Original Article

A 'New Arms Race'? Framing China and the U.S.A. in A.I. News Reporting: A Comparative Analysis of the Washington Post and South China Morning Post

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Abstract

This study explores the news framing of A.I., China, and the U.S.A. in two mainstream news outlets: *The Washington Post* and *The South China Morning Post*. The main objective is to analyse how both, as parts of different discourse cultures, portray the competition for leadership in A.I. innovation between China and the U.S.A. The study takes a critical look at the media discourse on the 'new arms race' and what role the news play in localising global technology trends. The empirical part makes use of a combination of manual and automated content analyses. To this end, a dictionary approach that utilises Names Entity Recognition was applied to a large volume of news texts (N = 3.055) to identify recurring news frames. The findings show similarities in the perception of A.I.'s potentials and versatility but also clear cultural differences in how risks and conflicts are portrayed in both outlets. Although the *Washington Post* appears more critical about A.I., the *South China Morning Post* frames the technology as a driver of economic growth and global influence. The discussion offers a starting point for theorising the relationship between mediatisation, tech trends, cultural differences, and international politics.

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Introduction

The rise of artificial intelligence (A.I.) triggered profound transformations across societal domains around the world. It evolved from a niche issue to a matter of economic, social and political importance. A.I. is a frequent topic in public discourses shaped by tech businesses, governments, researchers and news media. The latter configure these intersectional discourses in several ways. First, they register newsworthy developments concerning A.I. Second, news media give public communicators a stage for sharing their views on the technology. Third, they proactively shape discourses through agenda-setting, priming and framing. Fourth, news media apply cultural lenses in their reporting about global developments for audiences in specific socio-cultural locations. News media contribute to processes of meaning-making and disseminate interpretative frameworks around new technologies (Pentzold, 2017; Paganoni, 2019). News framing can influence lay audiences' conceptual understanding of A.I. as a social, cultural, economic and political issue.

Governments around the world devised ambitious A.I. strategies, as progress in technology development has become a matter of national interest, international prestige, and geopolitical strategizing (Karatzogianni, 2021). The China-U.S.A. rivalry is exemplary for this. Both countries proclaim aspirations to take global leadership in A.I. and some commentators argue that they may have entered a 'new arms race' (Lee, 2019). Their interest in A.I. is two-fold. On the one hand, China and the U.S.A. seek to exploit A.I. domestically for boosting their economies and securing technological sovereignty. On the other, A.I. is considered essential for gaining global influence, economically and politically. News coverage of this A.I. competition co-establish public discourses on (1) how the technology is perceived and assessed within each 'discourse culture' (Hepp, Brüggemann, Kleinen-von Königslöw, Lingenberg, & Möller, 2012) and (2) how A.I. has become a subject of global politics tied to national interests. Perceptions of A.I. are likely to differ between outlets, their cultural contexts and national public discourses.

How A.I. has become a topic in news reporting, how it is framed, and who gets to speak about it and its societal ripple effects are important political questions (Michael & Lupton, 2015). These concern power hierarchies, conflict constellations in global politics and how emerging technologies are assessed from different social perspectives. This makes news framing of technology a relevant research subject for analysing social, cultural and political processes influenced by datafication and automation across cultural spheres.

The present study explores differences between cultural angles in the perception of value, opportunities and risks by investigating news framing of A.I. in Chinese and U.S. news outlets. This includes the portrayal of China and the U.S.A. as drivers of A.I. development, especially concerning beneficial and harmful uses of technology. The main arguments are as follows: first, global technology trends are subject to localisation processes in news media reporting that reflect national interests vested in innovation. Second, the portrayal of nation-states as actors in tech discourses is directly connected to the framing of technology. The appropriation of technology trends by governments and how news media cover national tech policies contribute to the discursive construction of nation-states as proactive agents in technology discourses. The empirical part zooms in on two news outlets: *The South China Morning Post* (SCMP) based in Hong Kong, special administrative region of China, and the *Washington Post* (WP) from the U.S.A. Both are owned by prominent technology companies, either directly or indirectly. SCMP was bought in 2016 by the

Alibaba Group. In 2013, Amazon founder Jeff Bezos bought WP. Although each news outlet has a regional focus on (South-)East Asia and North America, respectively, they reach international audiences. However, SCMP has been described as a promoter of 'Chinese soft power' (NYT, 2018) and WP faces criticism for its positive bias towards Amazon (CJR, 2018). The outlets were chosen for their close ties to the technology sector and focus on A.I. in tech reporting (SCMP 2021; WP, 2021). They offer insights into mainstream discourses on A.I. in their respective countries of origin. This makes them suitable cases for a comparative analysis that scans their news framing for cultural differences in the portrayal of A.I.

News framing, the localisation of global trends, and discourse cultures

News framing is the process of selecting parts of (social-) reality-based on implicit and explicit editorial guidelines that are motivated by economic, cultural, political and practical factors (de Vreese, 2005). These selections are encapsulated in news content that emphasises specific aspects of an issue and establishes context through associations with other related events, developments and social entities (Severin & Tankard, 2001). The resulting news frames offer interpretative frameworks around an issue (Reese, 2001). How news organisations determine news values and agenda-setting shapes news framing practices (Harcup & O'Neill, 2017).

Hepp et al. (2012) argue that news media are situated in distinct discourse cultures, which are integral for the formation of (national) public spheres. Language, the dominant political system and its ideological foundation, the structure of the media system and level of access to media technology, the legal framework and prevailing cultural norms give discourse cultures their forms (Jiang, d'Haenens, & Zhang, 2021; Hanitzsch, 2009). Discourse cultures differ along linguistic-cultural and political lines (e.g. left-wing vs. right-wing). These factors influence how news organisations develop professional cultures that in turn determine editorial policies, journalistic practice, news routines and news framing (Carter, 2013). The relationship between discourse cultures and news organisations is interdependent: while news media are shaped by the discourse cultures that they are part of, they also contribute to the formation of discourse cultures through their role as enablers *of* and active participants *in* public discourses (Nguyen, 2017). It is essential to consider the political economies that shape media landscapes, as the underlying models can differ drastically between national contexts. In China, for decades the press primarily served as an official outlet of the Communist Party. Only relatively recently, marketisation gave rise to more diverse news outlets. These differ in their reporting styles but still seem to largely overlap and rely on the government as a primary source of information (Wang, Sparks, & Huang, 2018), which exerts a direct influence on editorial policies (Sparks et al., 2016). The Hong Kong-based SCMP is no exception, as its editorial policies 'moved closer to the official position of the Chinese government' (Wiebrecht, 2018) over the years. In the U.S.A., most news media operate as private organisations independent from the government. Although many outlets have explicit political leanings along the left-right spectrum, influence on, for example, news agendas, is also exerted by economic forces. Especially the challenges of the digital transformation illustrated how news media adjusted to the attention economy created by Big Tech companies (Bruns, 2018). In the case of the WP, this is a dual influence from 1) its owner, who is the CEO of one of the largest tech companies in the world (Amazon), and 2) the digital platforms through which audiences find news.

