
RESEARCH ARTICLE

China's News Media Tweeting, Competing With US Sources

Joyce Y. M. Nip and Chao Sun

University of Sydney, AU

Corresponding author: Joyce Y. M. Nip (joyce.nip@sydney.edu.au)

This paper examines China's recent initiative on international social media and assesses its effectiveness in counteracting Western dominance in international communication. Analysing data collected from the Twitter platform of three public accounts run by China's state news media CGTN, *People's Daily* and Xinhua News, it finds that their news agenda about China focuses on the country's top leaders and achievements, while that about other countries is on breaking news. Their China-related tweets receive more positive replies than their non-China-related tweets, but tweets about China's top leader, Xi Jinping, receive fewer positive replies than soft news items. Analysis of Twitter data of the #southchinasea hashtag finds that China's media mainly compete with US sources for influence. China's state media influence the news agenda on the issue by active and persistent tweeting and drawing retweets. However, US sources are more influential as a whole in setting the news agenda and amplifying certain news events. The study finds evidence that forces seemingly unfriendly to both China and the US attempt to skew the news agenda of #southchinasea using manipulated accounts.

Keywords: Chinese media; external propaganda; media globalization; South China Sea; social bot; Twitter

Introduction

Western dominance of international communication (MacBride et al., 1980) manifested as a real diplomatic issue for China in the 1990s, after Western television news beamed images of the injured and dead next to rolling military tanks in the streets of Beijing in early June 1989 to the living rooms of audiences around the world. To counteract the negative image created by such reports – which China described as 'demonisation' (Li, 1998), and which resulted in punitive diplomatic measures by other countries – China strengthened its external communication in the decade afterwards. Resorting to the latest communication technologies, China launched its first externally targeted satellite television channel in 1992 before building a global satellite television network in the 2000s. It built foreign-language news websites from 1997 and accomplished the China National Network in 2001 (Zhang, 2009). As social media become an increasingly important source of news, China's news media have lately embraced international social media platforms for external communication – although, ironically, many

of these platforms are blocked from access by ordinary users in China. This paper focuses on this little-studied recent initiative. It examines the publishing activities of three of China's state news media organisations on Twitter, analyses their news agenda, and observes user responses received by their accounts and tweets. To evaluate the effectiveness of China in counteracting Western dominance of international communication, it studies communication around the South China Sea dispute via the #southchinasea hashtag on Twitter.

China's expansion into global communication

If reactive defence explains China's expansion of external communication in the 1990s (Zhang, 2009), its goals have since turned proactive. In the 2000s, China's goal was to develop its cultural soft power to match its economic strength (People.com.cn, 2008; Hu, 2011). Under Xi Jinping's administration, the focus has been to propagate 'China's voice', which more recently has become 'making China's viewpoint the world's vocabulary and international consensus' (in Xinhuanet.com, 2016). Over the years, the target audience of China's external communication has also shifted from overseas Chinese to the mainstream international audience, particularly the elite (Zhang, 2009). These changing aspirations have been supported by massive investments, notably in the 2001 'go-global' electronic media project (Hu, Ji, & Gong, 2017), and the 2009 'going-out' media policy (Hu & Ji, 2012). Strategies have included building communication infrastructure (Thussu, de Burgh, & Shi, 2017), gaining access to markets (Zhang, 2009; Sun, 2014; Birtles, 2017) and captivating the audience (He, 2010; Xinhuanet.com, 2016). In the expansion, centralised coordination has remained the main model of operation, as exemplified by the plan announced in March 2018 to create a flagship broadcaster through the merger of China's three national broadcasters (China National Radio, China Radio International, and China Central Television) (*CGTN America*, 2018). News communication forms a key part of the expansion, and central-level state news media have played the pioneer role (*Forbes*, 2009), although more recently lower-level news media have joined the game (Tatlow, 2016; Qiu, 2017).

China's expansion into global communication has not achieved resounding success. Few dispute that its news outlets lack credibility (Thussu, de Burgh, & Shi, 2017) and have small audiences (Zhang, 2010). Many consider China as possessing little cultural influence (Shambaugh, 2013; Nye, 2015), but some argue that it wields different and contradictory cultural resources and that in the long term its cultural influence will increase substantially (Pan, 2006; Sparks, 2016). China's international image is improving only slowly, if at all (Globescan, 2017; Norman, 2018).

China lands on international social media

Recent developments in communication technologies have alerted the Chinese leadership to their ideological implications in a Western-dominated global communication order (Hu, 2008; Li, 2011). Critical public opinion formed on the domestic microblogging platform, Weibo (Nip & Fu, 2016) – which, for a time, struck fear into Chinese officials (People.com.cn, 2013) – convinced the Chinese authorities of the need to launch an ideological offensive against 'Western anti-China forces ... that target the thought and cultural spheres of the Chinese Communist Party' to protect the 'ideological security' of the country (*China Military*, 2013). The strategy is to occupy the new spaces of public opinion formation and boost China's power of global discourse to build a new order of international communication (Li, 2013).

China's venturing into international public social media platforms is logical given the increased importance of social media as sources of news for consumers, as found in a 36-country study (Newman, Fletcher, Kalogeropoulos, Levy, & Nielsen, 2017). This importance is rising in the US and UK (Newman et al., 2017): two-thirds of Americans report that they get

some of their news from social media (Shearer & Gottfried, 2017). Since 2013, at least half of Twitter users in the US have used the platform as a news source. In late 2017 the figure was 74 per cent, up 15 per cent from early 2016, probably because of the Twitter activities of the US President Donald Trump (Newman et al., 2017). Internationally, Twitter is used as a news source by a higher percentage of its users than other social media, although Facebook and some apps designed for private communication are more popular news sources (Newman et al., 2017). The private communication on Facebook and privately-oriented apps, however, are not accessible to researchers for privacy reasons. This study, therefore, concentrates on the public communication on Twitter.

News media are the most retweeted (Meraz & Papacharissi, 2013) and most influential users on Twitter (Lee et al., 2010), but the influence of China's news media on Twitter is rarely studied. There is one notable exception: Guo, Mays & Wang (2017) found that in 2011–14 most tweets about the South China Sea focused on China in a negative way, and that US newspapers were more influential than China's newspapers in forecasting discussion of bilateral relationships between nations involved in the South China Sea dispute on Twitter.

China's news media on Twitter

Twitter, along with several other international social media platforms, has not been legitimately accessible to users in China since 2009. However, a study conducted in 2015 estimated that users who reside in mainland China, and those who reside outside but who are significantly connected in following or interacting with users inside mainland China, together hold 8,275 Twitter accounts (Song, Faris, & Kelly, 2015).

The official blocking has not stopped news organisations in China running accounts on international social media. Our search found the following verified Twitter accounts belonging to Chinese media, some of which are also associated with other seemingly legitimate un-verified accounts:

- China Radio International (CRI) (now called @ChinaPlusNews) since April 2009
- *Global Times* (@globaltimesnews) since June 2009
- China.org.cn (@chinaorgcn) since May 2010
- *China Daily* (@ChinaDailyAsia) since April 2011
- *People's Daily* (@PDChina) since May 2011
- Xinhua News (@XHNews) since February 2012
- *Guangming Daily* (@Guangming_Daily) since June 2012
- China Central Television News (@CCTVnews)¹ since January 2013 (superseded by China Global Television Network, @CGTNOfficial, from 4 January 2017)
- *Sixth Tone* (@SixthTone) since February 2016

Un-verified accounts of official organisations in China include:

- *China Pictorial* (@CHINA_PICTORIAL) since March 2014
- *Beijing Review* (@BeijingReview) since June 2009
- China State Council Information Office (@chinascio) since September 2015

We found no verified accounts run by commercial news media, such as *Caijing* or *Caixin*. Nor did we find a verified or credible account representing the Chinese president, Xi Jinping, on Twitter. It appears that state media are used as China's official voice to address and interact with the international audience. This paper seeks to examine this voice by analysing the news agenda of selected verified official accounts of China's state media. It aims to assess

the influence of these accounts by observing the responses to their tweets. A case study of the #southchinasea hashtag is used to further examine China's relative influence on Twitter. Specifically, the study asks:

1. What are the most prominent themes in the tweets of China's state media?
2. What is the sentiment of the replies received by the tweets?
3. What are the most prominent themes in the original tweets containing #southchinasea related to China?
4. What are the most prominent themes in the entirety of tweets including retweets and replies containing #southchinasea related to China?

