62 reports from The New York Times.

3. Shenzhou reports in Chinese and Western media

3.1 People’s Daily

Table 1 shows that Shenzhou reports in the People’s Daily were relatively short: most articles were shorter than 1000 words, and only a few were longer than 3500 words. For example, the report titled ‘Flying the Shenzhou’, published on 9 February 2000, was 5902 words long (Ma, 2000). Published on 26 September 2011—the eve of the launch of Tiangong-1—the ‘Life in space: From Shenzhou to Tiangong’ report was over 6000 words long (Yu, 2011). In the report, Qi Faren, the first chief designer of the Shenzhou spacecraft and technical consultant of the Fifth Academy of China Aerospace Science and Technology Corporation, was interviewed.

Since 1999, the People’s Daily has been publishing news related to the Shenzhou spacecraft every year. More articles were published in years in which Shenzhou spacecraft were launched, while the reports in the other years were retrospective and derivative news, such as an exhibition on commemorative stamps and recovered capsules. The number of reports published peaked at 88 in 2005, and only one news item was published in each of 2009, 2015 and 2018 (Figure 1).

The People’s Daily mostly carried reports with a positive tone, but some of the news items had a neutral tone.

Table 2 shows that most Shenzhou reports in the People’s Daily were published in the Headline News section. During the launch of Shenzhou VI and Shenzhou VII, the People’s Daily published a special issue. In addition, reports on the spacecraft were also published in the Science and Technology and Culture sections.

3.2 The Times

Among the 29 news reports on the Shenzhou spacecraft we collected from The Times, about 58.6% were 500 words or less (Table 3). The longest article was titled ‘An Asian battle for the stars’ (1187 words), and the shortest was titled ‘Lift-off blackout’ (only 44 words). The average word count was 448; all articles were thus relatively short.

The publication of Shenzhou reports in The Times coincided with the launch of the Shenzhou spacecraft (Figure 2). Starting with the launch of Shenzhou-1 in 1999, news reports were published on all subsequent important launches, including in 2001 (the successful launch of Shenzhou-2), 2003 (Shenzhou-5), 2005 (Shenzhou-6), 2008 (Shenzhou-7), 2012 (Shenzhou-9), 2013 (Shenzhou-10) and 2021 (Shenzhou-12). Most notably, in 2003, when China successfully conducted its first manned space mission, more than 10 reports were published in The Times, which

| Article length     | Frequency | Proportion | Effective proportion | Total proportion |
|-------------------|-----------|------------|---------------------|------------------|
| 0–500 words       | 118       | 32.87%     | 32.87%              | 32.87%           |
| 501–1000 words    | 89        | 24.79%     | 24.79%              | 57.66%           |
| 1001–1500 words   | 66        | 18.38%     | 18.38%              | 76.04%           |
| 1501–2000 words   | 25        | 6.96%      | 6.96%               | 83.01%           |
| 2001–2500 words   | 24        | 6.69%      | 6.69%               | 89.69%           |
| 2501–3000 words   | 15        | 4.18%      | 4.18%               | 93.87%           |
| 3001–3500 words   | 6         | 1.67%      | 1.67%               | 95.54%           |
| More than 3500 words | 16       | 4.46%      | 4.46%               | 100.00%          |
| Total             | 359       | 100.00%    | 100.00%             |                  |
was more than in any other year. This shows that the event surprised the international audience.

In terms of emotional tone, the number of neutral reports was the highest (Table 4). More reports published in the newspaper had a positive rather than a negative tone.

News reports related to the Shenzhou spacecraft in The Times were mainly published in its Overseas News section. Depending on their content, some of the reports were also published in the Features, News, Home News, Editorial and Business sections (Table 5).

