



Across the firewall: Foreign media's role in shaping Chinese social media narratives on the Russo-Ukrainian War

Hans W. A. Hanley^a, Yingdan Lu^{b,1}, and Jennifer Pan^c

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There is a widespread perception that China's digital censorship distances its people from the global internet, and the Chinese Communist Party, through state-controlled media, is the main gatekeeper of information about foreign affairs. Our analysis of narratives about the Russo-Ukrainian War circulating on the Chinese social media platform Weibo challenges this view. Comparing narratives on Weibo with 8.26 million unique news articles from 2,500 of some of the most trafficked websites in China, Russia, Ukraine, and the United States (totaling 10,000 sites), we find that Russian news websites published more articles matching narratives found on Weibo than news websites from China, Ukraine, or the United States. Similarly, a plurality of Weibo narratives were most associated with narratives found on Russian news websites while less than ten percent were most associated with narratives from Chinese news sites. Narratives later appearing on Weibo were more likely to first appear on Russian rather than Chinese, Ukrainian, or US news websites, and Russian websites were highly influential for narratives appearing on Weibo. Altogether, these results show that Chinese state media was not the main gatekeeper of information about Russia's invasion of Ukraine for Weibo users.

censorship | media | narratives | Russo-Ukrainian War

The Chinese Communist Party (CCP) has established the most extensive digital censorship system in the world (1–3). Many have argued that this system distances Chinese citizens from the global internet, positioning the CCP, through party, government, and state-controlled media outlets, as the gatekeeper of information about foreign affairs (4, 5). However, few studies have empirically examined whether the CCP is the main gatekeeper of information about foreign affairs. Moreover, the limited research that exists has focused on links between China and the English-speaking Internet, leaving China's connectivity, or lack thereof, with other linguistic and regional contexts unexplored (6).

We address this gap by measuring the source of narratives about the Russo-Ukrainian War circulating on the Chinese social media platform Weibo (a microblogging site similar to Twitter/X) in the initial months of Russia's invasion of Ukraine. As a major global event, the Russo-Ukrainian War provides an ideal context for studying China's digital connectivity. Suppose the CCP serves as the main gatekeeper of information flowing into the country. In that case, the narratives observed on Chinese social media about the war should align with and predominantly originate from China's state-controlled news ecosystem.

We define narratives as elements (actors, actions, developments) selectively placed in relation to other elements that imply moral judgments or anticipated outcomes and provide a lens through which events, concepts, and the world can be understood. Narratives are selective, omitting some elements while emphasizing others, but structured, relating elements to others sequentially or causally. To operationalize the concept, texts are considered part of the same narrative if they have the same elements (e.g., named entities, events, geographic focus) and the same explicit or implied relations between them.

We identify narratives among 435,261 Weibo posts made between February 1 and April 19, 2022, classified as related to Russia's invasion of Ukraine by a pretrained Chinese Bidirectional Encoder Representations from Transformers (BERT) model fine-tuned on human-labeled posts (*SI Appendix, section S1*). After dividing posts into smaller passages and converting them into vector representations (*SI Appendix, sections S3 and S4*), we apply an optimized version of the DP-Means algorithm (7) to cluster similar vectors. This process groups similar passages into narratives, with human reviewers setting a threshold to determine what constitutes a narrative cluster based on our definition (8) (*SI Appendix, section S4*). To measure the source of Weibo narratives, we gathered 8.26 million unique articles published between January 1 and June 1, 2022, from 10,000 of the most popular Chinese, Russian, Ukrainian, and US news websites (*SI Appendix, section S2*).

Author affiliations: ^aDepartment of Computer Science, Stanford University, Stanford, CA 94305; ^bDepartment of Communication Studies, Northwestern University, Evanston, IL 60208; and ^cDepartment of Communication, Stanford University, Stanford, CA 94305

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¹To whom correspondence may be addressed. Email: yingdan@northwestern.edu.