News media observe events from specific cultural angles embedded within broader discourse cultures (e.g. the Guardian is a left-leaning mainstream news organisation situated within British discourse culture). Most new media cater to 'national' audiences through agenda-setting and framing of newsworthy issues. They are access points to global developments, for example, trends,

challenges and conflicts, and connect them to their local contexts. For example, global crises such as the COVID-19 pandemic are border-transcending challenges that have different effects in specific cultural-geographical locations. News media, as co-constructors of discourse cultures, play an essential role in monitoring localisation processes and filling them with meaning. The same applies to technological trends. Global transformations, such as the rise of A.I., are 'translated' within frameworks of interpretation that are reflective of their local impact and determined by prevailing cultural norms. Perception of relevance, value, benefits and risks associated with a trend inevitably differs between discourse cultures. Although the same technologies trigger changes of similar proportions across societies, the exact impacts and felt experiences vary between as well as within cultural contexts (Schelly et al. 2021). A critical reflection on cultural differences in technology perception is often missing in discussions on datafication and automation. Side effects are questionable stereotyping and oversimplifications, such as East-Asian cultures' alleged disinterest in personal privacy. Another issue is a potential misunderstanding of how tech adoption becomes manifest in specific cultures. The global and national dimensions are not opposites but intrinsically linked, or as Beck and Levy (2013, p. 6) argue: '[g]lobalization provides a new context for the transformation of national identifications'.

News media contribute to this reconfiguration of time and space perception through their reporting of global trends for locally anchored audiences. Their news framing practices eventually co-shape the social construction of reality (Carter, 2013): what issues are considered important, how their impact is evaluated, how responsibility is attributed, and what potential futures look like (Grusin, 2010). News media invite audiences to draw conclusions about current issues and have an impact on individual views and behaviour via framing effects (de Vreese and Lecheler, 2019). However, news frames are not objectively 'mirroring' reality, since they are highly selective narratives in which the perception of relevance and interpretation of meaning vary between discourse participants (news media, governments, businesses etc.). Entman (1993, p. 52) differentiates between problem definitions, diagnoses of causes, moral judgements and suggested remedies that form distinguishable frames. These are largely determined by cultural context. Public communicators, including journalists, can differ considerably in their views on the same topic (e.g. positive vs. negative, low vs. high relevance) and news outlets mediatise conflicts by serving as culturally biased arenas (Nguyen, 2017).

Artificial intelligence in the news

Novel technologies in the news often appear abstract, prone to hypes and controversial (Matthes & Kohring, 2008; Tucker, 2012). However, media discourses on digital technology are 'not some supplementary interpretation of existing brute facts; instead, their frameworks of intelligibility represent an integral dimension' (Pentzold & Fischer, 2017: 3) of how societies make sense of them conceptually, perceive values and risks, negotiate approaches and eventually adopt or reject them (Groves, Figuerola, & Groves, 2015). The media narratives about technologies have tangible impacts on audience attitudes and political decision-makers.

Artificial intelligence is subject to diverse framing practices that range from extreme portrayals of 'all-powerful salvation' to 'mortal threat to humanity'. In a basic definition, A.I. generally refers to computational solutions that use statistical principles, algorithms and data analysis to create non-human decision-making – and recommendation systems. There is no one-fits-all definition but most applications of A.I. are of the 'narrow' kind that exploits machine learning and large datasets for small, repetitive tasks. A.I. influences how businesses work, what products and services they offer, and it creates new markets and/or transforms existing ones. A.I. innovation is considered key to

economic success in diverse domains since it can help with saving resources and exploiting new business opportunities. Hence, leading tech companies such as Baidu and Google invest considerably in A.I. to maintain a competitive edge in a growing spectrum of digital services. However, A.I. is also playing a growing role in, for example, public services and non-commercial research. As a result, A.I. appears ubiquitous in digital societies. The transformations triggered by A.I. are registered by news media with a focus on the promises of economic growth and increased efficiency, advances in fundamental research, but also risks such as data bias/algorithmic discrimination, loss of human agency, automation and unemployment, surveillance, and dis-/misinformation (e.g. bots and fake news).

News reporting on A.I. takes two general forms: first, most news media maintain dedicated technology sections where they cover innovations, new products and business trends. Second, technology developments affect a diversity of societal sectors covered across news sections (e.g. politics, economy and culture) with different perceived impacts. In some cases, A.I. offers novel solutions and leads to greater efficiency, while in others it is a threat to privacy, autonomy and/or an accelerator of social biases. News coverage includes the mundane, for example, the review of consumer products, and the profound, for example, critical reflection on data surveillance or the effects of automation on labour markets. The perception of A.I. and associated meanings have become more complex over time, as the use of the technology expanded and diversified rapidly. Differences between cultural perspectives are likely to matter in how societies view and engage with A.I., how they assign responsibility for successes and failures, and for how A.I. progress corresponds to national interests in global politics and -economy. The first research question therefore is:

RQ1: *How do the WP and SCMP frame A.I. in their news reporting and what are the cultural differences in the perception of the technology's benefits and risks?*

The China-U.S.A. artificial intelligence rivalry

Artificial intelligence innovation is pursued around the world but only a few countries have the resources, know-how, and policies to lead tech development and dissemination (Fraiberg, 2017). The two most important ones are China and the U.S.A., who are often portrayed as competitors in technology, economy, and international politics. In 2017, the Chinese government declared to be the world leader in A.I. by 2030 (Roberts et al., 2020) and in 2019 the U.S. government launched its American Artificial Intelligence Initiative to ensure 'American leadership in A.I.' (OECD, 2020).