3.3 The New York Times

News reports on the spacecraft published in The New York Times were relatively short: articles that were 0–500 words made up the highest proportion (43.5%) of all articles, followed by articles that

![Figure 1. The number of reports on the Shenzhou spacecraft published by the People’s Daily over the years.](image)

| Page                      | Frequency | Proportion | Effective proportion | Total proportion |
|---------------------------|-----------|------------|----------------------|------------------|
| Headline News             | 215       | 59.9%      | 59.9%                | 59.9%            |
| Culture                   | 19        | 5.3%       | 5.3%                 | 65.2%            |
| Science and Technology    | 21        | 5.8%       | 5.8%                 | 71.0%            |
| Viewpoint                 | 25        | 7.0%       | 7.0%                 | 78.0%            |
| International             | 22        | 6.1%       | 6.1%                 | 84.1%            |
| Supplement                | 9         | 2.5%       | 2.5%                 | 86.6%            |
| Special Edition           | 23        | 6.4%       | 6.4%                 | 93.0%            |
| Other                     | 25        | 7.0%       | 7.0%                 | 100.0%           |
| Total                     | 359       | 100%       | 100%                 |                  |
were 501–1000 words long. Only two articles were over 2000 words (Table 6).

Of the articles we collected, 21 were published in 2003, more than in any other year, and most of the reports were related to Shenzhou-5. The second highest number of reports was published in 2021, when Shenzhou-12 and Shenzhou-13 were launched (Figure 3).

About 70% of the reports had a neutral emotional tone, while the number of negative reports was much higher than the number of positive ones (Table 7). The emotional tone of The New York Times in reporting on the Shenzhou spacecraft was, on the whole, neutral or somewhat negative. In particular, with the rise of China in recent years, The New York Times has paid more attention to its activities in space. On 5 May 2020, China’s new Long March-5B carrier rocket took off from the Wenchang Satellite Launch Center in Hainan and sent a test vessel of China’s new-generation manned spaceship into orbit. Unlike previous carrier rockets, Long March-5B is a ‘one-and-a-half’-stage rocket. From 3 to 10 May, The New York Times released five reports, hyping a story of uncontrolled rocket wreckage and possible casualties.

### Table 3. The lengths of reports on the Shenzhou spacecraft in The Times.

| Article length | Frequency | Proportion | Effective proportion | Total proportion |
|----------------|-----------|------------|----------------------|------------------|
| 0–500 words    | 17        | 58.62%     | 58.62%               | 58.62%           |
| 501–1000 words | 11        | 37.93%     | 37.93%               | 96.55%           |
| 1001–1500 words| 1         | 3.45%      | 3.45%                | 100.0%           |
| Total          | 29        | 100%       | 100%                 |                  |

### Figure 2. The number of reports on the Shenzhou spacecraft published by The Times in different years.
News related to the Shenzhou spacecraft was mostly published in the Foreign section of the newspaper. Because manned spaceflight involves cutting-edge science and technology, some articles were also published in the Science section of the newspaper (Table 8).

### 4. Analysis of differences in coverage

#### 4.1 Comparison of topics

1) The People’s Daily focused on Shenzhou-6, while Western media focused on Shenzhou-5. By comparing the subjects of the three newspapers, it is clear that reports in *The Times* and *The New York Times* mostly concerned Shenzhou-5, while those in the People’s Daily focused on Shenzhou-6 (Table 9). Shenzhou-5 was the first manned spacecraft launched by China, making China the third country, after Russia and the United States, to independently master manned space technology. The launch of the spacecraft triggered strong reactions in the international arena. As Western media pay close attention to originality, they published more reports on Shenzhou-5. For Chinese media, the successful launch of Shenzhou-6 sent two Chinese astronauts into space for the first time, which showed that China had gained more comprehensive and deeper knowledge of the core technology for manned spaceflight. By building on experience accumulated from

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Table 4. The emotional tone of reports on the Shenzhou spacecraft carried in *The Times*.

|        | Frequency | Proportion | Effective proportion | Total proportion |
|--------|-----------|------------|----------------------|------------------|
| Positive  | 6         | 20.7%      | 20.7%                | 20.7%            |
| Neutral  | 20        | 69.0%      | 69.0%                | 89.7%            |
| Negative | 3         | 10.3%      | 10.3%                | 100.0%           |
| Total    | 29        | 100.0%     | 100.0%               |                  |

Table 5. Distribution of news reports on the Shenzhou spacecraft in *The Times*.