Comparing the results of questions 3 and 4 is expected to help us assess the impact of China's state media in the #southchinasea sphere.

Data and Methods

Influence on Twitter is usually evaluated by the structural position of the user in the social network (common measures are page-rank and number of followers), or the extent of information adoption by others of the user's messages (common measures being the number of retweets, comments, and mentions) (Lee et al., 2010), but these two types of measures do not necessarily correlate (Cha, Haddadi, Benevenuto and Gummadi, 2010; Lee et al., 2010). This study relies on the number of followers of the account, the Like and retweet counts of the tweets from Twitter's user metrics, and the number of replies to the tweets that we collected as indicators of influence.

The design and interpretation of the study are sensitised by the knowledge that user metrics of social media are subject to manipulation. Cases of fake follower numbers on Twitter, including of Xinhua News, have been reported (Confessore, Dance, Harris, & Hansen, 2018; Grundy, 2015). Social bots have been found to manufacture tweets and tamper with human interaction on Twitter to amplify visibility of certain information or misinformation (Shao, Ciampaglia, Varol, Flammini, & Menczer, 2017). Seemingly manipulated accounts have been observed to conduct propaganda on Twitter by China and against China (Bolsover, 2017). In China, the requirement for real name registration of social media accounts means that similar manipulation of information often takes the form of hidden paid posters, known as the 'Internet water army' (shui jun, 水军) in the commercial context (Chen, Wu, Srinivasan, & Zhang, 2013), and the 'fifty-cent army' (wu mao dang, 五毛党) in the service of the government (Han, 2015; King, Pan, & Roberts, 2017).

Two Twitter datasets were collected – one of China's state media accounts and one of the #southchinasea hashtag. The first dataset contains data from the following three public accounts on Twitter:

- CCTVNEWS/China Global Television Network: @cctvnews/@CGTNOfficial
- People's Daily, China: @PDChina
- China Xinhua News: @XHNews.

These three media are among the most important central-level media supported by the Chinese state to expand globally. Their Twitter accounts gather far larger followings than any other account listed above. On 13 April 2018, the Twitter user interface showed that @CGTNOfficial had 7.64 million followers, @PDChina 4.66 million, and @XHNews 12 million. The largest following of the other accounts of China's news media was for China Radio International (CRI) (@ChinaPlusNews), with 597,000 followers, and China.org.cn

(@chinaorgcn), with 531,000 followers. The three selected accounts are also associated with a number of regionally focused verified (e.g. @cgtnamerica, @XHJapanese) and unverified (e.g. @xinhua_hindi) accounts, and accounts that focus on individual programmes (e.g. @CGTNDCproducers) with smaller followings and which were not included in this analysis. Hence the three media outlets, which also hold accounts on Facebook, YouTube and Instagram, are considered the most effective of China's media on Twitter.

The South China Sea dispute was considered an appropriate case study because China's expansive and competing territorial claims against neighbouring countries in Asia, which also threaten the navigational routes of several other countries, necessitates competition for supportive international public opinion.

The #southchinasea hashtag was selected as the field site of the dispute as it was far more popular than another hashtag focused on the issue, #south_china_sea, which was the only other similar hashtag identified through frequency analysis of hashtags of our #southchinasea dataset. Using TrISMA, a tool developed in Australia to track, store and process the entirety of public social media data posted by Australians (Bruns et al., 2016), we found that the number of Australian tweets containing the #south_china_sea hashtag was a tiny fraction of those containing #southchinasea. We assume a similar distribution would apply to the global dataset. The hashtag search was preferred to keyword-combination searches as it collects tweets tagged by their authors as focused on the South China Sea, making them more relevant for our purpose.

We started by using the DMI-TCAT (Digital Methods Initiative Twitter Capture and Analysis Toolset), an open-source tool developed by the University of Amsterdam¹ (which sources data from the Twitter streaming API in real time) to collect data. We supplemented the tweets and replies collected by capturing Like and retweet data directly from Twitter's REST API for China's media dataset on 25 October 2017, and for the #southchinasea dataset on 27 November 2017.

The period studied of China's state media dataset was 1 October 2016 to 24 October 2017. The coverage of an entire year should give a clear overview of the activities of state media.

The period studied in the #southchinasea dataset was 13 December 2016 to 23 May 2017. The selection took into consideration the development of events in the South China Sea as reflected in Google Trends since 1 January 2009. Interest in 'south china sea' peaked on 12 July 2016, when a tribunal of the Permanent Court of Arbitration (PCA) in the Hague ruled against China's claim to historical territorial rights within the 'nine-dash line' (its self-declared territorial boundary) in the South China Sea. After that public interest in the issue declined until around 15 December 2016, when China seized a US drone. This also brought to light that China was installing weapons in the area, and had just started daily passenger flights to one of the disputed islands. Interest continued to decline until a very small peak around 19 May 2017, when China threatened to go to war with the Philippines over the dispute and a draft framework was then finalised among ASEAN countries about conduct in the South China Sea. We are satisfied that the selected period involves concerns at international and regional levels affecting multiple countries.

Twitter's streaming API enforces restrictions on data scraping to a maximum of 1 per cent of the entire Twitter data stream at the moment of collection. This could potentially affect the #southchinasea dataset. We evaluated the comprehensiveness of the collected #southchinasea dataset by comparing the Australian messages collected in the dataset to those collected by TrISMA, and found that 97 per cent of the Australian #southchinasea messages in TrISMA were included in our #southchinasea dataset. This gives us confidence that our #southchinasea dataset captures the overwhelming majority of relevant messages. Restrictions applied by the Twitter REST API are not expected to affect our collection of the China media dataset.

Among the data collected using the above methods, English-language messages were counted and further analysed. While all the tweets collected from the China state media accounts were in English, 34 per cent of replies made to their tweets that contained non-English (ASCII) symbols (including 6 per cent of English-language tweets containing the truncation symbol "...") were discarded. Ten per cent of collected messages in the #southchinasea dataset containing non-English symbols were discarded.

Theme analysis

To study the news agenda of China's state media on Twitter, themes of their tweets (excluding retweets but including replies *made by* the state media) were analysed by word frequency and word co-occurrence frequency using the scikit-learn package in the Python 3.6 script (<http://scikit-learn.org/stable/index.html>). In addition to the standard Stopword list pre-compiled by the package, words standing for Monday to Sunday and URLs were further excluded before running the analyses. We take frequency as the number of tweets in which a word appears, meaning that even if a word appears in the same tweet twice or more, frequency is still counted as one. A 'word' is defined as a single word in the first round of analysis, and a two-word term (two consecutive words) in the second round. In each round of analysis, co-occurrence frequency analysis was conducted among the most frequent 50 words.

In the #southchinasea dataset, word frequency and co-occurrence frequency analyses as described above were applied to the original tweets (excluding retweets and replies), and then to the entirety of messages (including original tweets, retweets and replies *received by* the original tweets). The words #southchinasea and 'southchinasea' were additionally excluded in the analyses.

