EasyChair Preprint

№ 10563

Narratives of "Tech Wars": Technological Competition, Power Shifts and Conflict Dynamics Between the US, China and the EU

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July 14, 2023

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Abstract

In the context of digitalization, technological change and competition are deeply entwined with questions of international security and power. In particular, leadership in digital technologies has become a key parameter of the growing geopolitical and geo-economic great power competition between the US, China, and the EU. The securitisation of such technologies can be seen in the widespread perception of an intensifying *Tech War* between the three actors. Against this background, the paper takes a social constructivist perspective to draw out the dominant interpretations of the competition for digital technological leadership between the US, China, and the EU. It uses a method of narrative analysis to explore the different meanings that are intersubjectively attributed to the technological competition and its implications for the power relationship between the three actors. The paper examines Artificial Intelligence (AI) as a paradigmatic case in which narratives of an "AI arms race" have proliferated in recent years. The empirical focus is on official strategy documents from the US, China, and the EU, which are supplemented with expert interviews to reconstruct the narrative dynamics and shifts in this field. Ultimately, this serves to identify the scope for cooperation between the three actors and to minimise risks to international security.

Introduction

Digital technology connects the world, but is at the same time a field of political competition. The unfolding rivalry between the United States and China presents a case in point, with both sides vying for technological supremacy across a range of fields. The "tech war" (Christakis 2020: 43) between the great powers is about market share, technological leadership, and standard-setting. This competition is not limited to, and maybe not even primarily about military or dual-use technologies, but about digital technologies more broadly, which are seen as forward-looking and transformative. This includes mobile technologies such as 5G, satellite communication, AI, super and quantum computing, semiconductors, biotechnology, cloud computing, additive manufacturing, space technologies, and more. Such technologies are considered to have particularly promising prospects and are seen as representative of a society's technological capacity. In short, digital technologies and innovation capacity are markers of status and security: "In the twenty-first century, technological innovation is driving geopolitical, economic and military competition" (Sahin/Barker 2021: 2).

For artificial intelligence (AI), warnings of an "AI Arms Race" provide an especially lurid narrative of an inescapable winner-takes-all competition (Asaro 2019, Diehl/Lambach 2022). While this narrative is not the only way of framing international competition for technological leadership (see below), it underscores that AI, and digital technologies more generally, are seen as radically disruptive. Decision-

makers in the U.S., China, and the European Union (EU) emphasise the strategic potential of these technologies and call for their own side to build up and expand autonomous capacities in them. In Europe, this is fuelling discussions about strategic autonomy and digital sovereignty (Monsees/Lambach 2022). In China, official narratives emphasize the potential for economic development. And for the US, one major focus is on maintaining global supremacy. But while such narratives are very influential within these respective nations or regions, they are not uncontested. Instead, we see a variety of narratives, some of which transcend boundaries.

Our paper is part of a broader research project and describes initial attempts at theorizing and researching narratives of geopolitical competition over digital technologies. It focuses on two questions: First, how do these three actors narrate AI? Our interest here is on identifying major narratives of technological competition in the relationship between the U.S., China and the EU, mapping areas of common ground and conflict over AI. We are especially interested how such narratives are informed by mutual interactions and perceptions among Chinese, US and EU actors. Second, what effects do these narratives have for international relations, especially from an EU perspective? This is particularly pressing issue given the political salience of AI in current global politics, expressed e.g. in the trade restrictions imposed by the US on exports to China. Different narratives may predispose actors towards more conflictual, competitive or cooperative behavior and legitimize action. While the role of narratives in international conflicts has already been studied (Miskimmon et al. 2017), there exist no narrative analyses of the technological dimension of the emerging geopolitical rivalry between the U.S. and China. We consider AI to be a paradigmatic case for the geopolitical competition in digital technologies more generally and use this as a pilot study into great power competition over technological leadership.

Technological Competition between the U.S., China, and the EU – A Theoretical Outline

Scholarship on the growing rivalry between the U.S. and China and the emergence of a new bipolarity is extensive (e.g., Lake 2018). Similarly, scholars and practitioners have widely discussed the implications of this rivalry for the EU (e.g., Lippert/Perthes 2020). The same applies to the technological dimension of the rivalry, albeit usually limited to specific technologies or sectors. In contrast, overarching perspectives on the role of technology and technological competition in US-China relations are relatively rare. The IR academic literature on technology in international politics cautions that technological innovation must be endogenous to our theories (Leese/Hoijtink 2019). In the context of great power competition, however, the focus of existing scholarship is mainly on the impact of technology on the "material capabilities" of states (Fritsch 2011: 35-37), e.g., how technological innovation may trigger security dilemmas (Jervis 1978: 194-199).