| Page          | Frequency | Proportion | Effective proportion | Total proportion |
|---------------|-----------|------------|----------------------|------------------|
| News          | 5         | 17.24%     | 17.24%               | 17.24%           |
| Overseas News | 17        | 58.62%     | 58.62%               | 75.86%           |
| Features      | 4         | 13.79%     | 13.79%               | 89.66%           |
| Business      | 1         | 3.45%      | 3.45%                | 93.10%           |
| Home News     | 1         | 3.45%      | 3.45%                | 96.55%           |
| Editorial     | 1         | 3.45%      | 3.45%                | 100.00%          |
| Total         | 29        | 100.00%    | 100.00%              |                  |

Table 6. The lengths of reports on the Shenzhou spacecraft in *The New York Times*.

| Article length | Frequency | Proportion | Effective proportion | Total proportion |
|----------------|-----------|------------|----------------------|------------------|
| 0–500 words    | 27        | 43.55%     | 43.55%               | 43.55%           |
| 501–1000 words | 19        | 30.65%     | 30.65%               | 74.19%           |
| 1001–1500 words| 9         | 14.52%     | 14.52%               | 88.71%           |
| 1501–2000 words| 5         | 8.06%      | 8.06%                | 96.77%           |
| 2001–2500 words| 1         | 1.61%      | 1.61%                | 98.39%           |
| 2501–3000 words| 1         | 1.61%      | 1.61%                | 100.00%          |
| Total          | 62        | 100.00%    | 100.00%              |                  |
the coverage of Shenzhou-5, the reporting system of Shenzhou-6 was more comprehensive and better established, and the number of news reports on it increased accordingly.

2) Reports by the People’s Daily were more focused on positive issues, while Western media reports covered both positive and negative issues. Positive issues reported by Western media included the recognition of China’s rapid rise and the comprehensive and orderly progress of manned space technology in the country.

The New York Times acknowledged China’s rapid progress in the space sector, calling China the ‘challenger du jour’ (Gugliotta, 2007). In 2003, after the successful launch of Shenzhou-5, The Times predicted that China would be capable of achieving ascendance in every field, calling it ‘the only nation with the economic might, the strategic ambition and technical ability to rival the Americans’. It also noted that ‘European observers mostly see China’s emergence as a space power in terms of commercial and technological benefits similar to those gleaned from the US space program since the 1960s’ (August, 2003).

China’s manned space programme was officially launched in 1992. The initial goal was to send astronauts into space. In the long term, its aims include the establishment of a permanent space station as well as lunar exploration. Since the programme’s inception, China has made steady advances in the development of manned space technology, and the comprehensive, prudent and practical implementation of its manned space programme is well recognized by Western media. John M Logsdon, Director of the Space Policy Institute at George Washington University, said, ‘China has had a very careful, slow-paced buildup to this launch. This is the result of a deliberate decision made a decade ago. It’s a very comprehensive program’ (Yardley, 2003).

Western media hold the view that the direction of the manned space mission in the United States is constrained by the country’s political situation. The relevant programmes cannot be implemented and progress as smoothly as in China’s case. They used...
the comparison between China and the United States to express their affirmation of China’s space programme. The New York Times pointed out that NASA’s direction tended to shift with every change of presidency. President George W Bush called on NASA to return to the moon by 2020. President Obama cancelled that programme, and then wanted the agency to send astronauts to an asteroid. NASA shut down its 30-year space shuttle programme after a final flight in July 2011. Speaking about China’s space programme, ‘The one thing that is admirable about their program is they don’t have fits and starts’, said Joseph R Fragola, a space safety expert who has visited the space facilities in China. ‘Their program is low budget but it is laid out, and they follow it in an orderly process, and we don’t do that’ (Wong and Chang, 2011).

The negative reports in Western media focused mainly on Chinese propaganda, the handling of space debris and the circumstances of the astronauts.