Sentiment analysis

Since Twitter is mainly a news medium (Kwak, et al., 2010), we reckoned that applying sentiment analysis on information-giving tweets would not be productive. Instead, sentiment analysis was conducted on the *replies received* to the tweets from the selected accounts in the China state media dataset, using version 3.2.5 of the Natural Language Toolkit package (<http://www.nltk.org/>), separately on tweets whose content was directly related to China and tweets that did not directly relate to China. To split the dataset into China and non-China-related, we followed a three-step process. First, all the tweets published by the three accounts were filtered using a list we compiled of 227 China-related keywords, which included geographical, political and cultural keywords, helped by searches on various China-related websites. In step two, we compiled a similar keyword list that related to foreign countries and landmarks to identify a non-China-related body of tweets. We were then left with 5,191 tweets that did not contain any China or foreign-related keywords in the compiled lists. These tweets were manually coded into China and non-China-related by the two authors, after a trial coding of 2 per cent of the same tweets, which produced 91.3 per cent inter-coder agreement (Krippendorff's Alpha 0.85).

Reliability of the automated sentiment analysis on the replies was tested through comparing the automated coding to manual coding of a random sample of 0.5 per cent each of the replies from the China- and non-China-related bodies of tweets. While automated coding generated sentiment scores on a continuous scale from -1 to $+1$, the first author manually coded according to a 5-point scale (-1 , -0.5 , 0 , $+0.5$, $+1$) while the second author attempted a 9-point scale (-1 , -0.75 , -0.5 , -0.25 , 0 , through to $+1$). We were able to obtain satisfactory agreement between automated and manual coding when we converted the scores to a 3-point scale (-1 , 0 , $+1$) based on the following rules:

- Same polarity, and the absolute value (irrespective of whether the numeral is positive or negative in value) of both coding is greater than 0.1
- Different polarities, or one/both are zero, and absolute value of both coding is less than 0.1
- ✓ 69.3 per cent (Krippendorff's Alpha 0.53) between automated and the first author's coding of the China sample
- ✓ 68.0 per cent (Krippendorff's Alpha 0.52) between automated and the second author's coding of the China sample
- ✓ 70.9 per cent (Krippendorff's Alpha 0.52) between automated and the first author's coding of the non-China sample
- ✓ 70.0 per cent (Krippendorff's Alpha 0.56) between the two authors' coding of the China sample

Since the agreement between automated coding and each of the author's is comparable to the agreement between the manual coding done by the two authors, we were satisfied that the automated coding was as good as human coding in differentiating sentiment on a 3-point scale, although we were cautious of the rather low Krippendorff's Alpha scores (Krippendorff, 2013). On this basis, automated sentiment analysis was conducted on the replies received by the China- and non-China-related bodies of tweets that contained more than three characters in the text, excluding those that contained a URL link alone.

Sentiment analysis was not conducted on the #southchinasea dataset because several countries are often included in the same tweets. Since our interest is on the sentiment related to China, the analysis would not serve our purpose.

Results and discussion

China's state media on Twitter

China's three state media accounts were very active in publishing tweets (N = 53,967), of which 52,047 were unique by content in the 389 days from 1 October 2016 to 24 October 2017. Their tweets received 255,857 replies (not counting promotions or petitions), of which 215,484 were unique by content. To the average of 4.7 replies received per tweet (4.1 unique replies to every unique tweet), the state media engaged little with them: not only did they publish few reply tweets overall (N = 1,552), the overwhelming majority of their reply tweets were made to tweets published by themselves to provide further information about their original tweets (**Table 1**). This suggests that, despite the interactivity capabilities of social media, China's state media used Twitter predominantly as a one-way propagation platform.

The most-liked tweet published by the three in the period was @CGTNOfficial's three photographs of gold-coloured fireworks with the caption: 'Showers of molten iron, a stunning fireworks alternative, light up #China arts fest <https://goo.gl/xbEr52>'.³ The most-retweeted tweet came from @CGTNOfficial: '#BREAKING Thailand's King Bhumibol Adulyadej, the world's longest-reigning monarch, has passed away aged 88'⁴ with four accompanying photographs. The most-replied to tweet was a three-minute video, published by @XHNews on 16 August 2017, with the caption: '#TheSpark: 7 Sins of India. It's time for India to confess its SEVEN SINS,'⁵ the first of which, according to the video, was India's troops illegally crossing the border with China. It is noteworthy that two of the three tweets involved serious non-China-related international events.

Most of the popular tweets, however, were China related, and they tended to be less serious. The second most-liked tweet was a video with the caption: 'Just when you think it's a police officer who thinks he can park anywhere, this amazing moment happens.' The video shows a Chinese policeman who stops his police vehicle in the middle of the road to block all

Table 1: Tweet Publishing and Replies Received by China's State Media, 1 October 2016–24 October 2017.

	@cctvnews/ CGTNOfficial	@PDChina	@XHNews	3 Media Combined (N)	3 Media Combined (%)
Total Tweets	12,189	14,145	27,633	53,967	96.4% unique
Tweets per Day	31.33	36.36	71.04	138.7	
Replies Received	44,155	78,387	133,315	255,857	84.2% unique
Average Replies Received per Tweet	3.6	5.5	4.8	4.7	
China-related Tweets	6,679	10,898	15,030	32,607	60.4% of total tweets
Original Tweets	6,459	10,881	14,403	31,743	97.4% of C-related tweets
Reply Tweets	220	17	627	864	2.6% C-related tweets
(Reply Tweets to Self)*	214	13	612	839	97.1% of C-related replies
Non-C Related Tweets	5,510	3,247	12,603	21,360	39.6% of total tweets
Original Tweets	5,136	3,223	12,313	20,672	96.8% of non-C related tweets
Reply Tweets	374	24	290	688	3.2% of non-C related tweets
(Reply Tweets to Self)*	368	24	270	662	96.2% of non-C related replies

*These are subsets of the China-related and non-C related reply tweets.

traffic and jumps out to usher an old lady across the road. The second most retweeted tweet was a caption: 'When the teacher asks you to bring a fish to class for observation and you tell your father any fish will do',⁶ that accompanies a photograph which shows a large mud carp on a stainless-steel tray on a table in front of a small child and several other children sitting around the table each holding a small transparent box with a gold fish inside. An example of a popular tweet was a video with the caption: '570 meters above valley! World's highest bridge in SW China's Guizhou ready to open for #Shanghai-Kunming High-Speed Railway'.⁷

The popular tweets suggest that China's news media, despite generally seen as lacking credibility, could draw user attention for other reasons. Replies made to soft items tended to be positive, indicating that users could identify with the messages. Many comments left by retweeters of the tweet about the death of Thailand's king were written in Thai, suggesting that some non-Chinese nationals used CGTN as an information source. Emotive expression of negative sentiment was mixed with appreciative responses in replies made to the tweet of fireworks photos, and the tweet on '7 sins of India' drew predominantly negative and critical replies. This suggests that at least some following of China's state media is not built on endorsement. We also found, consistent with previous studies (Bolsover, 2017), that some users used the reply function on the tweets of China's state media to vent their grievances. Notable among such responses was a campaign against an alleged fund-raising scandal at the Yunnan Kunming Fanya Non-Ferrous Metal Exchange (*Radio Free Asia*, n.d), which replied in Chinese.

Certain metropolises are prominently represented, notably Beijing ('beijing' n = 1057; #beijing n = 325); Hong Kong ('hong kong' n = 305; #hongkong n = 259), and Shanghai ('shanghai' n = 392). Beijing is most associated with 'new' and 'president', and Shanghai with 'new' and 'beijing'. Hong Kong, on the other hand, co-occurs most often with 'president', #xijiping, and 'chief executive', probably extolling the power of the Chinese president over the Special Administrative Region, particularly the appointment of its new chief executive on 11 April 2017.