Instead of the material effects of technological competition, our project explores the discursive construction of technology between the U.S., China, and the EU. As a simple shorthand, we refer to these two countries and the multinational bloc as "technopoles" (borrowing a term from Castells/Hall 1994). We view these technopoles as hubs to denote their nature as prominent nodes within global AI innovation networks. Interaction is denser within these technopoles but also—if less frequently—occurs across boundaries. The exigencies of AI development shaped the emergence of these technopoles: economies of scale in the access to training data, computing power, and the talent base privilege the large over the small (Lee 2018; Rikap/Lundvall 2021).

We treat narratives as attempts to make and fix meanings of technologies, inspired by the Social Construction of Technology (SCOT) approaches from Science and Technology Studies (STS) which emphasizes the "interpretative flexibility" of technology (Pinch/Bijker 1984). Such narratives draw on collective imaginaries and translate them into a particular story structure that is easily understandable for larger audiences. SCOT tells us that meanings are constructed through interaction among relevant actors. This, we posit, also holds for AI, where policy communities from the three technopoles offer competing interpretations of what AI is, what it does, its significance, and why and how governments need to pursue AI capabilities. In formulating their AI policies, governments frequently look at, and react to what everyone else is doing.[1] This is also true for official narratives, which frequently seek to express a national "brand" that is distinct from those of other key actors. By ascribing significance to technologies for the relationship between technopoles, such discursive constructions affect the strategies and behaviours of the three powers. Foreign and security policy strategies in great power competition are based on intersubjective understandings of what this competition means for the actors involved. Specifically, the interpretations of U.S.-China relations that are negotiated in public discourse shape which foreign policy strategies come to be seen as possible and plausible (Herschinger/Renner 2017).

We understand US-China relations as an evolving great power conflict between economically interconnected states, with the EU a lower-tier observer and participant. The multidimensional US-Chinese rivalry manifests itself in different ways in different policy fields (Lake 2018) including, among others, territorial disputes in the South China Sea, trade restrictions on high-tech goods, and limitations on research collaborations. In the struggle for technological leadership, the two great powers and the EU are seeking economic advantages resulting from a mastery of key technologies of the future. And

[1] There is a huge literature on the AI policies of the three technopoles, both a single-case studies and pairwise comparisons. See, for example, Hine/Floridi (2022), Roberts et al. (2021, 2023), Smuha (2019), Ulnicane (2022), and Zeng (2022).

even though each technopole is characterized by a distinct innovation system, private industries are frequently treated as little more than "extensions" of their governments (Helleiner 2021).

The conflict is as much about geopolitical influence and economic competitiveness as it is about recognition and status (see Wolf 2011). Being technologically capable is seen as an intrinsic status marker in international society (Gilady 2018). For example, Musgrave and Nexon (2018) have shown how technological capacity has long been considered an important source of symbolic capital. Paikowsky's (2017) research demonstrates that the ability to master certain technologies gives countries access to the "space club", i.e. the informal community of space-faring nations that get to make the rules for outer space. In short, states invest in science and technology not just for concrete material gains but also because they want to be recognized as "capable" and "modern" countries. This applies to AI as well, which is frequently portrayed as a key technology enabling the large-scale transformation of societies and economies (Hermann 2021).

Reconstructing Narratives of Tech War: Research Questions and Methods

The research interest of the broader project is to understand the technological competition between the U.S., China, and the EU by reconstructing narratives around different digital technologies. Based on recent secondary literature (e.g., Christakis 2020, Sahin/Barker 2021) and relevant categories in U.S. laws on emerging technologies (e.g., Export Controls Reform Act, Endless Frontier Act), we identified the following technological fields as possible cases: semiconductors, cloud computing, biotechnology, mobile technology, AI, quantum computing, 3D printing, cybersecurity, and space technology. Some of these fields have a strong economic focus (e.g., cloud computing, semiconductors) while others are seen mainly in terms of security policy (e.g., cybersecurity), but most have both an economic and a security policy dimension. The EU, moreover, has identified many of these digital technologies as strategically important.

Following a reconstructive-interpretative logic (Franke/Roos 2018), the broader project addresses the following research questions:

- Which narratives of "tech war" in different fields of digital technologies exist in the U.S., China, and the EU?
- How do the narratives on different technologies and between the three powers interact?
- What are the similarities and differences between the narratives of the three powers?
- What do the narratives have to say about the worldviews and geopolitical strategies of the U.S., China, and the EU?
- What are the implications of the narratives for cooperation and conflict between the three powers in the field of digital technologies?