Space technology is an important part of the defence technology industry and a key industry for national science and technology. With China’s growing strength in space technology and increased international exchange in this field, its research on space technologies has inevitably become the focus of attention and a key target of surveillance by foreign countries. Over the years, Chinese organizations involved in the space programme have attached significant importance to confidentiality both in their work and in international communication, which has provided a target for criticism by Western media. By the time it launched Shenzhou-6, China had already had considerable experience in publicizing space launches and had established a sound public communication system. Those changes, including a live broadcast of the launch, were noted and reported by Western media. ‘Although the live broadcast of the launching represented a significant move toward greater openness for China’s space program, many aspects of the Shenzhou-6 launching were deliberately shrouded in ambiguity until the launching itself’ (French, 2005). When China launched Shenzhou-12 in 2021, Western media concluded that China’s publicity efforts during the event showed the country’s growing confidence in its space programme.

In recent years, countries around the world have conducted intensive experiments in space, generating large amounts of space debris. The problem posed by space debris has been a cause for concern about and criticism of excursions into outer space for a long time. The US Space Surveillance Network is the only agency that detects, tracks and publicly catalogues space debris, and the United States has been

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**Table 7.** The emotional tone of reports on the Shenzhou spacecraft carried by *The New York Times.*

|                | Frequency | Proportion | Effective proportion | Total proportion |
|----------------|-----------|------------|----------------------|------------------|
| Positive       | 4         | 6.45%      | 6.45%                | 6.45%            |
| Neutral        | 45        | 72.58%     | 72.58%               | 79.03%           |
| Negative       | 13        | 20.97%     | 20.97%               | 100.00%          |
| Total          | 62        | 100.00%    | 100.00%              |                  |

**Table 8.** Distribution of news reports on the Shenzhou spacecraft in *The New York Times.*

| Page            | Frequency | Proportion | Effective proportion | Total proportion |
|-----------------|-----------|------------|----------------------|------------------|
| Foreign         | 41        | 66.1%      | 66.1%                | 66.1%            |
| World           | 4         | 6.5%       | 6.5%                 | 72.6%            |
| Science         | 8         | 12.9%      | 12.9%                | 85.5%            |
| National        | 1         | 1.6%       | 1.6%                 | 87.1%            |
| Editorial       | 2         | 3.2%       | 3.2%                 | 90.3%            |
| Week in Review  | 1         | 1.6%       | 1.6%                 | 91.9%            |
| Unknown         | 5         | 8.1%       | 8.1%                 | 100.0%           |
| Total           | 62        | 100.0%     | 100.0%               |                  |
closely monitoring the debris generated by countries around the world. *The New York Times* published an article in May 2021 on the site of the wreckage of China’s Long March-5B carrier rocket (Myers and Chang, 2021) and joined other Western media outlets in trumpeting the threat of runaway wreckage from the Chinese rocket. After confirming that the wreckage of March-5B had been dropped precisely into the Indian Ocean, the newspaper changed the direction of its attack and accused China of irresponsibly putting the world on edge, even without having caused any casualties. The scaremongering by *The New York Times* and some other media adversely affected China’s international image and the public’s opinion about the country.

### Table 9. Reporting topics in *The Times*, *The New York Times* and People’s Daily.

| Theme   | The Times | The New York Times | People’s Daily | Total |
|---------|-----------|--------------------|----------------|-------|
| Shenzhou-1 Count | 1 | 2 | 15 | 18 |
| Proportion | 3.45% | 3.23% | 4.18% | 4.00% |
| Shenzhou-2 Count | 1 | 0 | 9 | 10 |
| Proportion | 3.45% | 0.0% | 2.51% | 2.22% |
| Shenzhou-3 Count | 0 | 1 | 13 | 14 |
| Proportion | 0.0% | 1.61% | 3.62% | 3.11% |
| Shenzhou-4 Count | 1 | 3 | 15 | 19 |
| Proportion | 3.45% | 4.84% | 4.18% | 4.22% |
| Shenzhou-5 Count | 7 | 16 | 45 | 68 |
| Proportion | 24.14% | 25.81% | 12.53% | 15.11% |
| Shenzhou-6 Count | 5 | 3 | 91 | 99 |
| Proportion | 17.24% | 4.84% | 25.35% | 22.00% |
| Shenzhou-7 Count | 4 | 6 | 33 | 43 |
| Proportion | 13.79% | 9.68% | 9.19% | 9.56% |
| Shenzhou-8 Count | 0 | 1 | 22 | 23 |
| Proportion | 0.0% | 1.61% | 6.13% | 5.11% |
| Shenzhou-9 Count | 3 | 5 | 15 | 23 |
| Proportion | 10.34% | 8.06% | 4.18% | 5.11% |
| Shenzhou-10 Count | 2 | 3 | 21 | 26 |
| Proportion | 6.90% | 4.84% | 5.85% | 5.78% |
| Shenzhou-11 Count | 0 | 1 | 24 | 25 |
| Proportion | 0.0% | 1.61% | 6.69% | 5.56% |
| Shenzhou-12 Count | 1 | 5 | 23 | 29 |
| Proportion | 3.45% | 8.06% | 6.40% | 6.44% |
| Shenzhou-13 Count | 0 | 2 | 12 | 14 |
| Proportion | 0.0% | 3.23% | 3.34% | 3.11% |
| Others Count | 4 | 14 | 21 | 39 |
| Proportion | 13.79% | 22.58% | 5.85% | 8.67% |
| Total Count | 29 | 62 | 359 | 450 |
| Proportion | 100.00% | 100.00% | 100.00% | 100.00% |