More generally, the achievements of China are showcased. 'New' is the second most frequent word (n = 1829). It co-occurs highly with 'beijing', 'cooperation', 'development', and 'high'. 'World' is the third most frequent word (n = 1641), and most often co-occurs with 'largest', 'bridge', and 'new' (The popular tweet about a bridge reported above is a typical example of this theme). Along this line, 'high' co-occurs with 'railway', 'new', 'train', and 'beijing'. 'High speed' is the fifth most frequent two-word term (n = 246).

'New year' is the fifteenth most frequent two-word term (n = 134), and was mainly used in tweets about celebration and hope for the future in China-related tweets. The same phrase, however, is related to security concerns and accidents in addition to celebrations in non-China-related tweets, among which the term ranks sixty-fourth. Our observation found that Chinese festivities, including, for example, the Winter Solstice festival, form a consistent theme, indicating a focus on traditional Chinese culture. There is a substantial body of tweets focused on the lighter side of life in China, which may be less easily identified by keywords. Many tweets focus on beautiful sceneries, cultural heritage, and amusing moments in street life. The emphasis of China's achievements and culture by state media on Twitter echoes an earlier finding about CCTV's international channel and the China National Network (Zhang, 2009), which, together with the continued focus on the country's leaders, suggests that China's state media on Twitter are repeating the same themes as published on other platforms in their external communication. The focus on China's culture and civilization is one of the tactics recently reiterated by President Xi Jinping for China's external communication (Xinhuanet.com, 2016).

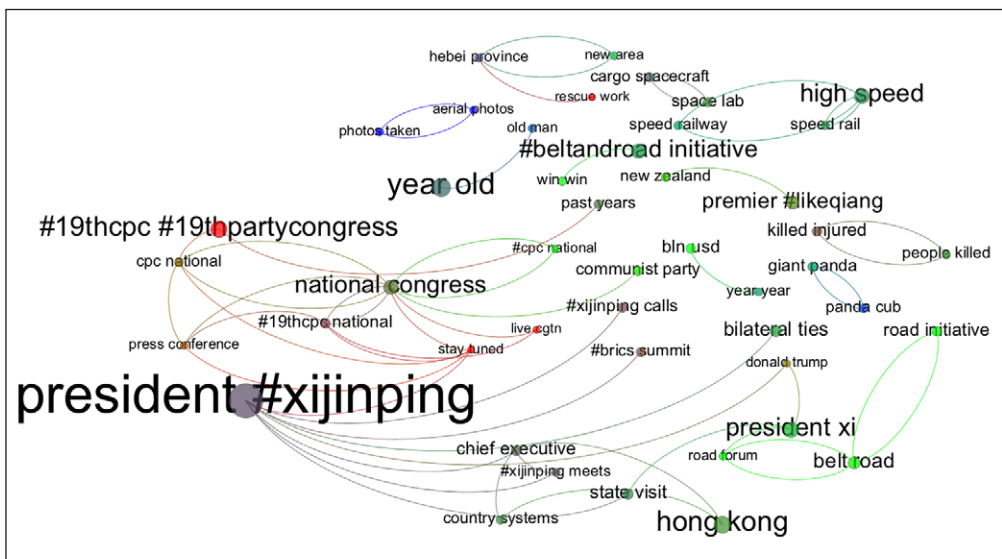


Figure 2: Visualization of the network of top 50 2-word terms used in China-related tweets of China's.

There are also many cute animals (particularly giant pandas) and scientific discoveries in various parts of the world, activities of Chinese persons in foreign/international organizations (e.g. the Chinese basketball player Yao Ming in the US), and international events held in China (e.g. the world robot conference). These themes are consistent with the tactic of focusing on points of common interest between China and the West (‘Xinhuanet.com, 2016).

Non-China-related tweets

Breaking news was the most common theme tweeted about other countries by China’s state media. It is logical given the nature of social media, and the aspiration of China’s state media to compete with other international media. #Breaking was the most frequent word (n = 1850), which most often co-occurs with ‘says’ (n = 198), ‘killed’ (n = 198), ‘injured’ (n = 165), and ‘police’ (n = 155) (See **Figure 3**). ‘Death toll’ was the third most frequent two-word term (n = 264).

Another top theme of the non-China-related tweets relates to the president (‘president’ n = 1391) of foreign countries, which co-occurred most frequently with the US president. ‘Trump’ occurs in 787 tweets, @realdonaldtrump 504, and #trump in 338 tweets. Many of these tweets reported what he ‘said’. Russia is a country that features prominently, with ‘russia’ (n = 797), ‘russian’ (n = 715), and #russia (n = 196) being high frequency words, again involving heavily what the Russian President ‘says’. The interest on foreign presidents is reflective of the importance accorded to these leaders based on elite-centric news values, consistent with what would also be covered by Western media with whom China’s media compete. The theme of the US follows the importance of the country, both globally and to China in particular, whereas the coverage of Russia is correlated with the strengthened relationship between Russia and China as reflected by the multiple meetings between the two presidents in the last few years.

North Korea is heavily reported (‘#dprk’ n = 591; ‘dprk’ n = 317) particularly in relation to ‘missile’, ‘nuclear’, ‘test’ and ‘military’ issues. South Korea is mainly reported in relation to

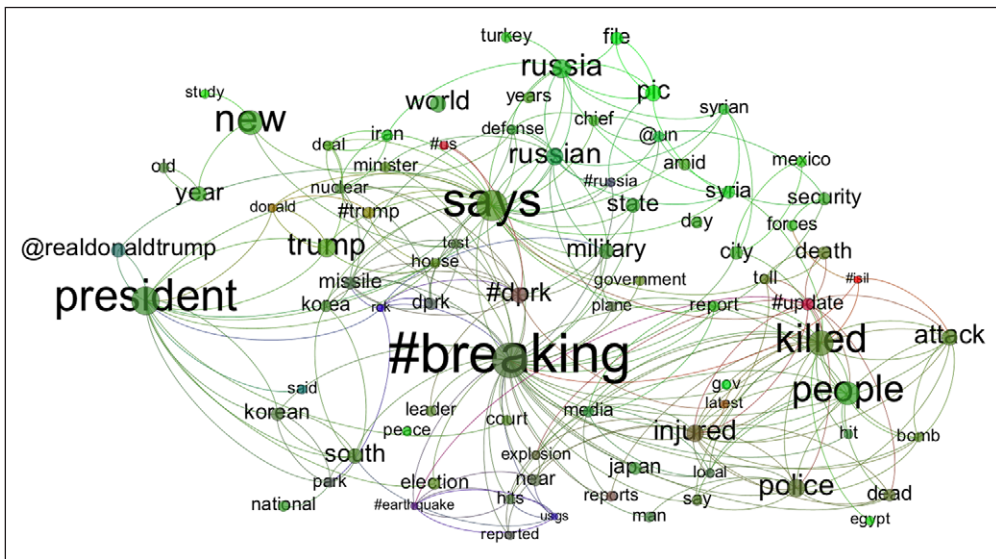


Figure 3: Visualization of the network of top 50 single words used in non-China-related tweets of the 3 Chinese state media organisations.

'korean president' (n = 124), North Korea, missile, Japan and security and defence issues. This mirrors international concern about test-launches of an intercontinental ballistic missile by North Korea in July 2017, and China's concern about the deployment in South Korea of the American Terminal High Altitude Area Defence (Thaad) system.

Sentiment of replies to China's media tweets

To examine the overall sentiment of replies received to the tweets from Chinese state media, the sentiment score of each of the replies after conversion was aggregated. Analysis shows that – within the limitations of reliability mentioned above—replies tend to be positive but more so towards China-related tweets than to non-China-related tweets (**Table 2**). Higher positivity in replies to China-related tweets may be related to the more human-interest themes in them than in non-China-related tweets. Non-China-related themes sometimes involve conflict between China and other countries (as in the '7 sins of India' tweet), which is more likely to draw critical comments.