Over the past decade, China built up a reputation as a fertile ground for widespread adoption of digital technology and A.I. innovation (Li, Ye, Liao, Ji, & Ma, 2020; Jia, 2021). Chinese companies evolved from 'copycats' to innovators (Sun, 2013) in big data, A.I., blockchain and quantum computing. This rapid development is partially a result of close collaboration between the Chinese state and the private sector. Although the U.S.A. continue to provide global impulses on tech innovation and dissemination, they have no monopoly on offering nurturing grounds for 'tech unicorns, digital disruptors, and celebrity entrepreneurs' (Greevens, Yip, & Wei, 2019). Technology companies directly address the China-U.S.A. rivalry and contribute to a tech-centric 'conflict discourse'. For example, Meta CEO Mark Zuckerberg implied that U.S. tech companies 'uphold American values against a growing Chinese threat' (Nikkei Asia 2020), while Google's former CEO Eric Schmidt voiced warnings about a 'national emergency' (Forbes, 2021) if the U.S.A. fell behind China in A.I.

The geopolitical competition between China and the U.S.A. is a frequent news topic that in recent years centred on economic tensions (e.g. 'trade-war'), human rights issues (e.g. China's Xinjiang

policies), territorial disputes (e.g. in the South China Sea), the COVID-19 pandemic, but also A.I. innovation. Both countries' governments resort to nationalist discourses and mutual accusations whenever tensions rise (Boylan, McBeath, & Wang, 2021). U.S. public discourses repeatedly portrayChina as a '*potential* enemy other' ((Ooi & D'Arcangeli, 2018) p. 270, original italics). Meanwhile, the Chinese government has a history of blocking major U.S. tech platforms, including Google, Facebook and Twitter, from the country (Business Insider, 2019). Economic and political tensions connect to technological competition (Tang, 2020), where global companies and national governments enter alliances to increase influence in the digital economy. The race for A.I. supremacy is another layer of a broader political-economic antagonism that has come to the fore in the late 2010s.

The China-U.S.A. rivalry in A.I. illustrates how nation-states are construed as driving forces in technology discourses. The digital transformation transcends borders and is primarily driven by globally operating companies (Smyrnaios, 2018) but that does not render nationalism and countries irrelevant. Governments and businesses alike evoke notions of techno-nationalism that connect innovation to 'national security, economic prosperity, and social stability' (Delios, Perchthold, & Capri, 2021, p. 5). Government policies shape the frameworks in which technologies emerge and evolve, for example, via political programs, policies, funding, education and research (Shi et al., 2020). As a result, digital globalisation, and digital/techno-nationalism are entangled in mutually influential relationships marked by tensions and contradictions.

Tech companies often appear as extensions of specific countries' economic, cultural and political influence. Alibaba, Tencent and Baidu represent China's booming technology sector and the country's active 'going-out' digital foreign policy (Tang, 2020). U.S.-based tech companies such as Amazon, Google and Microsoft have ambiguous histories with governmental collaboration but still represent the U.S.-technology sector's cultural and political values. They provide technologies for data-driven governance, contribute to economic influence, and increase global soft power. The relationship between nation-states and tech companies is two-faced. Most form global networks operating in diverse international markets. Simultaneously, they maintain strong connections to their 'home countries' and portray themselves as agents of these and/or are perceived as such. For example, Chinese companies such as TikTok or Huawei faced allegations of posing foreign threats to Western societies and Chinese news outlets portray U.S.-based companies as antagonists in tech competition (SCMP, 2021).

News framing contributes to the construction of agency in tech-related developments by simply naming organisations and individuals that are part of a story. They also provide tech entrepreneurs and political leaders with stages for sharing their views and proactively stimulate conflict-/competition-focussed discourses in which nation-states are posited as key actors. Not only does news media reporting on A.I. provide a localised view on the impact of technology but it also contributes to the discursive creation of conflict constellations, 'othering' (Hall, 1997), and potentially stereotyping through simplified friend-foe schemes. The second research question is:

RQ2: *How do the WP and SCMP portray China and the U.S.A in their news reporting on A.I.?*

Methodology and data collection

The empirical part combines manual content analysis with automated content analysis (A.C.A.), which utilises Named Entity Recognition (*N*.E.R.). The A.C.A. scanned news text for emphasis frames (Burscher, Vliegenhart, & de Vreese, 2016). The researchers sampled all articles for the keywords A.I./artificial intelligence published since 2010 (Table 1).

Table 1. Sample Overview.

Outlet	Number of Articles
SCMP	1.032
WP	2.036
Total	3.067

News media frames are defined as clusters of topics/societal domains, risks and references to ethics that form distinguishable interpretative frameworks in news content on A.I. An adapted version of Entman's (1993) proposal to operationalise media frames into problem definitions, causal interpretations, moral judgements and suggested remedies/treatments served as a starting point. However, to eventually conduct the A.C.A., news media frames were operationalised into three variables: 1) the domains/topics evoked in A.I. reporting (e.g. business, politics and culture); 2) the risks and challenges raised in A.I. reporting, and 3) whether ethics are an issue in A.I. reporting.

Variables and dictionary-approach

The procedure started with a qualitative content analysis for code creation. Two researchers analysed a sample of 120 articles for building a codebook via open coding and manual clustering. This resulted in over 300 codes that were gradually reduced into a codebook of six variables and 34 codes (domain, topic, context of interaction, type of conflict, data risk and ethics). The codebook was tested on a second sample ($N = 30$, that is, 40% of the original sample for the initial qualitative analysis) in a manual quantitative content analysis. The main purpose was to check whether the codebook measured frame elements consistently. The intercoder reliability scores reached satisfactory levels for all variables (KALPHA = 0.75–0.85, Hayes & Krippendorff 2007).

The insights from the manual content analyses informed the construction of a dictionary that includes 'signals' deemed relevant for each variable (see Table 2). The N.E.R. algorithm scanned the full volume of news texts and labelled the occurrence of a variable based on specific semantic signals. For example, if an A.I. article included the term 'self-driving cars', it was labelled for 'logistics/transportation'. The development of the final dictionary went through several iterations. Variables and signals deemed too ambiguous for the dictionary approach were eventually excluded. 'Domains' and 'topics' were merged, and 'context of interaction' and 'type of conflict' were dropped, since these could not be reliably operationalised for the A.C.A. Certain signals were left out since they were difficult to tie to a specific concept (e.g. 'tracking' may not always indicate surveillance). As a result, the frame elements were reduced to three categories, covering 21 variables in total (Table 2). To identify articles that mention the U.S.A. and/or China, the dictionary included lists of the most important states, provinces and cities in both countries.