#### 4.2 Sources of information

Most of the reports in the *People’s Daily* were by its own correspondents. In addition to the newspaper’s in-house reporters, Xinhua News Agency provided the most information, followed by the spokesperson for China’s manned space programme and relevant officials (Figure 4). The percentage of information provided by relevant government departments and experts was also relatively high, which shows that the sources of information used by the *People’s Daily* were authoritative. It is noteworthy that reports in the *People’s Daily* sometimes also contained feedback from Western media, most of which struck a positive tone, including praise for
China in the international arena. In addition, the People’s Daily also published reports representing public opinion in Hong Kong, Macao and Taiwan, which highlights the national pride and national identity of the people of those three areas.

Apart from information provided by in-house reporters, the most commonly used sources by The Times were foreign experts and Chinese media (other than Xinhua News Agency), such as CCTV. Xinhua News Agency was also an important source of information. The percentage of information from foreign experts was slightly higher than that from Chinese experts (Figure 5). Among the information sources used by The New York Times, the percentage of foreign experts was the highest, followed by Chinese media (other than Xinhua News Agency), Xinhua News Agency and Chinese experts (Figure 6). Associated Press and Agence France-Presse were also frequently quoted.

A comparison of the sources of information for the three major newspapers considered here shows that: 1) in addition to in-house reporters, all newspapers cited information provided by Xinhua News Agency, indicating that some of the reports had the same source; 2) Western media cited foreign experts slightly more often than Chinese experts, reflecting their attention to the opinions of foreign experts when reporting Chinese events; and 3) citations of Chinese media (especially Xinhua) in Western reports were very high, while those of foreign media were extremely low, which shows Western media’s preference for first-hand information. In recent years, Western media have paid growing attention to voices in Chinese social media. They have frequently cited comments and posts of Weibo users and singled out negative comments for one-sided or out-of-context interpretations. For example, in 2021, stories about Tianzhou-3

![Figure 4. Information sources for reports on the Shenzhou spacecraft in the People’s Daily (excluding reports by correspondents of the newspaper).](image-url)
sending cosmetics to female astronauts made headline news. The reports in Chinese media showcased the convenient life enjoyed by female astronauts in space, but public opinion focused on the claim that cosmetics make women feel better. This difference in media reports and public opinion caused a big stir in China. Some Western media quoted negative comments made by Chinese netizens on this matter to criticize the status of women in China. Other topics for positive publicity, such as the logistical support for astronauts and made-in-China cosmetics, received little attention.

4.3 Content of reports

1) **Western media like to politicize science and technology events, while Chinese media focus on presenting China’s achievements in science and technology.** In news reports on the Shenzhou spacecraft, the achievements of China’s science and technology sector have been distorted to varying degrees and presented in a biased manner by Western media. *The Times* described the advance of China’s manned space technology as a ‘mission fuelled by a sense of shame’, arguing that China is trying to compete with the United States for hegemony, while the United States believes that China’s manned space technology could be used for military purposes, thus creating an atmosphere of tension.