To further understand the response of Twitter users, we analysed the sentiment of replies made to three prominent Chinese themes: Xi Jinping's visits, the Belt and Road Initiative (BRI), and giant pandas. Tweets were identified as about these themes by keywords:

- Xi's visits – #xivisit or words from both ['president #xijinping, #xijinping, 'president jinping', 'xi', 'jinping'] and ['visit', 'arrive', 'arrives'].
- BRI – any of [#beltandroad, #obor], or words from both [belt, #belt] and [road, #road].
- Panda – any word of [panda, pandas, #panda, #pandas].

We are aware that the 'panda' criteria would exclude many tweets about giant pandas that contain videos and captions without the 'panda' word or hashtag, but reckon that the tweets included by the criteria are relevant for our purpose. Results show that the panda theme receives more replies per tweet than the BRI or Xi's visits (**Table 2**). Replies to the panda-related theme are also more positive, particularly compared to Xi's visits. Almost 18 per cent

Table 2: Sentiment of *Replies** Made to China's State Media Tweets, 1 October 2016–24 October 2017.

	Non-China-Related Tweets		China-Related Tweets		Xi's Visits (N = 514)		BRI (N = 780)		Panda (N = 647)	
Replies Received	90,298		153,938		2,268		3,473		3,585	
Average Reply per Tweet	4.23		4.72		4.41		4.45		5.54	
Overall Average Sentiment	0.043		0.240		0.205		0.335		0.365	
	N	%	N	%	N	%	N	%	N	%
Positive Replies	29,266	32.4	65,915	42.8	873	38.5	1,592	45.8	1,691	47.2
Neutral Replies	35,688	39.5	59,104	38.4	988	43.6	1,451	41.8	1,510	42.1
Negative Replies	25,344	28.1	28,919	18.8	407	17.9	430	12.4	384	10.7

*11,621 replies received that contain a URL alone or fewer than three characters were excluded from the analysis.

of replies to the Xi visit theme are negative. Results of the sentiment analysis are consistent with the observation that the most popular tweets are soft news items. The results speak to the appeal of China's culture (loosely defined) – and less so its economics – compared with its politics.

#southchinasea on Twitter

Our collected *#southchinasea* dataset, after de-spamming, contained 71,238 messages, including 22,922 original tweets, 47,111 retweets and 1,205 replies to original tweets. To assess the relative influence of China's state media in the hashtag, we de-duplicated identical original tweets published by the same accounts to arrive at 16,854 unique original tweets by account and consolidated the Like and retweet counts around these tweets. We ranked the influence of the accounts by a score, calculated by multiplying the number of unique original tweets published by the account with the average Like count and average retweet count of the unique original tweets, and arrived at a list of top twenty accounts.

China's state media in #southchinasea

Tweeting activity

China's state media were active in publishing tweets using the *#southchinasea* hashtag. In the 160-day period, *@PDChina* published 56 unique original tweets, an average of 0.35 per day, and ranks fourth by the number of unique original tweets among the top twenty accounts. *@XHNews* published 53 and *@cctvnews/cgtnofficial* 21 unique original tweets (**Table 3**). In addition, CCTV published 12 and *@cgtnamerica* published two unique original tweets.

The tweeting level of China's state media outperformed other news media among the top 20 accounts in *#southchinasea* except the Moscow headquartered news agency, *@SputnikInt*. However, they lag far behind two non-news accounts: *@9DashLine* and *@AsiaMTI*. *@9DashLine* describes itself as '[f]ocused on security developments across the South China Sea and Indo-Pacific region. RT ≠ endorsement'. While its name on Twitter contains the Chinese characters equivalent to '9 dash line', which may suggest sympathy with China's territorial claims, its tweeting of reports published by news suppliers does not reveal a clearly identifiable political position. *@AsiaMTI* is the verified account of the Asia Maritime Transparency Initiative, formed by the Washington DC based Center for Strategic and International Studies (**Table 3**). Other influential accounts outside the top twenty that tweeted actively using *#southchinasea* include US and Chinese news and research accounts (**Table 4**).

'Likes' and retweets

According to Twitter data, the tweets of China's state media containing *#southchinasea* were very successful in fetching Likes and to a lesser extent retweets: *@XHNews* published the most-liked (by consolidated Like count, henceforth) original tweet ($n = 2159$) and the most-retweeted original tweet of all accounts ($n = 507$). *@cctvnews* (including *@CGTNOfficial*) published the second most-liked original tweet ($n = 494$), and *@PDChina* published the ninth most Liked tweet ($n = 185$). Their average Likes per tweet ranged from 92.5 to 199.3, which placed them between fifth and twelfth in ranking among the most influential twenty by average Likes of original tweets (**Table 3**).

@XHNews also published the most retweeted original tweet, while *@cctvnews* and *@PDChina* were among the top 11 of the 20 most influential accounts in *#southchinasea* considering maximum retweets. However, their rankings by average retweet count of original tweets are slightly lower (ranked 8–15 of the top 20) (**Table 3**).

Table 3: Relative Performance of Chinese State Media by *Unique Original* Tweets Among Top 20 Accounts in #SouthChinaSea, 13 December 2016–23 May 2017.

	N of tweets	Rank by N of Tweets	Max Likes	Rank by Max Likes	Average Likes	Rank by Average Likes	Max RT	Rank by Max RT	Average RT	Rank by average RTs
cctvnews (including CGTNOfficial)	21	6	494	2	135	6	247	6	50.9	14
PDChina	56	4	185	9	92.5	12	117	11	40.2	15
XHNews	53	5	2159	1	199.3	5	507	1	81.2	8
9DashLine	763	1	47	19	4.2	20	60	18	9.5	20
AsiaMTI	157	2	160	10	11.7	18	299	3	24.9	18
FoxNews	1	15	317	4	317	2	295	4	295	1
HeatherNauert	2	13	242	6	121	8	55	19	28.5	17
ianbremmer	1	15	108	14	108	11	99	13	99	7
jimsciutto	4	9	308	5	201.5	4	317	2	220	2
JulieBishopMP	1	15	213	8	213	3	166	9	166	4
kentkristensen1	1	15	113	13	113	10	61	17	61	11
mkopNY	2	13	49	18	26	17	294	5	213	3
PacificCommand	18	7	229	7	81.4	13	180	8	56.9	13
RT_com	3	11	65	16	53.7	14	73	14	57	12
samirsinh189	5	8	55	17	47.8	15	53	20	39	16
ShepNewsTeam	1	15	133	11	133	7	114	12	114	6
SputnikInt	90	3	32	20	9.9	19	66	15	14.8	19
statedptspx	1	15	115	12	115	9	62	16	62	10
USNavy	3	11	469	3	434	1	149	10	139.3	5
yicaichina	4	10	102	15	45.5	16	241	7	71.75	9

Table 4: Selected Active Accounts Outside the Top 20 in #SouthChinaSea.