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We conduct four analyses. First, we identify the share of articles in each news ecosystem that contain narratives found on Weibo. We split news articles into smaller passages and use multilingual MPNet to create vector representations of each passage (9), which we compare to Weibo passages. When the vector representation of an article is similar to that of a Weibo post, they may have different meanings, especially in multilingual settings (10). To address this, we go beyond semantic similarity to identify paraphrases, which preserve meaning but allow for different words and phrasing, by training three bilingual mDeBERTa models (Chinese–Russian, Chinese–Ukrainian, Chinese–English) (*SI Appendix, section S5*).

The second analysis estimates the percentage of Weibo narratives most associated with each news ecosystem. We use pointwise mutual information (PMI) to measure the probability of co-occurrence between each Weibo narrative and each news ecosystem (*SI Appendix, section S6*) (11). For each ecosystem and Weibo narrative combination, a PMI value is calculated. The Weibo narrative is most associated with the news ecosystem with the largest PMI value.

In our third analysis, we identify which of the four news ecosystems each Weibo narrative first appeared in by comparing the publication dates of Weibo posts and news articles. If the earliest date is from an article in a particular news ecosystem, we consider that ecosystem as the narrative’s first appearance. If the earliest date is from a Weibo post, we consider the narrative to have first appeared on Weibo. However, this analysis may not capture the narrative’s true origin, as it may have initially emerged offline or in a news ecosystem not included in our analysis.

Finally, we analyze the spread of narratives over time to understand the relationships between each news website and Weibo, using network inference-based techniques (*SI Appendix, section S7*). This analysis helps us estimate the overall “influence” each news ecosystem has on Weibo narratives, where influence refers to the likelihood that narratives on Weibo are being copied from a particular news website. For example, if several narratives across our dataset first appeared on Russia Today (a Russian news website), then on Breitbart News (a US news website), next on Epoch Times (a US news website linked to Falun Gong, a religious group banned in China), and finally on Weibo, this technique would suggest that Epoch Times had a stronger influence on Weibo than the other website, as the Weibo posts appeared immediately after the Epoch Times articles. We estimate the total influence of each ecosystem from the sum of their websites’ weighted edges on Weibo.

Results

We identify 2,183 distinct narratives on Weibo, each composed of at least five unique messages. On average, 95% of the messages within these narratives are posted within 11.8 d of the narrative’s

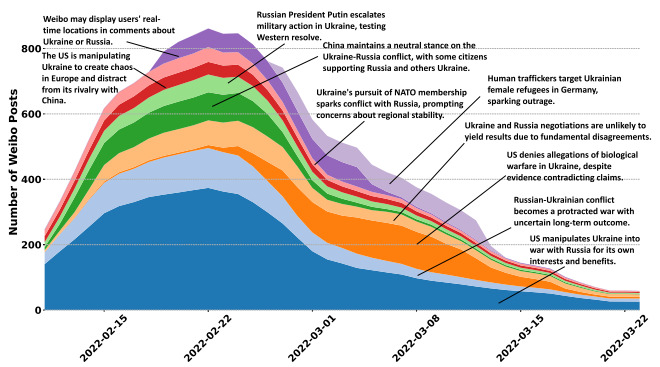


Fig. 1. Volume of top ten narratives on Weibo over time.

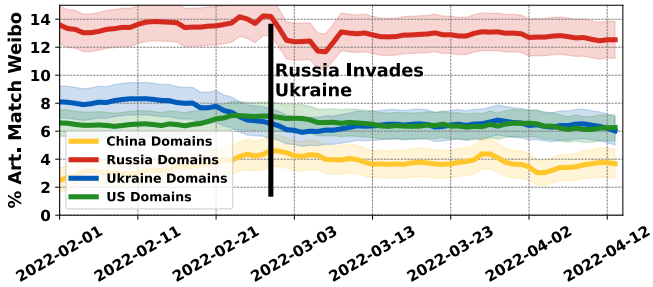


Fig. 2. Analysis 1: Percent of articles matching Weibo narratives from Chinese, Ukrainian, Russian, and US-based news websites.

first appearance (with a median of 3 d). Each narrative was shared by an average of 40 users (with a median of 12 users). The most frequently occurring narratives on Weibo concern the impact of sanctions on Russia, as well as the role of the NATO, the European Union, and the United States in the conflict. Fig. 1 shows the top ten narratives by post volume with their llama3 generated summaries (*SI Appendix, section S4*).