   Chinese media regarded the manned space programme as a key indicator of the country’s comprehensive national strength. They wrote about China’s various scientific and technological achievements in the course of its development of manned spaceflights, from the Shenzhou spacecraft to the space lab, the space station, astronauts’ living space, flight times, technical equipment and other aspects. For example, news stories such as ‘Technology gives protection to astronauts in space’ (People’s Daily, 2021) and ‘A tour of Tiangong-2 (special report: Tiangong-2 and Shenzhou-11 manned flight missions)’ (People’s Daily, 2016) were all focused on specific space technologies.

2) **Chinese media focus on presenting a collective image, while Western media focus on the analysis of**
individual cases. Western media have paid more attention to the astronauts’ personal features and built their personal profiles from multiple perspectives. For example, in a story about Yang Liwei, they emphasized his status as an astronomer as well as his role as a father. Western media talked about the hardships faced by astronauts, including the rigorous restrictions on them during training and the unrecognized social status of female astronauts. However, they rarely mentioned the researchers who were part of the programme. By ignoring the collective identity of Chinese scientists in the field of manned spaceflight, they attributed China’s technological progress to the imitation of and assistance from other countries. The emphasis placed by Western media on the personal image of the astronauts also overlooked, to some extent, overall scientific progress in China. This angle of reporting is affected by Western values that stress individualism and maximum personal fulfilment.

By contrast, Chinese media put more emphasis on the collective identity of Chinese scientific workers, represented both by the astronauts and by the researchers, and underscored the important role played by the country’s scientific research system as well as the collaboration of research teams in the progress made in manned space technologies. During different phases of the Shenzhou programme, various research organizations in China have all played important roles to pave the way for continued progress in manned spaceflight. With advances in manned space technology in recent years, China now has stronger confidence in its science and technology and has become more open in publicity and international communication on its space programme. From interviewing individual scientists (anonymously) to speaking to a group of scientists (not anonymized), the People’s Daily has reached out to Chinese scientific workers at all levels to provide a full picture of their work and life—particularly the firm belief, patriotic fervour,
strong sense of responsibility and motivation of generations of space workers—and attributed that to the leadership and collective wisdom of the CPC and the government. Those reports have conveyed positive energy to society, but such an approach to image building is too simplistic.

3) **Chinese media have a well-established reporting system and a diverse selection of topics.** The topics chosen by Chinese media for reporting were more comprehensive and diversified. The reports covered topics related to major events, past events, history, results, impacts and evaluation to form a standardized reporting system. With regard to format, the reports included news bulletins and newsletters as well as feature articles, interviews and artworks. In terms of the tone of reporting, positive news reports filled with praise for the country’s space programme made up a very high proportion of all reports. However, the problem of homogeneous reports is unavoidable, especially in retrospective articles that are published at different times but have similar qualities.

Western media, on the other hand, do not have such diversified topics, and their reports often focus on the interpretation and explanation of a specific event at a specific time. Compared to the ‘outpouring of emotions’ by the Chinese media, the emotional preference of Western media towards China’s progress in manned space technology is somewhat ambiguous. They adhere to the principle of news objectivity and rarely state a clear-cut attitude towards China’s major achievements in their reports.

**4.4 Means of presentation**

1) **Reporting by Chinese media is honest and accurate.** The *People’s Daily* is realistic and honest in its reporting. Most of the news bulletins are a quick review of events, while some newsletters and feature articles are more lively, vivid and emotional.

When reporting science and technology news, the *People’s Daily* pays considerable attention to professionalism, which is reflected in the accuracy of the data used in its reports. For example, the article ‘Life in space: These good things are essential’ used accurate figures to introduce the process used to manufacture pressure-bearing materials for space, the environment faced by astronauts outside the capsule, and the weight and function of extravehicular suits (Yu et al., 2021). When introducing aero engines, the article ‘Aero-engines: What do we lack?’ explained the high performance of aero engines using figures, and used common analogies to describe the performance of the compressor of the engine and its centrifugal force:

Once pressurized, the pressure of the engine is up to 50 plus atmospheric pressures, equivalent to three times the pressure at the bottom of the Three Gorges Dam once it is filled with water. The rotor performs tens of thousands of revolutions per minute, and the centrifugal force at the tip of the blade is equivalent to the pulling force of a 40-tonne truck. (Bai and Cai, 2015)

It is thus clear that, when reporting on science and technology news, the *People’s Daily* also takes into account readability so that the average reader can understand such scientific and technological achievements.