Account	Description	Unique Original Tweets	Average Likes	Average RTs
South China Sea News, @SCS_news	Twitter: 'A non-profit, non-governmental project to promote better understanding and study of South China Sea disputes.'	179	4.0	5.3
RealClearDefense, @RCDefense (verified)	Twitter: 'Your source for the latest on Defense, National Security, Strategy, and Military Commentary and Analysis'. Its website: 'RealClearDefense (RCD) was created at the request of the Pentagon and Hill staff on the House Armed Services Committee.'	89	4.3	7.3
Ankit Panda, @nktpnd (verified)	Twitter: 'Senior Editor @Diplomat_APAC in NYC'	71	6.5	9.0
Global Times, @globaltimesnews (verified)	Twitter: 'China's national English language newspaper, under the <i>People's Daily</i> '	55	9.3	4.8
Ashley Townshend, @ashleytownshend	Twitter: 'Director, Foreign Policy and Defence Program at the United States Studies Centre.'	53	4.3	7.0
South China Morning Post, @SCMP_News (verified)	Twitter: 'South China Morning Post provides news and analysis on Hong Kong, China and the rest of Asia.'	33	7.0	10.0

Accounts that ranked at the top of average Likes and average retweets in #southchina-sea were not active tweeters of the hashtag. The account that averaged the highest Likes per tweet ($n = 418.8$) is the official US Navy account (@USNavy), which published only four tweets. FoxNews published one tweet, and received 317 Likes and 295 retweets, making it number two by average Like and number one by average retweet in #southchinasea. However, @foxnewsvideo published two tweets but only has an average Like of 9, and an average retweet of 5. Five of the top 20 accounts in #southchinasea are run by the US news media and personnel – two accounts by Heather Nauert, a former anchor/reporter on Fox News and now spokeswoman at the US State Department (one account in her personal and the other her present official capacity), one by Fox News, one by Jim Sciutto (CNN Chief National Security Correspondent), and one by ShepNewsTeam (Fox News anchor Shepard Smith's team). Other accounts include the US Pacific Command, the Australian Foreign Minister Julie Bishop, the Russian news service @RT_com, a finance information media group in China, the Yicai Global @yicaichina, and several businesspeople (@mkopNY, @kentkristensen1) and academics (@ianbremmer, @samirsinh189) (Table 3). Based on our score, which takes into account the tweeting level, average Likes and average retweets per tweet, XHNews ranks as the most influential, and PDChina the second most influential, of all accounts using the hashtag #southchinasea.

The most-liked tweet, which is also the most retweeted, published by @XHNews on 26 April 2017, is a two-hour video 'Chasing sunrise in #SouthChinaSea and exploring an uninhabited island'.⁸ It features a trip made by a male and a female journalist of Xinhua

News Agency to one of the disputed Spratly Islands (called Nansha, or literally 'South Sand', Islands in the video, and falling within the 'nine-dash line'-demarcated territory claimed by China), described as administered by the Sansha city of China's southern Hainan Province – as part of a series of reports about the Belt and Road Initiative. The audience sees the sunrise over water in the South China Sea as the pair introduces the importance of the area in ancient and present maritime navigation on a speedboat, and sees them examine the corals and ceramics on the beach, and the flora and fauna of the island as they walk around. It then sees the underwater world around the island after the cameraman dives in with his camera. The idyllic portrayal of the tropical island and the purported significance of the South China Sea in the maritime silk road belied the conflict behind the 2016 PCA ruling, which China rejected, and the controversy over navigational rights in the area.

China's state media published seven of the ten most-liked tweets. The seven tweets talk either about the non-military aspect of the geographic area like the above one, or showcase China's naval drills. Their content contrasts with the other three tweets in the top ten, published by @USNavy, which showcases the naval might of the US.

As for attracting retweets, China's state media were less successful. Only three of the ten most retweeted original tweets were published by China's state media (all of which fall within the top ten most-liked). The other seven were published by US sources: three by @jimsciutto, two by @AsiaMTI, and one each by @FoxNews and mkopNY (**Table 5**).

The results suggest that in the #southchinasea hashtag, China's state media compete mainly with US sources for influence, be they non-profit organizations, news organizations or official US government bodies. Individual tweets of China's state media attracted extensive positive attention, but their average retweet count was often smaller than that of the US sources. However, the active tweeting of China's state media could enable them to exert influence in a way different from the US sources, which, except @AsiaMTI, were far less active in tweeting the hashtag. By the sheer volume of their tweets, China's state media are important shapers of the news agenda on the South China Sea dispute on Twitter. On events or issues that other sources do not tweet about, they would set the frame. This kind of influence would apply to @AsiaMTI, @9dashline, and @SputnikInt as well.

Themes of original tweets in #southchinasea about China

China is clearly the centre of interest in the #southchinasea hashtag. Among the original tweets, #china (n = 7252) is the most frequent single word. In addition, 'chinese' occurs in 1,022 tweets, and 'beijing' in 550 tweets. Other countries appearing most frequently are the United States ('#us' n = 2394; '#usa' n = 828; '#american' n = 838), the Philippines ('#philippines' n = 1130; 'philippines' n = 625) and Japan ('#japan' n = 992; 'japan' n = 420).

The verb that most frequently co-occurs with #china is 'warns' (n = 952) (See **Figure 4**). '#China warns' is the third most frequent 2-word term (n = 883), and 'warns #us' (n = 834) is the fourth most frequent two-word term after 'china sea' and 'south china'. The object of China's warning is the US: '#china warns' co-occurs the most with 'warns #us' (n = 832), the fourth most frequent two-word term) – a use supported by our reading of the original tweets.

'Tension' is the noun that most frequently co-occurs with '#china' (n = 878), other than #us and 'sea'. 'Tension escalating' ranks eleventh among frequent two-word terms (n = 797). At the same time, 'chinese' co-occurs with 'aircraft' in 92, and with 'carrier' in 83 tweets. The word frequencies and co-occurrences suggest that China is presented as a threatening actor in the original tweets of #southchinasea.

Table 5: Ten most retweeted *original* tweets of #SouthChinaSea, 13 December 2016–23 May 2017.

Rank by RT Count	Created by	Text	Consolidated Like Count	Consolidated Retweet Count
1	XHNews	Chasing sunrise in #SouthChinaSea and exploring an uninhabited island @periscopetv	2159	507
2	jimsciutto	New: US has quietly suspended freedom of navigation operations in #SouthChinaSea, none since Jan 20 as admin seeks not to antagonize #China	247	317
3	XHNews	Chinese naval formation consisting of aircraft carrier #Liaoning conducts take-off, landing drills in #SouthChinaSea	1084	309
4	AsiaMTI	New & Improved Island Tracker – China, Taiwan, and Vietnam reclamation in Spratly Islands, #SouthChinaSea. http://bit.ly/2dx08He	160	299
5	FoxNews	WARNING SIGN? #China's 1st aircraft carrier enters #SouthChinaSea #FOXNewsWorld	317	295
6	mkopNY	RED lines being crossed by #China, #SouthChinaSea, seizing #USA underwater drone, watch out, escalation reuters/2hP1Bdu via @Reuters	49	294
7	jimsciutto	Trump called Obama weak on #SouthChinaSea patrols. 100 days in, he seems to have halted them entirely.	308	273
8	jimsciutto	Don't miss this – #China certainly didn't: @PressSec said "We will defend" islands in international waters. #SouthChinaSea	206	261
9	CGTNOfficial	Chinese naval formation involving aircraft carrier Liaoning conducts drill in #SouthChinaSea on New Year's Day 2017	494	247
10	AsiaMTI	New imagery shows #China fortifies its close-in point-defense capabilities at outposts in #SouthChinaSea. See more: http://cs.is/2hvrXNZ	96	245

A number of high-frequency two-word terms such as '#us challenging', 'states #us', '#us cause', '#american researcher', 'researcher states', 'challenging actions', 'stance #china', 'indonesia takes', and 'takes stance' with similar frequencies of around 800 alerted us to identify about 800 repeats each of the following three tweets, the words within which explain the results of the theme analysis:

- #American researcher states #US is the Cause of the #SouthChinaSea Conflict (unique URL supplied with each tweet, as noted below)

- #China warns #US about Challenging it’s [sic] actions in the #SouthChinaSea’s [sic] (unique URL supplied with each tweet, as noted below)
- Tensions escalating in #SouthChinaSea’s [sic]; Indonesia takes stance against #China (unique URL supplied with each tweet, as noted below)

None of these 2,400 or so repeat tweets drew any Likes or retweets. They were published by the same 19 accounts, which, upon checking on Twitter, have all now been suspended. Each of these 19 accounts published all of the above three tweets, with each account embedding a URL link in its tweets that was different from those used by other accounts, but all of which pointed to the same web page on the same website. This is clear evidence that systematic attempts were made to skew the news agenda on #southchinasea.