The final dictionary included 2133 indicators (1529 to identify the presence of China and the U.S.A. and 604 for frame variables). To test for the robustness of the dictionary approach, the researchers checked human-computer agreement for a sample of 200 randomly selected articles (100 per outlet). They 'agreed' with the algorithm in 85% of the cases. The A.C.A/N.E.R. method correctly labelled whether an article included any indicators for the variables. The number of false positives stands at ca. 15%. In some cases, the lack of context sensitivity of the automated approach led to the labelling of texts where a given signal indeed occurs but is used

Table 2. Structure of Dictionary for ACA.

Frame Elements	Variables	Indicators (examples)
Domains/Topics	Business	Business, economy
	Governance	Governance, policy
	Innovation	Innovation, research
	Politics	Political parties, elections
	Military	Army, navy, air force
	Education	Schools, universities
	Culture	Museums, art
	Sports	Football, athletics
	Health	Healthcare, medicine
	Finance	Finance, banking
	Consumerism	Shopping, retail
	Logistics/Transportation	Self-driving cars
	Industries	Manufacturing, oil, agriculture
	Technology-Infrastructure	5G, cloud computing
	Technology-solutions	Facial recognition, NLP
	Competition-Conflict	Arms race, conflict
Data Risks	Cybercrime and Cyberwar	Cyberattack
	Information disorder	Fake news, disinformation
	Surveillance	Surveillance, privacy invasion
	Data bias	Bias, racism, sexism
Ethics	Ethical considerations	Ethics, ethical, unethical, accountability, injustice

in a different context (e.g. the use of 'business' in a non-business-related report). After the automated coding, the labelled texts were grouped via hierarchical clustering to identify news frames (Matthes and Kohring, 2008), excluding the country variables. Using the elbow-method and scree plots, different clusters solutions were tested (1–8). A five-cluster solution yielded interpretable results for WP, while a four-cluster solution for SCMP. In both cases, the texts were labelled binary per variable (occurs/does not occur, Matthes and Kohring, 2008). In addition, the N.E.R. script yielded datasets of countries and organisations for network graphs.

Findings: News reporting on A.I. in SCMP and WP

Artificial intelligence's was not a noticeable topic before 2015 but its newsworthiness increased sharply afterwards (Figure 1). This may indicate convergence in global media attention connected to a potential hype-cycle. Breakthroughs in tech development and expanding tech adoption likely triggered media coverage. Examples are progress in self-driving cars, automation in healthcare, A.I. in consumer products, and the influence of bots in public debates.

South China Morning Post and Washington Post show similarities in how they portray A.I. They often focus on A.I.'s economic potential and progress in research and development. Addressing the commercial value of A.I. for industrial sectors, companies, professions and consumers is a dominant framing (Tables 3 and 4). In the case of SCMP, A.I. is almost exclusively viewed from an economic-commercial and innovation-centred perspective. Taken together, 77% of all articles deal with either business, consumerism or financial/economic aspects of the technology and ca. 50% address tech innovation ($N = 1032$). This reflects China's ambitious A.I. strategy for 2030 in which the Chinese
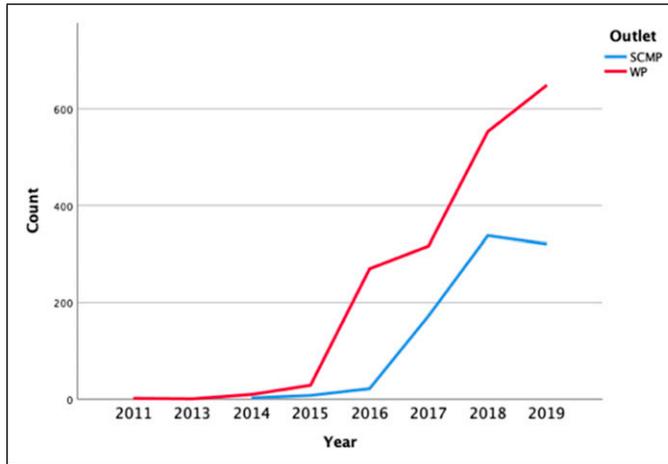
Figure 1. Publications on A.I. per news outlet over time.

Table 3. Clusters SCMP.

Cluster	N
Business, innovation, governance and data risks (C1)	250 (24.2%)
Tech development (C2)	242 (23.45%)
Consumerism (C3)	238 (23.6%)
Finance and economic prospects (C4)	302 (29.2%)
Total	1032

Table 4. Clusters WP.

Cluster	N
Governance, data risks and tech development (C1)	342 (16.7%)
Business, finance and economy (C2)	432 (21.2%)
A.I. in society (C3)	326 (16.0%)
Consumerism (C4)	510 (25%)
A.I., politics and data risks (C5)	427 (20.9%)
Total	2036 (100%)

government declares 'to monetise AI into a trillion-yuan (ca. 150 billion dollars) industry' (Roberts et al., 2020: 1). Turning A.I. into a profit is a national interest and portrayed as such in SCMP's news reporting. For the WP, also almost half of the articles cover A.I. from a business- or consumerism angle (46.7% of *N* = 2036). U.S.-businesses and the U.S.-government perceive A.I. as a driver for economic growth, which resonates in WP's reporting. Concrete examples are more efficient systems for using resources, automation and optimisation of industrial processes, novel business models, end-user gadgets and services, entertainment, automated transportation, and investments in A.I. projects.

Table 5. Total Counts Risks in Articles per Outlet.

Outlet	Cybercrime/Cyberwar	Surveillance	Data Bias	Information Disorder	N
WP	371 (18.2%)	558 (27.4%)	491 (24.1%)	349 (17.1%)	2036
SCMP	101 (9.8%)	263 (25.5%)	95 (9.2%)	32 (3.1%)	1032

However, differences emerge concerning the political implications of A.I. It is important to distinguish here between *governance* and *politics*: governance concerns the formulation and implementation of national policies and questions of top-down regulation. These issues are visibly covered by both news outlets, as governance either formed a distinct cluster or is part of a cluster (Tables 3 and 4). However, SCMP mostly connects governance to economic growth and innovation (C1 in Table 3), while WP more frequently discusses regulation concerning different data risks (i.e. privacy invasion/surveillance, data bias and information disorder, C1 in Table 4).

Politics concerns the involvement of political parties, political groups, elections, campaigning, diplomacy, ideology etc. These issues occur less frequently in SCMP (13.1% of $N = 1032$). For WP, the situation looks different: a distinct politics cluster emerged (C5 in Table 4) but even articles that do not primarily focus on a political topic often include a reference to politics (44.9% of $N = 2036$). The U.S.-based WP is overall more likely to include references to politics than the SCMP ($N = 3067$, $\chi2 = 306.61$, df = 1, $p = .000$).