2) **Western media like to apply the techniques of ‘contrast’ and ‘praise to blame’, and use direct quotations to offer praise.** Although the number of Western media reports on China’s space technology was limited, the media’s means of reporting were relatively diverse. They compared how China and other countries handled similar situations in order to create a positive image of their own country or region.

For example, by targeting the confidentiality of China’s manned space programme, *The New York Times* lavished praise on the so-called ‘open space program’ of the United States and went from criticizing the secrecy of China’s space programme to attacking China’s freedom and human rights record. It argued:

The contrast is stark between the relatively open space program of the United States—it is cooperating with 15 countries on the International Space Station—and China’s clandestine approach. Sending a man into space is a notable achievement. But this feat should not obscure the important political differences that continue to divide China from the United States. Amid calls for joint scientific or commercial ventures in space to improve Chinese–American relations, officials in Washington should consider what kind of cooperation is appropriate with a regime that does not share the United States’ tradition of freedom and respect for human rights. (Newmyer, 2003)
In response to comments about female astronauts in China, *The New York Times* used the example of NASA to underscore that only a ‘subtle gender bias’ exists in the United States: ‘NASA’s 2013 class of astronauts, by contrast, was the first with an equal number of women and men. That is not to say that NASA has eliminated its own subtle gender biases. In 2019, it had to postpone the first all-female spacewalk at the International Space Station because it did not have spacesuits that fit both women’ (Myers, 2021).

The technique of ‘praise to blame’ is the opposite of ‘blame to praise’. Before attacking China’s space technology, space programme and progress in space exploration, Western media often start their reports with a seemingly laudatory paragraph, and then use the grammatical conjunction ‘but’ to move into attack mode. For example, *The Times* raised doubts about the investment in and scientific benefits of China’s manned space mission: ‘China’s space programme is an impressive achievement that testifies to the power of science and to the country’s rapid development. But the scientific benefits of manned space missions are doubtful’ (Kamm, 2013). *The New York Times*, on the other hand, questioned the level of sophistication of China’s space technology: ‘Despite its achievements, experts say, China is decades away from developing the full array of space expertise and infrastructure that allows the United States to simultaneously launch astronauts, send unmanned craft to explore outer planets, take spectacular pictures from orbiting telescopes and profile the eye of a hurricane’ (Gugliotta, 2007).

When *The New York Times* praises China, it mostly paraphrases the positive comments of others rather than directly praising the country itself. For example, it quoted John M Logsdon, Director of the Space Policy Institute at George Washington University, as saying: ‘China has had a very careful, slow-paced buildup to this launch. This is the result of a deliberate decision made a decade ago. It’s a very comprehensive program’ (Yardley, 2003).

5. Suggestions

5.1 Expanding the subjects of communication and cultivating international influence among scientists and science and technology communities

In terms of subjects of communication, such official media as Xinhua News Agency are an important information source for Chinese media due to their authoritativeness and thus are frequently cited by Western media. Official media should continue to leverage their advantage as a major subject of communication, ensure the authenticity and timeliness of news coverage, and show the world a more comprehensive and three-dimensional image of China’s science and technology.

In their reports on China’s space mission, Western media quoted scientists in addition to citing information released by official media. In the arena of international public opinion, the voice of Chinese scientists and China’s science and technology communities is very weak. China should seek to cultivate more scientists and science and technology communities with global influence and strong voices on international platforms. They must be able to present their own research stories and conduct dialogue with international audiences on an equal footing. We should step up overseas publicity for scientists and related science and technology communities to boost their international influence and create opportunities for them to speak out on overseas platforms and introduce China’s achievements in science and technology to the world based on their professional knowledge and narratives.

5.2 Enriching the content of communication and highlighting the pluralistic identities of the scientific community

In the content of their communication, Chinese media should strive to present personal features of scientists from multiple angles to achieve empathic communication. Because reports in Western media pay little attention to the Chinese researchers working behind the scenes, it is all the more necessary for Chinese media to leverage their home advantage and produce higher quality news in this regard.