Analysis 1 finds that the Russian news ecosystem has the highest percentage of articles containing narratives matching those on Weibo, peaking on the day of the Russian invasion (red line in Fig. 2). China’s news ecosystem has the lowest percentage of articles containing narratives matching those on Weibo (yellow line in Fig. 2).

Although the Chinese news ecosystem does not contain the largest share of articles matching Weibo narratives, it could still serve as a major gatekeeper if Weibo narratives are more similar to content from the Chinese news ecosystem than that of other news ecosystems. However, Analysis 2 shows this not to be the case. The analysis of the association between Weibo narratives and news ecosystems finds that 37.1% of narratives on Weibo are most associated with Russian news websites, followed by Ukraine’s (35.0%). Only 9.7% of Weibo narratives are most associated with Chinese news websites and 18.3% with US news websites (see first row of Table 1). The Weibo narrative most associated with the Russian ecosystem concerns US President Biden meeting Polish President Duda in Rzeszow following the Russian invasion. The Weibo narrative most associated with the Ukrainian ecosystem concerned accounts encouraging Ukraine to win, with some users writing “Let’s go Ukraine.” The Weibo narrative most associated with the US ecosystem highlights the American press’ comparison of Ukraine’s situation to Taiwan’s. Finally, one of the Weibo narratives most associated with the Chinese ecosystem discusses how the Russo-Ukrainian War overshadowed other news. One user remarked “there is a lot of content online, but everyone is only paying attention to the news about Ukraine.”

Analysis 3 of first appearance finds that 37.8% of Weibo posts had narratives that first appeared on Russian news websites,

Table 1. Results of Analyses 2 to 4

	China	Russia	Ukraine	US
Analysis 2: Share of Weibo narratives most associated with each news ecosystem	9.7%	37.1%	35.0%	18.3%
Analysis 3: Share of Weibo narratives first appearing in each news ecosystem	5.2%	37.8%	37.2%	19.1%
Analysis 4: Relative influence of news ecosystems on Weibo	1.1%	78.0%	18.9%	2.0%

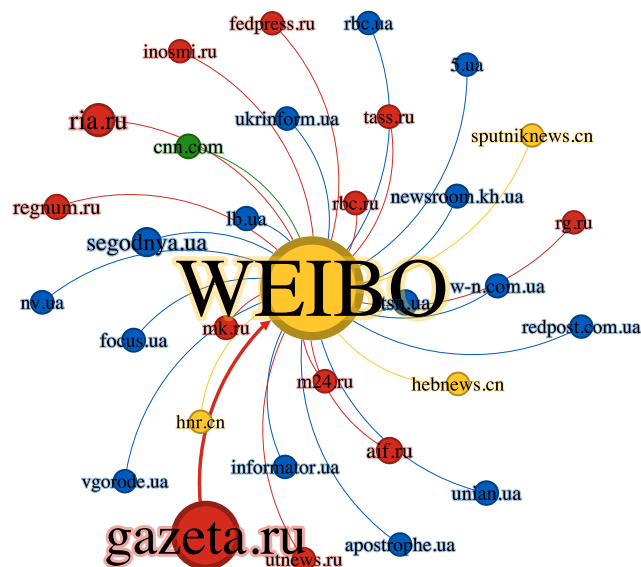


Fig. 3. Influence network on Weibo from the top 31 Russian (red), Ukrainian (blue), Chinese (yellow), and US (green) news websites; the estimated influence on Weibo determines the size of nodes.