Another quantitative difference between SCMP and WP concerns data risks (Table 5): surveillance/privacy intrusion, data bias/algorithmic discrimination, cyberwar/cybercrime and information disorder ('fake news', disinformation and misinformation). WP articles are more likely to include references to data risks than their SCMP counterparts (53.7% vs. 37.7%, $N = 3067$, $\chi2 = 69.69$, df = 1, $p = .000$). The same applies to ethics, as WP is more likely to mention them than SCMP (28.2% vs. 12.2%, $\chi2 = 99.44$, df = 1, $p = .000$). References to data risks are indicators for critical reporting on A.I. The WP includes a diversity of data risks, most noticeably surveillance and data bias. A.I. is associated with new forms of privacy invasion/data monitoring and discriminatory decision-making in automated systems. In SCMP's articles, all data risk categories are present but in lower frequencies. However, its reporting is not per se uncritical in a qualitative sense, as it still addresses the downsides of technology use.

Two factors may explain these observations. First, there are fundamental differences between each country's underlying political system. Multilateral public debates and controversy over societal developments are part of U.S. political- and discourse culture. Simply put, the role of A.I. in, for example, election campaigning or controversies around racist technology matter more for U.S. society than for its Chinese counterpart. Second, and closely connected to this, A.I. frequently made headlines in the U.S.A. as part of scandals and incidents that caused public concern about the unethical use of A.I. Examples are bots that attempt to manipulate elections or algorithmic biases in policing systems. SCMP's A.I. reporting on governance and politics rather emphasises different aspects of how regulation can stimulate or stifle growth and on questions of international/global competition in the digital economy.

China and the U.S.A in A.I. News: Data risks and competition

China and the U.S.A are the most frequently occurring countries in A.I. reporting, along with a few others (Figure 2 and 3). 86.8% (896) of all SMCP articles mention China, while 58.4% (603) the
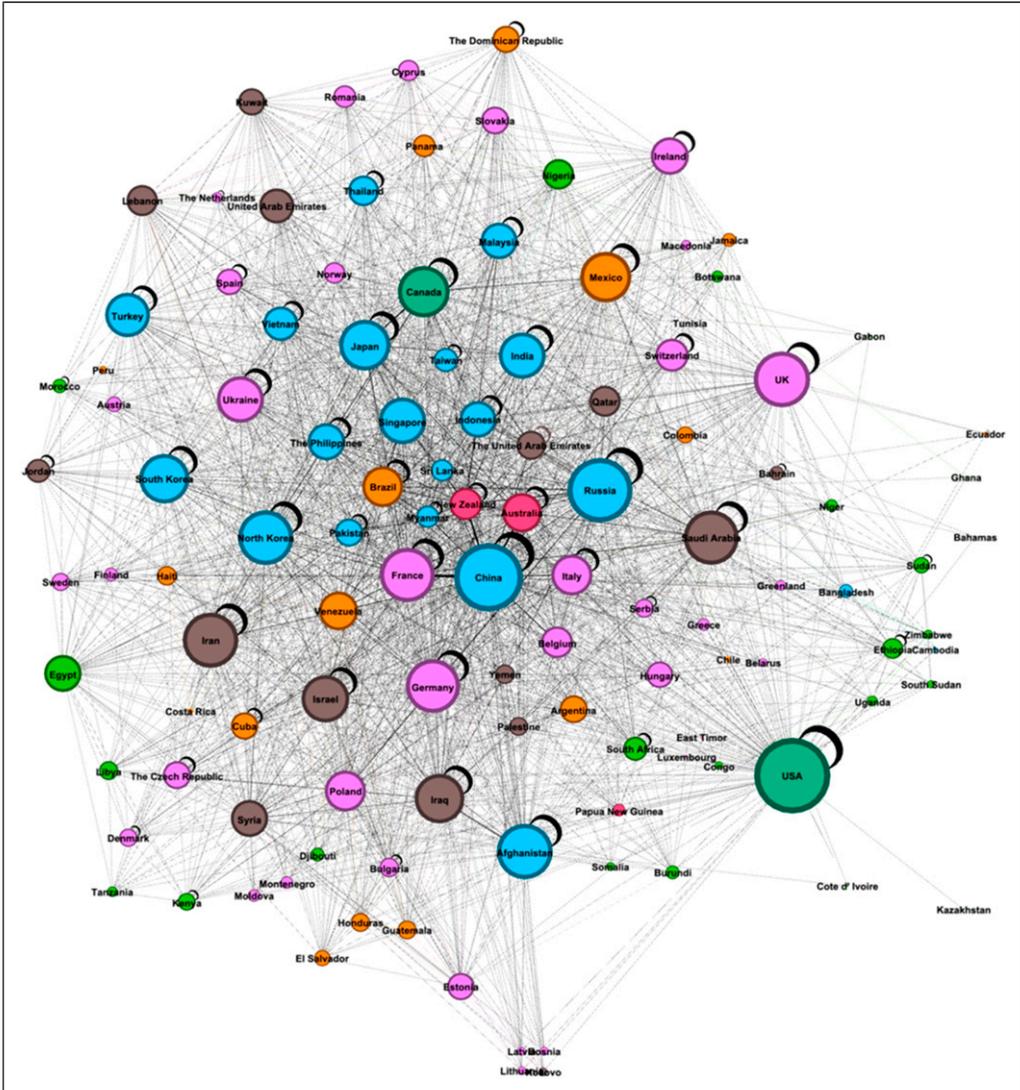
Figure 2. Countries mentioned in AI coverage WP (Colour-Coded for Continent).

U.S.A. This compares to 35.5% (722) of all WP articles that include China and 89.6% (1830) the U.S.A. SCMP reporting includes the U.S.A. more frequently than the WP does China. Editorial policies aside, potential reasons are the continued dominance of U.S. companies in parts of the global tech sector, mutual investments and direct legal and/or economic clashes with U.S. regulators. Still, China is a visible entity in WP's A.I. reporting.