The content of the ‘#American researcher’ tweet is not favourable to the US. The ‘#China warns’ tweet runs contrary to China’s official rhetoric of ‘China’s peaceful rise’. The ‘Tensions escalating’ tweet is not in China’s interest. These tweets, published by the same accounts, suggest that some force unfriendly to both the US and China seemed to be behind these attempts to skew the news agenda.

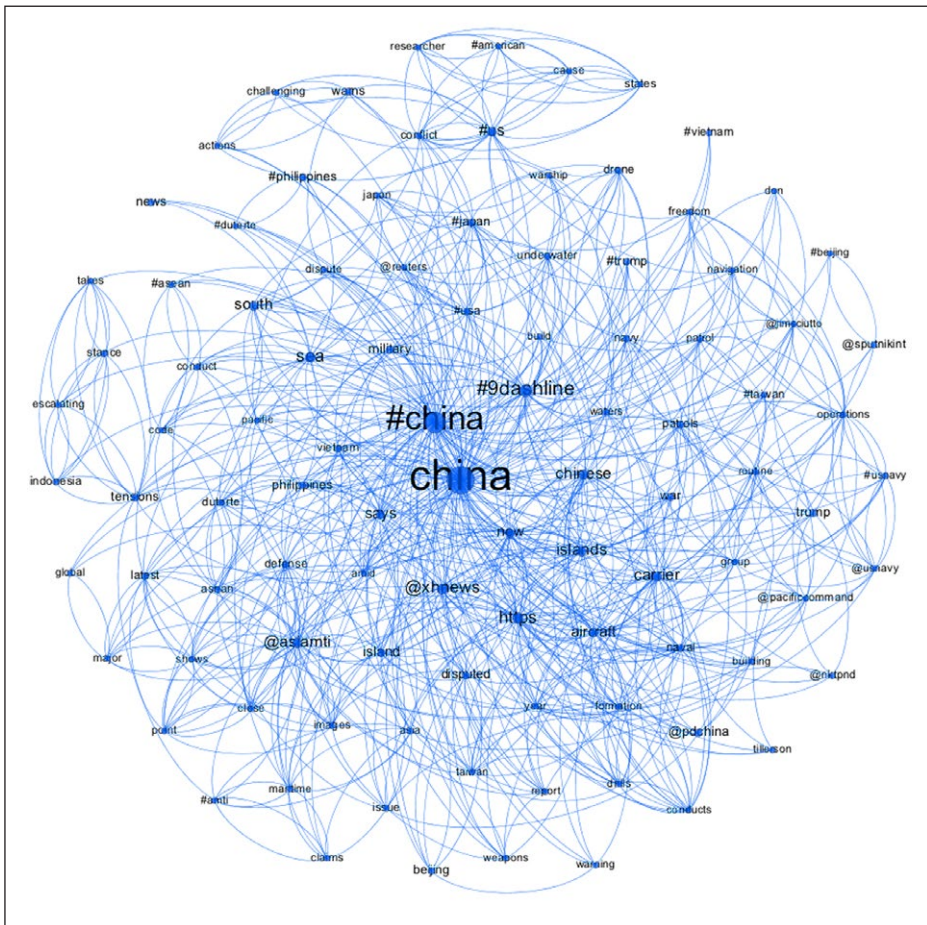


Figure 4: Visualization of the network of top 100 single words used in original tweets containing #southchinasea, 13 December 2016–23 May 2017.

Themes of all tweets in #southchinasea about China

When retweets and replies are included in the analysis, the influence of China's state media, particularly @xhnews, can be seen. '#China warns' is less prominent, now being the seventh most frequent two-word term ($n = 1096$). Also less prominent is 'warns #us' ($n = 951$; rank = 14). 'Tension escalating' and the other above-mentioned high-frequency two-word terms have moved to rank ninth and below. Instead, 'aircraft carrier' has become the most frequent two-word term ($n = 2714$), after 'china sea' and 'south china': It most frequently co-occurs with 'naval formation' ($n = 547$), 'chinese naval', '#china aircraft', 'carrier formation'. '@xhnews china' ($n = 376$), and 'carrier enters' in that order, suggesting that some of the co-occurrences come from the third most retweeted original tweet published by @xhnews. This suggests that retweeting has helped @xhnews to spread its message. 'Underwater drone' is now the eighth most frequent two-word term ($n = 1055$) (See **Figure 5**), and it most frequently co-occurs with '@xhnews china' ($n = 128$), again suggesting that tweets published by @xhnews have influenced the prominent themes in #southchinasea to some extent.

Retweeting has helped @xhnews to become the fifth ($n = 4492$) and @pdchina the twenty-first ($n = 2310$) most frequent word. @asiamti has become the ninth ($n = 3876$) most

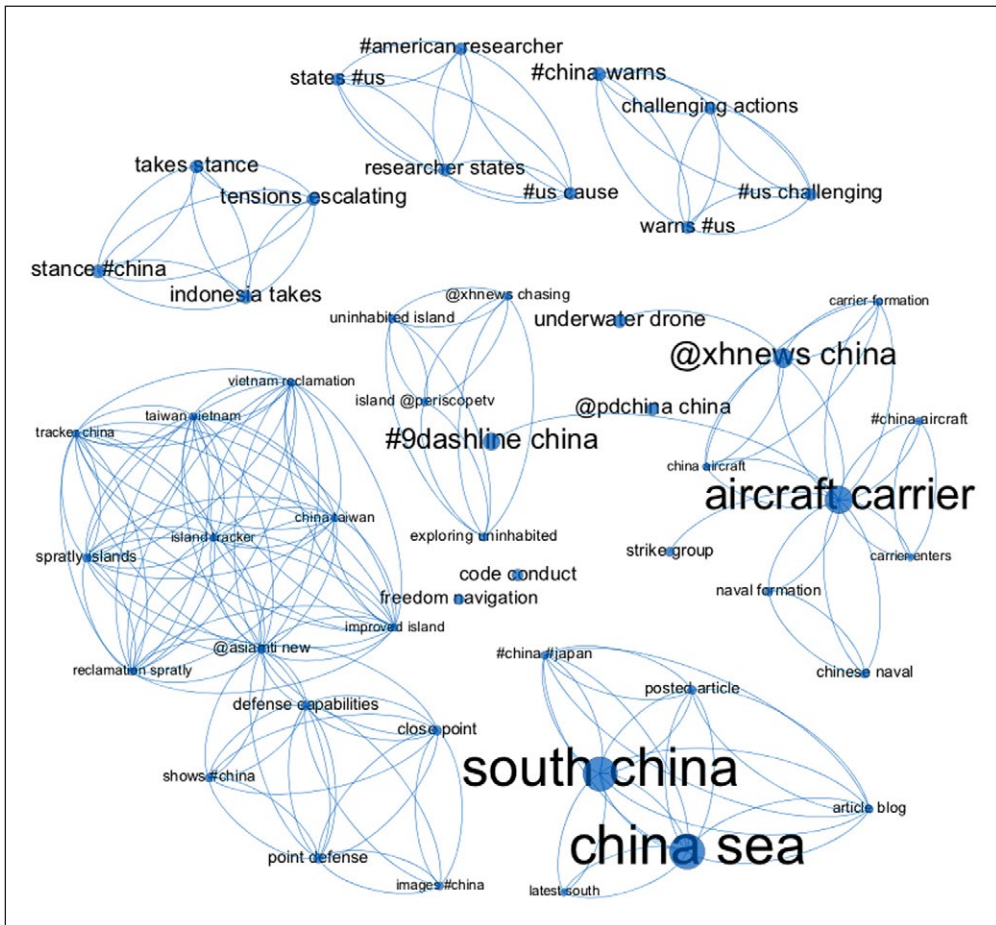


Figure 5: Visualization of the network of top 50 2-word terms used in all tweets containing #southchinasea, 13 December 2016–23 May 2017.

frequent word, and 'dashline', found in retweets of @9DashLine's tweets, has become the third most frequent word (n = 6487).