This paper uses the AI case as a pilot study to validate our research design and help further develop our theoretical assumptions. We have selected the field of AI for this purpose because it represents, in many ways, a paradigmatic case for the technological competition between the U.S., China and the EU. In particular, AI has attracted great political attention in all three powers, the field is discussed both as an economic and as a security issue, the EU has positioned itself strategically on AI and the available and accessible source material is very good. The field of AI is marked by prominent narratives of an "AI Arms Race", "AI nationalism" and "AI geopolitics". These narratives emphasise power political interpretations of technology (Roff 2019, Asaro 2019), but contradict the transnational practices of knowledge production and value creation (World Intellectual Property Organization 2019). The strategic importance attributed to AI is still largely based on future expectations that have not yet been realised, often following breathless pronounciations of a coming "superintelligence" (Bostrom 2014). We consider these patterns of national discursive framings of transnational processes and of "betting on the future" to be typical for the field of digital technologies in general. The AI case study should therefore give us useful pointers to how we can structure further case studies for the broader project.

The project uses established approaches of narrative analysis (Shenhav 2015) that understand narratives as a specific form of political discourse and provide an analytical framework to reconstruct and compare such narratives. We rely on a method of narrative analysis that focuses on the interplay between three constitutive elements of narratives: their setting, protagonist(s), and plot (see Oppermann/Spencer 2023). The setting sets the scene and can be understood as the stage on which the narratives are enacted (Toolan 2001: 41). How the setting is fitted out already shapes the expectations of the audience about how the story will play out. The protagonists are the main actors in a narrative who drive the story forward. Narratives assign their protagonists different roles, for example as hero or villain, and imbue them with certain traits, motives, and interest (Fludernik 2009: 46). The plot weaves what happens in a story together and scripts how the story develops from a beginning towards the end. It gives meaning to the actions of the protagonists and makes the narrative intelligible to the audience (Ricoeur 1981: 167). The objective of narrative analyses is to map out the three narrative elements in the discourse under study and to reconstruct the respective narratives. When the analysis points to multiple narratives in a discourse, the method can also be used to compare and contrast the narratives and to explore their relationship (Lambach/Oppermann 2022). Specifically, narratives can stand in a competitive or complementary relationship to each other and they may be tightly interwoven, showing a high degree of "internarrativity" (Hagström/Gustafsson 2019: 388), or largely unconnected.

Along these lines, the paper reconstructs the narratives of AI in the U.S., China, and the EU. Following the two main strands of scholarship on narratives in IR (see Oppermann/Spencer 2023), this promises

to advance our understanding of the technological competition between the three powers in two interrelated ways. One major area of IR research focuses on the strategic use of narratives and understands them as a "tool for political actors to extend their influence, manage expectations, and chance the discursive environment in which they operate" (Miskimmon et. al. 2013: 2). From this perspective, governments craft AI narratives to garner domestic support and legitimacy for their AI policies and to communicate their priorities and intentions to international partners and adversaries, using narratives for strategic signalling and as soft power instruments. Reconstructing the AI narratives of the U.S., China, and the EU therefore sheds light on the political strategies of the three actors in the domestic and international arena. The second research direction on narratives in IR is less interested in the strategic intentionality of using narratives, but more concerned with the narratives themselves and the "political work" (Kohler/Riessmann 2008: 8) they do. From this viewpoint, narratives are central to how actors construct the political world, shaping actor identities and behaviours (Somers 1994; Shenhav 2006). AI narratives constitute the political meaning of AI and how this affects great power relations which is particularly relevant in areas about which no widely shared and relatively fixed intersubjective meaning has yet been established, such as in the case of 'new' digital technologies. Reconstructing AI narratives thus opens a window into how actors understand the technology and how the narratives constrain and direct their domestic and international behaviours. Comparing and contrasting the AI narratives of the U.S., China, and the EU, in turn, can bring into view how narrative struggles between the actors may contribute to geopolitical conflict dynamics around the technology.