Furthermore, the two outlets put different types of actors at the centre of the A.I. discourse: WP frequently mentions political and media actors (Figure 4), while SCMP seems to prioritise economic entities such as big tech companies (Figure 5).
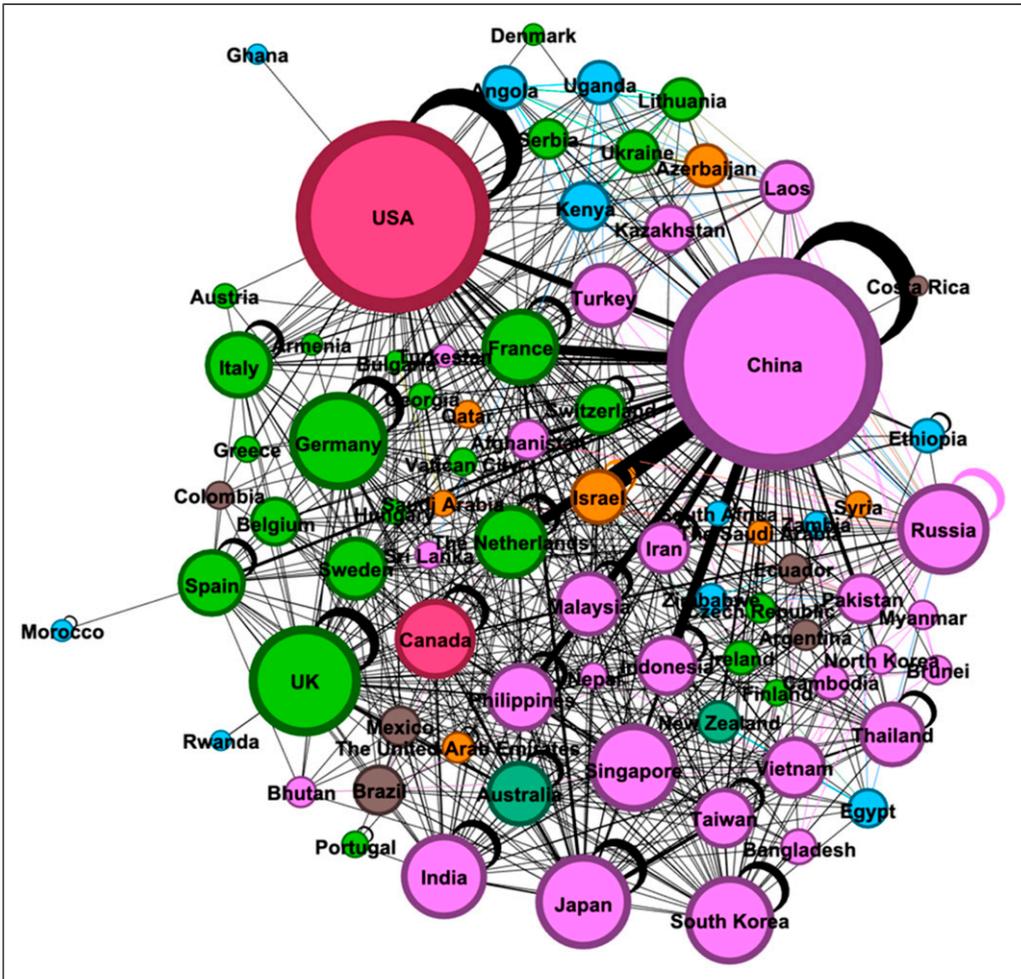
Figure 3. Countries mentioned in SCMP AI coverage.

The U.S.A. and China are associated with progress in A.I. development and economic growth. However, differences emerge between SCMP and WP concerning the portrayal of the two countries as antagonists and their links to data risks, conflict/competition and international politics (Table 6 and Table 7)

Washington Post articles that mention China are more likely to refer to data risks (67% of 722 articles, $N = 2036$, $\chi^2 = 79.13$, df $= 1$, $p = .000$) than articles that do not (46% out of 1314 articles) or mention only the U.S.A. (57%). This often concerns incidents involving Chinese companies (e.g. TikTok) that happened during the sampled timeframe. The occurrence of Chinese companies in foreign news coverage seems to depend on the 'social and political events' (Chen, Song, & Yao, 2020) that surround them. Surveillance is the most salient data risk in WP articles that include China (38% out of 722, $N = 2036$, $\chi^2 = 65.83$, df $= 1$, $p = .000$). This is considerably higher than for articles that do not mention China (21.5% out of 1314). Close behind is data bias (30.9% of articles that
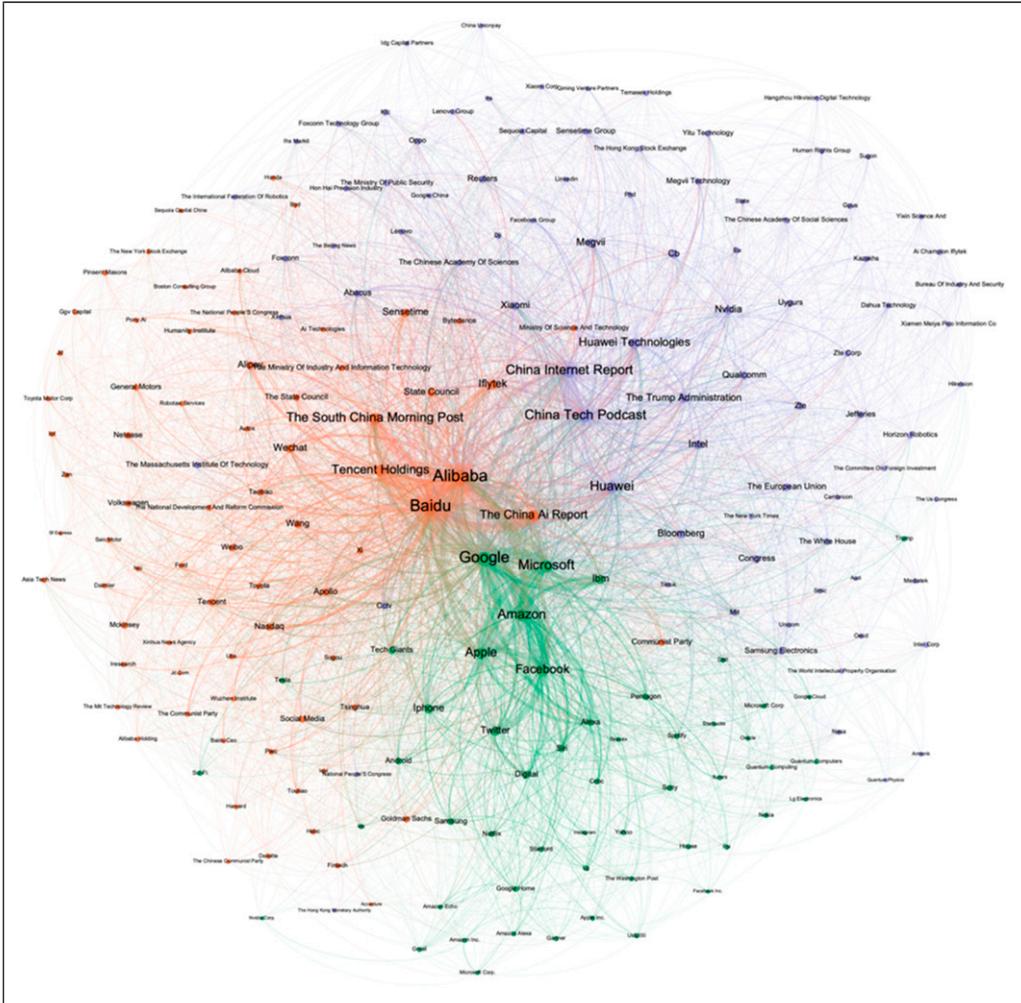
Figure 4. Actors in WP articles.