On the one hand, the media should place equal emphasis, in their reports about scientists, on the value of collectivism and on individual profiles. Current reports of this kind in the Chinese media focus on showing a patriotic and collective spirit and the dedication shared by scientists, such that the image of scientists is tied to a fixed pattern. This has greatly reduced the readability and power of communication of the reports. On the other hand, the reports
must be able to showcase the pluralistic identities of scientists by quoting them and the people around them. In particular, in the case of Chinese female astronauts, the media should emphasize their female character, convey the message that women in China are no weaker than men and, on that basis, shape China’s image as a country of gender equality, freedom and fraternity to combat the stereotypes harboured by people in other countries and trigger the empathy of the international community.

5.3 Improving the mechanism for releasing information while ensuring confidentiality

In recent years, we have seen a qualitative leap in China’s approach to the publicity of space activities. It has even overturned the traditional Chinese concept of news, from reporting the latest facts to reporting the ongoing facts, thus realizing whole-process synchronization with the event and all-round transparency to the world. For the reporting of space activities, which are known for their rigorousness and secrecy, such a transparent approach means greater openness than reporting in other fields. The boldness displayed in the reporting has notably enhanced China’s positive image. (Tang and Zhang, 2011)

It must be noted that space science and technology is an important sector of the defence technology industry and a major science and technology industry of China. Given its mission of researching and producing technologies for space, it is invariably a key subject of interest and a target of surveillance by Western countries. Core technology is of vital importance to a country. Thus, while upholding the bottom line of confidentiality, the media should enhance the transparency and accuracy of information that can be released in public, enrich the form and content of reporting, and adopt a combination of live broadcasts, texts and pictures in reports by using 5G, virtual reality, augmented reality and other new technologies to showcase the image of an open China.

5.4 Finding the right methods and channels of communication to reduce cultural discounts

Due to the specialized features, rigorousness and complexity of space technology, it is often difficult to convey news of it to the public and to achieve the transition from knowledge to attitude and practice in the communication process. Achieving large-scale communication is also challenging. In addition, in the era of all-media, the content and channels of communication are becoming increasingly diverse. In future, China should establish an effective narrative to introduce its achievements in scientific research, such as by focusing on content that reflects the common experience and thinking of humanity, choosing positive issues that can be accepted internationally, and communicating in a way that is easily understood by overseas audiences, in order to reduce cultural discounts.

For the channels of communication, we should choose platforms or media that have international influence and are accessible to overseas audiences, and we should pay special attention to the role of overseas social media in reporting on science and technology, making the overseas audience see and understand what we are reporting. As for possible weaknesses in China’s system of scientific research, the media can play a supervisory role and hold to account the relevant departments to take measures to correct and solve problems in a timely manner. This can help further improve China’s system of science and technology.

5.5 Strengthening the communication response mechanism and monitoring public opinion in China and abroad

In terms of communication-related responses, Chinese media should face up to the questions being asked and present China’s scientific and technological achievements through objective reporting. To counter the distortion of the image of Chinese astronauts and China’s space policy by Western media, Chinese media should provide clarifications and responses through timely reporting to prevent the formation and perpetuation of harmful stereotypes. They should keep track of overseas public opinion, produce high-quality commentaries and quote scholars and experts who have international influence to push back against unfounded questions. The media should also check the content and circumvent sensitive words and topics to avoid causing unnecessary controversies.

The development of the internet and mobile communication technology has accelerated the growth of
social media. With the expanded application of QQ, blogs, Weibo and WeChat, entertainment-oriented social media have moved to the centre of public attention. Social networks are now among the major channels for the communication of public opinion. In particular, news spreads especially quickly on open social networks such as Weibo and Baidu Tieba, which makes them important platforms for Western media to track public opinion in China. China should pay more attention to the surveillance of public opinion on Weibo, WeChat and other social media platforms. When alarming opinions are spotted on the internet, the mainstream media should take timely action to prevent misinterpretation and exaggeration in order to connect the two arenas of online and offline public opinion.

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