With these potential benefits of the method in mind, our narrative analysis proceeds in two steps (see Oppermann/Spencer 2023). The first step is to draw out from our text corpus how the narrative elements of setting, protagonists and plot are being represented in the respective AI discourses in the U.S., China, and the EU. To this end, we have developed a coding scheme to unpack references to the three narrative elements in our source material. The first draft of the coding scheme was derived from the basic structure of narratives, distinguishing setting, characters, and plot, and informed by existing scholarship on AI policy in the U.S., China, and the EU. The categories were finalized inductively after reading, by all three authors, of three texts from our source material, one by each actor. The results were compared and the coding scheme revised accordingly. A second round of reading three documents, once again by all authors, was necessary to arrive at a final revised coding scheme that was used to code the entire source material. While representations of the narrative setting, protagonists and plot are deeply entwined and will often overlap, the tri-partite structure of narratives serves as a heuristic to guide our qualitative content analysis of the selected texts and to identify the constitutive elements of different narratives of AI in the discourses under study. In the second step, the analysis brings the representations of the setting, protagonists, and plot back together to re-

constitute distinct AI narratives that are being told by the three powers. The analysis examines government documents and strategy papers on AI as well as discussions around AI in documents about digital technologies more generally. Since no clearly defined text corpus in the AI field exists, we have selected documents based on their context and relevance for our research. We have also consulted publications from experts and think tanks for background, analysis, and translations. We supplement our text-based analysis with targeted expert interviews to validate our findings and fill in the gaps.

On the dimension of the setting, narratives of AI unfold against the backdrop of general worldviews and more specific images of AI, establishing the broader context in which China, the U.S. and the EU understand the development of AI and its implications for great power politics. As for general worldviews, our codebook distinguishes between confrontational, competitive, and cooperative perspectives on international relations. For example, AI narratives may be told in terms of an emerging zero-sum geopolitical conflict between the U.S. and China, global competition for technological leadership and market shares or international cooperation in knowledge production and standard setting. On the level of AI images, our codebook first differentiates between optimistic and more pessimistic views of AI, emphasising either the opportunities of technological advances in the field or the dangers and challenges involved. The codebook also notes whether or not the positive or negative implications of AI are expected to be transformative for international relations. The second distinction is between AI images that foreground either economic and societal or security aspects of the field, picturing AI as a core technology for economic development competitiveness and for the society or as a technology with far-reaching consequences for national security. Although we suspect that there may well be differences for AI images between the three actors in terms of AI as a key technology for society and for the economy, the two form one single category for the coding scheme. This is partly due to the often-difficult distinction between society and economy, for example possible references to the labor market, and due to the possibility to make qualitative distinctions during the analytical evaluation of the coding scheme in the later process.

Moving on to the narratives' protagonists, our codebook focuses on how the narratives represent the respective "others" in the geopolitical triangle between the U.S., China, and the EU (including its member states). For example, it conceptualises the U.S. and the EU as key protagonists in China's AI narrative, mapping out how the narrative describes the roles of the two powers in AI. More specifically, the codebook considers the motives which the narratives ascribe to others in AI as well as how they describe the policies and behaviours of others in this field. It is important to note, moreover, that we have not only coded explicit references to the U.S., China, or the EU, which were often few and far between, but also more general and generic references to other international actors, for example

"competitors" or "partners and allies" in "North America", "Asia" or "Europe", deducing from the context whether these references point to the U.S., China or the EU.

Finally, the plot of AI narratives recounts what an actor wants to achieve with AI and how it plans to get there. We have coded references in our source material to how the actors define their aspirations in AI and to which broader political objectives they pursue these aspirations. We have also coded references to proposed and already implemented measures to achieve these ends, distinguishing between inward-facing (or domestic-focused) measures, for example industrial policy, research funding or regulation, and outward-facing (or international-focused) measures, for example export controls, diplomatic partnerships, or efforts at international standard-setting. Along these lines, the analysis establishes the different representations of the narrative setting, protagonists and plot in the source material which work together to constitute distinct AI narratives of the U.S., China, and the EU. The next section discusses first preliminary findings for China's AI narrative.

Preliminary Results: China's AI Narrative

For China, a total of 15 AI policy documents have been analysed using the codebook. These documents have been published by actors from various policy fields, including the Ministry of Education (MOE), Ministry of Industry and Information Technology (MIIT), Ministry for Science and Technology (MOST)[2], Ministry of Foreign Affairs (MFA) and the State Council. In addition, documents published by the Central Cyberspace Affairs Commission (CCAC), the Cyberspace Administration of China (CAC), the Standardization Administration of China (SAC), the National Information Security Standardization Technical Committee (SAC/TC260) as a subordinate of the SAC, or think tanks operating under one of the ministries listed, such as the China Electronics Standardization Institute (CESI) or the China Academy of Information and Communications Technology (CAICT) have been parsed for the purpose of this study. The documents either approach AI from a broad perspective, such as the *A Next Generation Artificial Intelligence Development* (State Council 2017) plan, or focus on specific aspects in the field of AI, such as standards (CESI/SAC 2018, SAC et al. 2020), ethics (NAIGSC 2021), or as a position paper outlining China's view in international forums on the regulation of military applications of AI (MFA 2021a) or international AI ethical governance (MFA 2021b). A complete list of all actors and documents can be found in the appendix. The broad range of documents and actors provide a comprehensive overall impression of China's AI policy documents. The number of documents and thus

[2] Respectively the National New Generation Artificial Intelligence Governance Expert Committee established by MOST.

stakeholders considered in our approach goes beyond articles already published (e.g., Hine/Floridi 2022).