Conclusion

To counteract Western domination of global communication, China has adopted a proactive strategy in its external communication as it grows in economic strength, and now aspires to set its own frame of global discourse. The activities of China's state media on Twitter constitute a step towards this aspiration.

Our analysis of big data collected from the Twitter Open API found that the selected public accounts run by Xinhua News, *People's Daily*, and CCTV News/CGTN have established a significant presence in the Twittersphere in the six-and-a-half years or so since they started their accounts. Each of them has several million, some more than 10 million following accounts, the overwhelming majority of whose owners must reside outside China given the blocking of Twitter access in China. The substantial percentage of non-English replies collected in the state media dataset suggests that China's state media reach an international audience in the true sense of the term, not restricted to English-language users, while some of the following accounts might be within China as the collected non-English replies contain tweets written in Chinese characters. The state media accounts tweet actively about China and to a lesser extent, the rest of the world. Some of their tweets are highly successful in attracting Likes and retweets, and on average receive a handful of replies.

Just over 60 per cent of tweets published by China's state media focus on China, and their Twitter news agenda resembles those they publish on other platforms. It still smacks of propaganda. The Chinese president – particularly when he makes official visits – is the most prominent theme in their tweets. The Chinese premier comes second on the news agenda, while metropolises such as Beijing, Shanghai and Hong Kong are the sources of frequent stories. Achievements and developments of China are also high on their news agenda. These serious items generally do not appeal to their followers as much as soft items, which may be less prominent in the news agenda but whose popularity makes them more prominent to Twitter users. The sentiment of replies to the panda theme is more positive than to the Belt and Road Initiative or President Xi Jinping's visits. This supports the view that China's soft power varies across different spheres (Sparks, 2016), and suggests that a more nuanced analysis of China's strategy of external communication would be fruitful.

China's state media make a concerted effort to compete as global news services by devoting just under 40 per cent of their tweets to news not directly related to China. These tweets often focus on breaking news, involving disasters and accidents, or presidents of other countries. These themes are similar to those covered by Western media, and suggest that China's state media follow Western news values in their reporting of non-China-related events.

Irrespective of the interactive capabilities available on Twitter, China's state media primarily use the platform as a one-way propagation medium, and rarely engage in conversation with those who reply to their tweets. While the same lack of reader engagement is also observed in the accounts of state media on China's domestic social platform, Weibo, international social media present new challenges that may further deter their use of the interactive features. Unlike on domestic social media, where 'undesirable' messages could be censored, China's state media are not able to delete critical replies or petition tweets on Twitter that are posted as replies to their tweets. Actively responding to replies may encourage petition or promotional uses of the reply feature on Twitter, and threatens to derail the mission of building good images of China as a big nation (Xinhuanet.com 2016).

Their high volume of tweeting about China makes China's state media important shapers of the news agenda about the country on Twitter. This is clearly seen in the case study of the #southchinasea hashtag, where the three Chinese state media accounts, individually, are among the most active and influential tweeters. They rank among the top fifteen accounts with the highest average Likes and average retweets per tweet, with Xinhua News publishing the most liked and most retweeted tweet of the hashtag in the studied period. Retweets of their original tweets have helped to make the themes related to China in #southchinasea less emotive.

Compared with the two most active tweeters of the hashtag, the tweets of China's state media received more unique replies. Yet the active response to their tweets cannot be equated to Twitter users' support for their messages. Sentiment analysis of the replies received by the tweets of China's state media identifies much negativity, especially in response to tweets not related to China in content (**Table 2**). It is likely that among the large number of followers of China's state media accounts are some who follow to monitor their tweets with the purpose of disputing their content.

Sources from the US and China make the majority of the most influential 20 accounts in #southchinasea. While this reflects dominance of US sources on the American platform, the prominence of China's state media may not be found among issues in which China has lesser interest. Even in #southchinasea, China's sources are beaten by US sources among the top twenty, both in terms of the number of accounts (four versus seven news-related and official accounts from the US alone) and the total number of tweets published. The US think tank, AsiaMIT, published more unique original tweets on its own than the combined tally of unique original tweets published by China's four accounts. The other US accounts among the top twenty in #southchinasea tweeted far less frequently using the hashtag than China's state media, but when they did, they provoked more retweets on average than the latter. This means that China's state media have yet to upset the dominance of US sources on Twitter, as exemplified in our study of #southchinasea.

Processing the data, it emerges that systematic attempts exist in #southchinasea to skew the news agenda by repeating tweets, an activity often performed by automated bot accounts. While the manufactured tweets are fake in the sense that they do not originate from the claimed account holders, they are real in terms of their existence in the Twittersphere as published content about the South China Sea. While manufactured tweets distort user metrics, their impact on legitimate Twitter users is uncertain. Twitter users tend to get their news through scrolling their timelines or browsing tweets of those they follow more than through searches (Rosenstiel et al., 2015). The repeated 2,400 tweets discussed above, in fact, received no Likes or retweets, meaning that even if the manufactured accounts managed to draw some legitimate followers, their tweets did not engage them. Our reading of these manufactured messages suggests that some force unfriendly to both the US and China may be behind the artificial amplification of a certain agenda in #southchinasea.

Limitations of the study

Our study has provided empirical understanding of the performance of China's state media on Twitter, the international social media platform recognised for news use. We are confident that our methods and data have produced valid results, but they need to be read in context. Our analysis relies on user metrics as indicators of influence but they are liable to manipulation. While genuine retweeting indicates influence, it does not necessarily equate to endorsement of the view expressed by the original tweet. Methodologically, since '#southchinasea' was used as the keyword to collect tweets in the case study, replies that do not include the #southchinasea hashtag in the text of the reply would be excluded in the dataset. However,

if we assume repliers to various accounts are equally likely to insert the hashtag, then our comparison of the reply numbers of accounts would still be indicative, although the level of overall influence may be underestimated.

Notes

- ¹ See <https://wiki.digitalmethods.net/Dmi/DmiAbout>.
- ² Figures 1 to 5 can be viewed as data visualisations in a supplementary file folder.
- ³ (1 August 2017, <https://twitter.com/CGTNOOfficial/status/892444829354926082>).
- ⁴ (13 October 2016, <https://twitter.com/CGTNOOfficial/status/786535727303577600>).
- ⁵ (<https://twitter.com/XHNews/status/897817640353144833/video/1>).
- ⁶ (@PDChina, 7 January 2017, <https://twitter.com/PDChina/status/817997818472169473/photo/1>).
- ⁷ (@PDChina, 23 December 2016, <https://twitter.com/i/web/status/812376196319219719>).
- ⁸ (<https://twitter.com/search?q=Chasing%20sunrise%20in%20%23SouthChinaSea%20and%20exploring%20an%20uninhabited%20island&src=typd>).

Additional File

The additional file for this article can be found as follows:

- **Additional File.** Visualisations for China's news media tweeting. DOI: <https://doi.org/10.16997/wppcc.292.s1>

Competing Interests

The authors have no competing interests to declare.

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How to cite this article: Nip, J. Y. M. and Sun, C. (2018). China's News Media Tweeting, Competing With US Sources. *Westminster Papers in Communication and Culture*, 13(1), 98–122, DOI: <https://doi.org/10.16997/wpcc.292>

Submitted: 23 April 2018 **Accepted:** 16 May 2018 **Published:** 21 June 2018

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