mention China vs. 20.4%, $N = 2036$, $\chi2 = $ T 28.02, df = 1, $p = .000$) and cyberwar/cybercrime (also 30.9% vs. 11.8%, $N = 2036$, $\chi2 = 120.40$, df = 1, $p = .000$). Furthermore, WP articles that mention both countries (34%, or 696 out of $N = 2036$) are likely to refer to competition (61% of 696, $N = 2036$, $\chi2 = 151.24$, df = 1, $p = .000$) and data risks (68%, $N = 2036$, $\chi2 = 87.26$, df = 1, $p = .000$). This is higher than for articles that refer only to one of the two countries (32% and 46.2%, respectively). There are a mere 26 WP articles that refer only to China and of those 10 include data risk- and/or competition references (38.5%).

In comparison, SCMP connects China less often to data risks (39% out of 896 articles, $N = 1032$, $\chi2 = 3.79$, df = 1, $p = .05$), though this is still higher than for articles that do not mention the country (30.1% of 136 articles). The same applies to the U.S.A., where 40% of 603 SCMP articles that mention the country refer to data risks. This stands against 34% of 429 articles that do not ($N = 1032$, $\chi2 = 4.19$, df = 1, $p = .041$). SCMP addresses conflict, competition and data risks less frequently than WP in articles that include both countries. Fifty one percentage ($N = 523$) of all SCMP articles do so. Of these 28% include a reference to competition and conflict ($N = 1032$, $\chi2 = 6.67$, df = 1, $p = .01$)

Figure 5. Actors in SCMP articles.

Table 6. U.S.A./China References in Frames WP.

	C1: Governance, Data Risks and Tech Development	C2: Business, Finance and Economy	C3: AI in Society	C4: Consumerism	C5: AI, Politics and Data Risks	Total
China	84 (11.6%)	140 (19.4%)	211 (29.2%)	68 (9.4%)	219 (30.3%)	722
U.S.A.	320 (17.5%)	399 (21.9%)	325 (17.8%)	361 (19.8%)	419 (23.0%)	1824

Table 7. U.S.A./China References in Frames SCMP.

	C1: Business, Innovation, Governance and Data Risks	C2: Tech Development	C3: Consumerism	C4: Finance, Innovation and Economic Prospects	Total
China	238 (26.6%)	199 (22.2%)	173 (19.3%)	286 (31.9%)	896
U.S.A.	171 (28.4%)	122 (20.2%)	133 (22.1%)	177 (29.4%)	603

while 41% address data risks ($N = 1032$, $\chi2 = 4.693$, df $= 1$, $p = .030$), which is higher than for articles that do not refer to both countries (20.8% and 34.4%) but still lower compared to WP. Of the 80 SCMP articles that refer to the U.S.A. without mentioning China, 18 (22.5%) address competition and 29 (36.3%) data risks. In SCMP content, surveillance is also the most frequent data risk that co-occurs with both countries but there are no differences (26.6% for China and 26.7% for the U.S.A.) and none is more likely to do so ($N = 1032$, $\chi2 = 1.12$, df $= 1$, $p = .288$). However, SCMP articles that cover the U.S.A. are slightly more likely to include a reference to data bias, which is the second-largest data risk category for the country (10.9% vs. 6.8%, $N = 1032$, $\chi2 = 5.25$, df $= 1$, $p = .022$).

SCMP articles that mention both countries are more likely to refer to the military: 13.2% (69 out of 523) against 4.9% of articles that do not refer to both countries (25 out of 509, $N = 1032$, $\chi2 = 21.36$, df $= 1$, $p = .000$). The same applies even more so for the WP, where 37.5% of articles that mention both countries refer to the military (261 out of 696) versus 12.7% in articles that do not mention both countries (170 out of 1340, $N = 2036$, $\chi2 = 169.01$, df $= 1$, $p = .000$). Competition between the two countries is a visible theme in the sampled news content. However, the literal A.I. 'arms race' is overall a rather recent metaphor that occurs only in a few articles. 24 SCMP articles include a direct reference, compared to 77 for WP. The Chinese outlet does not omit competition, conflict, and data risks when the two countries are mentioned within the same articles but there is a quantitative difference to its U.S.-based counterpart.

Discussion

Concerning the first research question '*How do the WP and SCMP frame A.I. in their news reporting and what are the cultural differences in the perception of the technology's benefits and risks?*': The comparative analysis indicates similarities and noticeable differences in the framing of A.I. Both outlets cover the technology's economical potential, as impulses in A.I. development come from tech businesses that seek to increase their (global) market shares and governments are supportive of these goals. WP and SCMP portray A.I. as a multi-domain development across society. Differences in news framing concern the political implications and downsides of A.I. Politics beyond governance (e.g. party politics and political campaigning), data risks and global political competition seem more salient in WP's reporting. The U.S.-based outlet discusses the impact of A.I. on the political system and its social effects more frequently than its East-Asian counterpart. The WP covers data risks to a greater extent than the SCMP, which implies a more wary stance towards A.I. Various high-profile scandals concerning privacy violations and discrimination made headlines in the U.S.-context in recent years. In the Chinese context, the technology is seen as a source of economic growth and critical reporting is concerned with the efficiency and sustainability of government policies to stimulate A.I. innovation. The example of SCMP illustrates how the global trend of automation is translated into a narrative of national progress. For the WP, A.I. progress is also closely tied to economic gains, but the overall portrayal is 'greyer' since several incidents with the technology triggered a public outcry over unethical uses. Both outlets politicise A.I. but with

different emphases: the WP portrays A.I. as a policy issue due to the data risks associated with it and the societal impact of A.I. Datafication and automation are partially perceived as 'domestic' challenges for inclusion and fairness. SCMP portrays A.I. as a key for economic growth and global competition with the U.S.A. Advances in tech create value domestically, while the same progress enables China to take a leading position on the world stage.