The stage or setting of the scene reveals all three perspectives for China: confrontational, competitive, and cooperative. China recognizes that "AI has become a new focus of international competition" and "the world's major developed countries are taking the development of AI as a major strategy to enhance national competitiveness and protect national security" (State Council 2017: 2). The link between the development of AI and national security shows a confrontational setting. Otherwise, however, China's view on the application of AI is less confrontational and rather expressed in terms of (economic) competition. There is a competition for "international product markets" (CESI/SAC 2018: 33), the lead for China's AI industry in a global competition (CESI/SAC 2018: 55), comparisons of AI papers and patent rankings (State Council 2017: 3, CESI 2021: 1), the creation of global leading AI enterprises and brands (State Council 2017: 17), or AI as a "strategic handhold for China to gain the initiative in global science and technology competition" (CESI 2021: 1). At the same time, China initially saw itself in the role of a challenger, but is now clearly claiming a global leadership role for itself. While in 2017 it was still acknowledged that "there is still a gap between China's overall level of development of AI relative to that of developed countries" (State Council 2017: 4), the documents repeatedly include specific targets to reach "international parity" by 2018 (NDRC et al. 2016: 2), or an international competitive advantage by 2020 (MIIT 2017: 4) and finally by 2030 to be at the "forefront of innovation-oriented countries" (MOE 2019: 4). China is thus striving for "dominance in a new round of international competition," which is not necessarily confrontative, but includes mainly economic elements (CESI/SAC 2018: 1). It is evident that China does follow a cooperative worldview at least in some areas of AI. The desire for cooperation is obvious, for example, in "foundational technologies such as AI algorithms and frameworks" (CAC 2023), AI-related governance (SAC/TC260 2019: 19, MFA 2021a; 2021b), standardization work (State Council 2017: 24, SAC/TC260 2019: 36) or scientific exchange (MOE 2019: 6). However, it is also repeatedly stated that China seeks supremacy in these cooperations and would like to assume the leading role (State Council 2017: 2). These statements summarize China's overall economically competitive worldview in the area of AI, which certainly encompasses confrontational elements in national security and expresses a Chinese claim to leadership in a range of cooperative AI elements.

On the level of AI images, China is trying to present AI as a transformative opportunity for the economy and thus society. This is reflected in clear images, such as the designation of AI as "a strategic technology that will lead in the future" and thereby "will profoundly change human society and life" (State Council 2017: 2). According to the Chinese government, the development of AI in the realm of industry will have a decisive impact on all industrial sectors, becoming "the core driving force for a new

round of industrial transformation" (State Council: 2-3). The application of AI to many sectors is praised, such as health care (CCAC 2021: 40), transportation or finance (SAC/TC260 2019: 26), education (CESI 2021: 6), social governance and public security (CESI/SAC 2018: 1), agriculture and forestry (MOE 2018: 9-10) and many others. However, the key image that runs through most of the documents is AI as a key technology for the economy (e.g., CESI/SAC 2018, 25 CAICT/JD Explore Academy 2021: 1). In addition to this economic transformation, AI is also presented as a key to the social transformation of society, which can meet the challenges of Chinese society (State Council: 3). Although much less so, AI is not only seen as an opportunity for society and the economy, but the image of AI as a threat or risk can also be detected. A distinction can be made between two forms of risks: on the one hand, there are possible negative ramifications flowing from AI, such as the impact on social structures, the influence on legal and social theory, or violations of personal privacy, uncontrollable security risks or AI as a technology used for illegal crimes (State Council 2017: 3, SAC/TC260 2019: 26, CAICT/JD Explore Academy 2021: 1; MFA 2021a); on the other hand, the image of threats in relation to new challenges in international relations is aired (State Council 2017: 3; 26). Therefore, an image of AI as relevant to China's security is also repeatedly mentioned, where AI is critical to national security and defense and the importance of military-civilian two-way transformation of AI technology is emphasized (State Council 2017: 7; 21, MOE 2018, 4, NAIGSC 2021: 5, CAC 2023). Overall, however, the images of a transformative key technology with opportunities for the economy (development) and society clearly predominate.