37.2% on Ukrainian websites, 5.2% on Chinese websites, and 19.1% on US-based websites (see second row of Table 1). The remaining posts contained narratives that first appeared on Weibo before being published on any of the 10,000 news websites that we analyzed. The most discussed Weibo narratives—by number of posts—that first appeared on Russian news websites were frequently pro-Russian, including false claims about the United States funding biological weapons development within Ukraine, depictions of Russia destroying numerous Ukrainian military targets, and claims of corruption in Ukraine. In contrast, narratives first appearing on Ukrainian news websites focused on developments of the war, such as the Chechen armed forces joining the conflict and Ukraine's declaration of a national state of emergency. The most discussed narratives first appearing on US news websites concerned US military supplies to Ukraine. The top narratives first appearing in Chinese media highlighted China's humanitarian aid provision, China's neutral role in the conflict, and the war's role in giving the United States a competitive advantage over China by rerouting capital flows to the West. The most popular Weibo narrative that did not originate from any of the four news ecosystems was a series of jokes poking fun at a Ukrainian athlete in the 2022 Winter Olympics.

Finally, Analysis 4 shows that Russian websites contributed 78.0% of the total external influence on Weibo discussions about the Russo-Ukrainian War, followed by Ukrainian sites at 18.9%, US sites at 2.0%, and Chinese sites at 1.1% (see last row of Table 1).

Fig. 3 highlights specific websites with the most influence on Weibo narratives, color-coded by country, showing that *gazeta.ru*—one of Russia's oldest online news outlets—has the

largest influence. Foreign language content makes its way to Weibo in a variety of ways, including Weibo users translating content into Chinese and foreign outlets posting directly in Chinese on Weibo (see *SI Appendix, section S8* for details and examples).

Discussion

Four separate analyses—(1) the percent of articles in each news ecosystem matching Weibo narratives, (2) the share of Weibo narratives most associated with each news ecosystem, (3) the share of Weibo narratives that first appeared in each news ecosystem, and (4) the influence of news websites and each ecosystem on Weibo—demonstrate that Chinese social media narratives about the Russo-Ukrainian relate to news coverage in foreign media, particularly non-English outlets.

One limitation of this study is that it uses Chinese news media as a proxy for CCP gatekeeping. The CCP may retain its gatekeeping role by allowing certain types of foreign media to directly reach the Chinese public, without mediation from Chinese state media. Another limitation of this study is that it focuses solely on the Russo-Ukrainian War, a highly salient event of global importance. It is possible that the CCP, through party, government, and state-controlled media outlets, exerts greater influence over the Chinese public on less prominent foreign affairs topics. However, it is equally plausible that there is simply less social media discussion within China about lower-profile issues.

Altogether, however, these results show that the Chinese populace is not digitally disconnected from the rest of the world despite China's stringent censorship regime. Chinese state media is not the only gatekeeper of information about foreign affairs for domestic audiences. Our findings also highlight that an English-language or solely Western-oriented perspective may lead to the mistaken impression that China is digitally isolated. Considering other languages and contexts, it becomes clear that narratives circulating beyond China's borders also appear on the Chinese internet.

Materials and Methods

We collected Weibo data in 2022 as the conflict between Russia and Ukraine unfolded (*SI Appendix, section S1*). News websites were identified using Amazon Alexa, Common Crawl, and Cloudflare data (*SI Appendix, section S2*). We preprocessed Weibo messages and news articles into short passages (*SI Appendix, section S3*). We then embedded, clustered, and interpreted Weibo narratives (*SI Appendix, section S4*), identified semantic similar passages and paraphrases (*SI Appendix, section S5*), measured narrative co-occurrence, and performed influence estimation (*SI Appendix, section S7*).

Data, Materials, and Software Availability. Anonymized replication data is available at <https://github.com/hanshanley/narrative-influence> (12).

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