Concerning the second research question: '*How do the WP and SCMP portray China and the U.S.A in their news reporting on A.I.?*': Both are dominant presences in A.I. reporting. However, the WP includes a wider range of countries, and the quantitative differences are less stark compared to SCMP. The country portrayals are marked by commonalities and contradictions. First, they are both driving forces in global A.I. development and -business. Although strong economic and scientific ties exist between China and the U.S.A., they compete economically and politically. The 'new arms race' is a distinct theme in A.I. reporting, even if it is only occasionally literally referred to as such. Whenever both countries are mentioned within the same article, the likelihood of a reference to competition and the military increases. There are clear differences in how WP and SCMP portray each country. Most WP articles that include China refer to data risks, especially surveillance and cyberwar/cybercrime. China's standing as a driver for A.I. trends is acknowledged but the country is also associated with harmful uses of technology and even threats to U.S. national security. The SCMP is overall less likely to relate the U.S.A. and/or China to negative aspects of A.I. The U.S.A. is mostly portrayed as an economic competitor but not associated with specific data risks and most articles portray China as a growing contender in A.I. leadership.

The news framing of A.I., China and the U.S.A illustrates several important aspects about the connection between technology and nation-states. First, there are marked differences in the portrayal of nation-states that stem from the political-cultural situatedness of a news outlet and the experiences with A.I. in the respective discourse culture. Second, the polarity between the U.S.A. and China as leaders in A.I. is a central theme but what dimensions of this rivalry are emphasised depends again on the outlook of each outlet. A.I. is a field of competition, but countries built up different reputations, which shapes framing in foreign news reporting. Third, the nation-state, represented through governmental and private organisations, is a central actor in technology discourses. Varyingly, countries are referred to as economic, political, and scientific powers. They are focal points in the mediatisation of politics and A.I. developments since they connect technology, economics, and security.

News framing of technology depends on external factors (de Vreese, 2005), as the societal context in which a news outlet is situated largely determines what the impact of a novel technological trend is. The Chinese and U.S. political systems and consumer cultures – and therefore discourse cultures – have different histories and features, which inevitably leads to different experiences of benefits offered and risks posed by A.I. The perception of harm and good vary regionally, possibly even locally. The rise of A.I. may be a global trend but its transforming effects are not uniform. Instead, they are contingent and subject to processes of localisation. A.I. changes forms of social interaction and communication, which are dependent on prevailing cultural formations and norms. Due to the profoundness of A.I. transformations, they are of news value in both countries but what aspects of A.I. are selected for news coverage differs considerably between outlets and their regional foci. A.I. is a thus 'glocal' development. Commonalities in the perception and global cross-referencing stand against local interpretations and evaluations. These differences are not always explored, assessed, and acknowledged in debates over A.I. competition on a global scale. China and the U.S.A. are portrayed as opponents in A.I. yet both societies enter this 'race' with different expectations towards the technology along the dystopia-utopia spectrum (de Bruijn & Janssen, 2017). Culture is key in the framing, perception and adoption of technology and the definition of (public) value.

News framing of technology is not limited to its perceived benefits and risks. In the case of A.I., it also contributes to the construction of international/global tensions in which specific nation-states represent opposing political and economic forces. Framing processes are multi-layered. First, they concern the sense-making of a complex technological trend. Second, they concern the contextualisation and characterisation of nation-states as agents that shape trends, thereby subsuming public and private actors under simplifying labels. This partially betrays the global reach of large tech companies, yet illustrates the connections that these maintain with their countries of origin. News framing contributes to the discursive construction of nation-states as proactive agents in global technology developments, which bears the risk of creating stereotypes. News framing of technology expands here to the selective, simplified portrayal of complex societal systems as seemingly closed units in form of countries. Simply put, tech framing and nation framing go hand in hand. Although the Chinese-U.S. rivalry in A.I. is an 'issue-specific frame' (de Vreese, 2005), it exemplifies the mediatisation of nation-states in tech discourses and the tension between local and global trends.

Conclusion

This study explored the news framing of A.I. and the tech competition between China and the U.S.A in media discourses. The findings show that A.I. is an important topic in the sampled Chinese and U.S.-based outlets. WP and SCMP alike consider it essential for economic prosperity and global influence. The race for A.I. dominance is a distinct theme in technology reporting and both countries are positioned as rivals in Chinese and U.S. media narratives about automation. However, there are noticeable differences in how A.I. is being portrayed concerning the associated benefits and risks. The U.S.-based WP appears to pay more attention to a wider spectrum of harmful impacts of A.I. than the SCMP does. At the same time, both differ in how they politicise the issue. WP and SCMP present A.I. as a subject of governance but the Chinese outlet seems to focus more on supportive regulation for innovation and tech adoption, whereas its U.S. counterpart also addresses needs for legal interventions to minimise (individual) harm. Furthermore, the WP appears more critical about China as an opponent than the SCMP is about the U.S.A., which may reflect current political climates in each country. The global trend of automation is subject to local interpretations, where distinct discourse cultures raise and process questions of value, risk, adoption, rejection and regulation. News media not only mirror these discourses but actively participate in them.

The discussion and findings open the path for further studies on how news media discourses make sense of the digital transformation, register, and assess societal impacts, and the role of nation-states in a global context. There are several limitations. To begin with, the dictionary approach is potentially blind to signals that the researchers simply did not register in the preceding manual analysis. A future iteration may deploy a fully inductive approach via, for example, topic modelling. Additionally, sentiment analysis could reveal the tone of voice in reporting. The distance reading should be supplemented with a qualitative investigation of nation-state framing in future studies. However, since the dictionary builds on an extensive manual content analysis, the presented findings have exploratory value. Furthermore, the sample is limited to two news outlets, and both are in English. Although WP and SCMP are insightful cases for the exploratory comparative analysis, they do not represent the entire spectrum of political–cultural viewpoints that are part of their discourse cultures. For example, WP is considered progressive/centre-left leaning and its reporting are likely to differ from, for example, more centre-right leaning news outlets such as the *New York Post*. Similarly, SCMP is only one newspaper among literally thousands on the Chinese market. Being Hong Kong-based sets it also apart in the Chinese news media landscape. To enlarge the analytical scope, a more diverse sample of news outlets should include content in Mandarin (and Cantonese).

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