Regarding the representation of other characters, both the U.S. and the EU receive only a limited and superficial treatment. There is virtually no direct reference to either actor. Exceptions to this are that the motives for both the EU and the U.S. to "develop trustworthy AI at the core of their AI ethics and governance" (CAICT/JT Explore Academy 2021: Preface) and to attach great importance to the task of AI standardization (CESI/SAC 2018: 33). Without the explicit references to both actors and with a view to more generic and general references, however, there are a few motivational attributions that can be interpreted in the context as a description of the EU or the U.S. These include descriptions such as major developed countries, which are attributed to take "the development of AI as a major strategy to enhance national competitiveness and protect national security; intensifying the introduction of plans and strategies for this core technology, top talent, standards and regulations, etc.; and trying to seize the initiative in the new round of international science and technology competition" (State Council 2017: 2). Overall, all major countries are said to consider "AI as a national development strategy" (SAC/TC260 2019: i). Moreover, it is evident that at least the U.S. (without being named directly) is still seen as a country that "excel[s] in AI" (MOE 2018: 9-10) and that should "refrain from seeking absolute military advantage" (MFA 2021b). The world's major developed nations are credited with striving for dominance in this new round of international competition and making appropriate deployments for

core AI technologies, top AI talents, and AI standards and norms (Sate Council 2017: 2). Overall, however, targeted and non-explicit motive attributions are rather rare. In some documents, however, actions of these two actors are referenced. These are usually lists of policies or updates within the U.S. and EU on a particular AI priority issue, such as standardization or ethical governance (e.g., CESI/SAC 2018, CESI 2021, CAICT/JD Explore Academy 2021). In a few cases, the documents address developments in individual EU member states in addition to measures at the EU level. These include, for example, France, Germany, and the UK (before Brexit) (e.g., SAC/TC260 2019).

China's stated aspirations and broader political objectives are diverse and thus difficult to summarize. In simple terms, these aspirations can be divided into different forms. First come the objectives that China is pursuing for the regulation of AI and more generally in the field of AI. These include, for example, the establishment of legal, regulatory, ethical, and moral frameworks (NAIGSC 2021: 2, CCAC 2021: 48-49), breakthroughs for bottlenecks in AI's basic theory (CESI/SAC 2018: 54). Often, specific years are mentioned until these goals are to be implemented, partly with indicators to measure progress. These include, for example, pre-research of more than 20 key standards by 2021 to drive AI standardization or the completion of an initially AI standard system by 2023 (SAC et al. 2020: 2), scaled development of key AI products by 2020 (MIIT 2017: 3) or to achieve “important progress in a new generation of AI theories and technologies” by 2020 (State Council 2017: 6). However, many goals also remain quite open, such as the target that "notable advances should be made in artificial intelligence" by 2023 (CCAC 2021: 48) or without a timeframe target, such as the establishment of an AI compliance system (CESI 2021: 22). Along with these goals for AI, China also formulates other goals that are mutually dependent. These include, for example, to "make colleges and universities epicenters for global scientific and technological innovation in AI" (MOE 2018: 3) and that "[b]y 2030, colleges and universities will become the main force behind building the world's main AI innovation centers" (MOE 2018: 4). In order to achieve this ambitious goal, milestones are formulated in advance that initially target only the field of AI, such as "to complete the scientific and technological innovation system for developing new generation AI at colleges and universities by 2020 or by 2025 to demonstrate a world-class level in some theoretical research, innovative technology, and application" (MOE 2018: 4).

These objectives thus flank China's first major objective, the creation of its own AI industry and its deployment in the economy and in society. While some of these objectives relate only to China, such as "to build China's upstream and downstream AI industrial chain" (SAC/TC260 2019: 6), these goals often also have a clear international aspiration. These goals range from "using generative AI products to provide services to the public" (CAC 2023) to "guaranteeing that China's AI industry will seize the lead and gain the advantage in global competition" (CESI/SAC 2018: 54). What is clear is the aspiration of the fastest possible integration of AI into the real economy (MIIT 2017: 4, CESI 2021: 1). It is

repeatedly mentioned that China sees AI as the key to becoming a manufacturing superpower and cyber superpower (MIIT 2017: 2), technology superpower (MIIT 2017: 4), network superpower (CESI/SAC 2018: 25), educational superpower, S&T superpower, and a smart society (MOE 2018: 3). In doing so, China wants to seize the strategic initiative in the international competition in AI development in order to gain a competitive advantage. China aims to use AI to protect national security, energize China's economic development, and maintain social stability (State Council 2017: 2-4). For the area of national security and military application, military-civilian cooperation is to be strengthened and, for example, military-civilian AI technology innovation bases and research projects are to be implemented (MOE 2018: 10). Overall, China is setting very ambitious objectives in a very short timeframe. By 2025, the first AI technologies should already be world-leading and decisive for China's industrial upgrading and economic transformation, and five years later it should be the world's primary AI innovation center and lay the foundation for transforming the country into a leading innovation-style nation and an economic power with the help of AI (State Council 2017: 6). However, it also becomes clear from the objectives that China wants to assert its own way internationally. Although the interest in an "effective governance regime, in order to prevent serious harms or even disasters caused by military applications of AI to mankind" is formulated (MFA 2021a), the aim is to consider the social and cultural characteristics of countries in the development of AI and to create AI ethical systems that are suited to the conditions of each country (MFA 2021b). Also, advantages in AI should not be used to undermine the sovereignty and territorial security of a nation state (MFA 2021a).

China's inward-facing (or domestic-focused) measures cover all categories of industrial policy, research funding or regulation. External measures are characterized much by intentions and little by actual initiative. Overall, the desire for diplomatic solutions and partnerships is repeatedly emphasized, but China remains rather vague in these announcements. According to China's wishes, international cooperation, for example, in the areas of foundational technologies such as AI algorithms and frameworks (CAC 2023) should exist, expressing the desire for the construction of internationalized open-source communities and open-source platforms (CCAC 2021: 44). China communicates its interest in an international agreement on AI governance ethics (MFA 2021b) or the joint regulation of military applications of AI as well as the establishment of a universal international regime. Based on a broad consensus, China also wants to contribute to formulating AI governance frameworks and norms (MFA 2021a). Previous successes, such as the "G20 AI Principles" in June 2010, were initiated in 2016 under the Chinese G20 presidency and are now being supported by China (CAICT/JD Explore Academy 2021). In order to participate in international standards development and to boost China's international voice, China is taking concrete steps to actively host international conferences and forums related to AI (CCAC 2021: 44, CESI 2021: 29; 55) and to "encourage Chinese experts to serve in international standardization organizations and act as editors of international standard projects"

(SAC/TC26036 2019: 36). Chinese scholars are expected to play a crucial role in the drafting process of international AI regulations and propose "Chinese initiatives" and "Chinese standards" (MOE 2018: 6; interview with Huw Roberts, 30 May 2023). Chinese enterprises are encouraged to participate in or even lead the development of international standards, and China advocates its own "technical standards "going out" approach to promote AI products and services in overseas applications" (State Council 2017: 25-26).

Against deepening US trade sanctions, measures to protect China from international isolation have expanded. To this end, the country calls on the one hand to "oppose the building of exclusive groups" (MFA 2021b) or "to adhere to the principle of multilateralism, openness and inclusiveness" (MFA 2021a) and on the other hand tries to bring foreign expertise to China. In general, Chinese students should be supported and encouraged to study in countries that excel in AI while training industry leaders and highly trained people as well as exchange students in China in the AI field through the Chinese Government "Silk Road" Scholarship Program (MOE 2018: 8-9). In addition, China seems to want to use existing bilateral and multilateral cooperation mechanisms and Belt and Road Initiative to achieve its AI priorities (MIIT 2017: 13) and announces support to establish AI innovation centers and cooperative international laboratories through the 111 Program and to incubate AI as part of China's International Mega Science Plan and Mega Science Project (MOE 2018: 6). The international-focused measures also include the support of domestic AI enterprises, for example, to lead to foreign mergers or acquisitions or to strengthen share investment or start-up investment or to contribute to the establishment of foreign research centers. With the help of the "One Belt, One Road" strategy, these international AI science and technology cooperation bases or joint research centers are to be established with the aim of promoting the use of AI technologies in the countries along the "One Belt, One Road" (State Council 2017: 24).

Conclusion

The three technopoles attach a great importance to AI and their own R&D capabilities. This is evidenced not just by a multitude of statements but by the sheer number of AI policy papers, regulations, investment programs etc. that these governments put out. Based on our research so far, we get the impression that while AI is definitively receiving a lot of attention, it is not fully securitized. In other words, the dreaded “AI Arms Race” so beloved of US political pundits is a misnomer. It is not at an arms race, neither in the classical IR definition of the term (Diehl/Lambach 2022) nor in a looser sense. At the same time, AI is not a “normal” technology either – as Asaro sarcastically notes: “Just substituting the word ‘math’ for ‘AI’ in the recent headlines above helps to highlight why there may be hype around ‘AI arms races,’ but not ‘math arms races.’ The public clearly associates something more

than the underlying mathematical techniques to AI" (Asaro 2019: 50). AI is attracting a lot of hype but even if most of it turns out to be smoke and mirrors, there is still a lot of potential for social, economic, and military innovation. In addition to this technological potential, AI is also imbued with status concerns. It seems that you simply cannot be a modern great power without having state-of-the-art AI capabilities.

These developments still have a potential for conflict, in and of themselves. Even though AI development is in practice quite transnational and reliant on a free form of exchange among experts, political actors driven by narratives of geopolitical conflict and high-level economic competition may be pushed towards further hostile behavior. If conflict narratives become (even more) detached from reality, they might have serious consequences not just in the AI sector but for great power relations in general. At its most extreme, we can envision the three technopoles entrapping themselves in a security dilemma of their own making, which would be driven almost entirely by perceptions of threat with little material necessity.

It must said, however, that we consider such a dilemma situation to be very unlikely, and possibly even less likely than it was five years when the AI boom was beginning to unfold. On the one hand, it is our impression that while there are identifiable national approaches to AI, certain communities share similar concerns even across technopole boundaries. Given the tight coupling of discursive arenas and the close attention that each side pays to its "others", we might see the emergence of transnational narrative coalitions. This is further supported by a gradual "normalization" of AI rhetoric. It is our impression that while tensions have mounted in US-Chinese relations, narrative constructions of AI have become slightly more down-to-earth as time has passed. In an optimistic reading, this "de-hyping" of AI may open spaces for more sober discussions about the global governance of this technology, about AI ethics and standards.

In short, we see interactions in the global AI field as subject to two countervailing trends. On the one hand, there is a normalization of AI, which is still considered a transformative technology but in somewhat less radical terms than it was only a few years ago (the current mini-hype about Generative AI notwithstanding). On the other, relations between these technopoles are fraught and still deteriorating. The US shows no signs of relenting on its hardline policy towards trade and scientific exchange with China. The Chinese government is busy tightening controls to solidify its increasingly authoritarian system of governance, including a "tech-lash" away from the formerly optimistic views on the potential AI. The EU, meanwhile, is trying to articulate a positive, more cooperative vision but is finding few takers among the other powers.

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Appendix

Table 1: Chinese documents (in alphabetical order by the author(s)

Author(s)	Year published	Title document
CAC (Cyberspace Administration of China)	2023	Measures for the Management of Generative Artificial Intelligence Services
CAICT (China Academy of Information and Communications Technology), JD Explore Academy	2021	White Paper on Trustworthy Artificial Intelligence
Central Cyberspace Affairs Commission (CCAC)	2021	14th Five-Year Plan for National Informatization
CESI (China Electronics Standardization Institute), SAC (Standardization Administration of China)	2018	Artificial Intelligence Standardization White Paper (2018 Edition)
CESI (China Electronics Standardization Institute)	2021	Artificial Intelligence Standardization White Paper (2021 Edition)
MFA (Ministry of Foreign Affairs)	2021a	Position Paper of the People's Republic of China on Regulating Military Applications of Artificial Intelligence (AI)
MFA (Ministry of Foreign Affairs)	2021b	Position Paper of the People's Republic of China on Strengthening Ethical Governance of Artificial Intelligence (AI)
MIIT (Ministry of Industry and Information Technology)	2017	Three-Year Action Plan for Promoting Development of a New Generation Artificial Intelligence Industry (2018–2020)
MOE (Ministry of Education)	2018	Notice of the Ministry of Education on Issuing the Artificial Intelligence Innovation Action Plan for Institutions of Higher Education
MOST (Ministry for Science and Technology), NAIGSC (National New Generation Artificial Intelligence Governance Specialist Committee)	2019	Governance Principles for a New Generation of Artificial Intelligence Develop Responsible Artificial Intelligence
NAIGSC (National New Generation Artificial Intelligence Governance Specialist Committee)	2021	Ethical Norms for New Generation Artificial
NDRC (National Development and Reform Commission), MOST (Ministry for Science and Technology), MIIT (Ministry of Industry and Information Technology), Office of the Central Cyberspace Affairs Commission (CAC)	2016	"Internet+" Artificial Intelligence Three-Year Action and Implementation Plan (
SAC/TC260 (National Information Security Standardization Technical Committee)	2019	Artificial Intelligence Security Standardization White Paper (2019 Edition)
SAC (Standardization Administration of China), CAC (Office of the Central Cyberspace Affairs Commission), NDRC (National Development and Reform Commission), MOST (Ministry of Science and Technology), MIIT (Ministry of Industry and Information Technology)	2020	Guidelines for the Construction of a National New Generation Artificial Intelligence Standards System
State Council	2017	A Next Generation Artificial Intelligence Development Plan