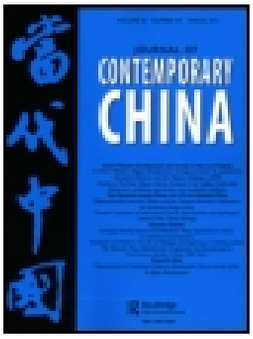

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China's Artificial Intelligence Ethics: Policy Development in an Emergent Community of Practice

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ABSTRACT
Extant literature has not fully accounted for the changes underway in China's perspectives on the ethical risks of artificial intelligence (AI). This article develops a community-of-practice (CoP) approach to the study of Chinese policymaking in the field of AI. It shows that the Chinese approach to ethical AI emerges from the communication of practices of a relatively stable group of actors from three domains—the government, academia, and the private sector. This Chinese CoP is actively cultivated and led by government actors. The paper draws attention to CoP configurations during collective situated-learning and problem-solving among its members that inform the evolution of Chinese ethical concerns of AI. In so doing, it demonstrates how a practice-oriented approach can contribute to interpreting Chinese politics on AI governance.

1. Introduction

Artificial intelligence (AI) is already having a major impact worldwide and is expected to become the defining technology of our future. Over the past few decades, 60 states around the world have developed a total of over 700 national policies and strategies to facilitate the development and adoption of AI technology.[1] However, in contrast to the historically dominant positive view of technological progress in AI applications, ethical concerns of AI's negative impacts that may lie ahead have been increasingly voiced in recent years. Common ethical issues associated with AI use can be summarized by the following categories: 1) lack of privacy and misuse of personal information; 2) lack of accurate and quality data; 3) an 'awakening' of AI and loss of human decision-making; 4) bias and discrimination; 5) negative impacts on social justice and vulnerable groups; and 6) potential for criminal, malicious use and mass production of autonomous weapons.[2] Calls for steering AI research and development to manage these potential negative impacts has gained traction within policy circles.

The Chinese government has not been indifferent to these concerns. Security and ethical accounts abound in many AI-related policy instruments that Beijing has laid out since 2017. In particular, Chinese President Xi Jinping stressed at the 2018 Political Bureau of the Communist Party Central Committee that it is of critical importance to 'strengthen research on legal, ethical and social issues related to AI', and 'establish and improve laws, regulations and ethics' to ensure 'AI is safe,

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[1]'AI Policy Observatory' (OECD n.d.), accessed October 9, 2022, https://oecd.ai/en/dashboards.

[2]This synthesis is based on: Mark Coeckelbergh, *AI Ethics* (The MIT Press, 2020); Vincent C. Müller, "Ethics of Artificial Intelligence and Robotics," in *Stanford Encyclopedia of Philosophy*, ed. Edward Zalta (Stanford University, 2020); Bernd Carsten Stahl, *Artificial Intelligence for a Better Future: An Ecosystem Perspective on the Ethics of AI and Emerging Digital Technologies* (Springer, 2021).

reliable and controllable'.[3] Chinese legislation to address AI risks has been fast tracked since this time, exemplified by the passage of the *Data Security Law*, *Personal Information Protection Law* and *Code of Ethics for New Generation AI* in 2021.

However, how China, the fastest growing AI country,[4] perceives and develops AI ethics to ensure safe and responsible use has not been well understood. Despite growing scholarly attention on China's AI policies, extant analysis is predominately focused on China's strategies of obtaining strategic and technological advantage over competitors, especially the US;[5] little has been done to parse its understandings and means of the ethical use of AI. Among the few pioneering studies touching on China's AI ethics,[6] analysis tends to focus on one or a few AI policy documents, omitting a comprehensive review, thereby missing the opportunity to identify some patterns and trends in the Chinese approach to ethical AI.

This article aims to address this shortcoming by providing a comprehensive mapping of the current AI ethics landscape in China. It focuses on explaining 1) the evolution in China's discourses and policy measures on ethical risks associated with AI; and 2) dynamics internal to China's decision-making processes as sources of such evolution.

Instead of simply viewing Chinese policies as a top-down exercise driven by instrumental calculations of elite government officials, this article argues that decision-making in the area of AI manifests an emergent community of practice (CoP) anchored in the joint performance of actors from three domains—the government, academia and the private sector. The field of AI is increasingly recognizing that the private sector is stepping into the driver's seat in setting up technical standards and norms for AI development and application.[7] As with other countries, the Chinese government has to piggyback on non-governmental initiatives, collaborate with non-state agents, and benefit from expertise inside and outside the government to better understand and handle the risk of AI. Drawing upon recent theoretical insights provided by CoP approaches in International Relations and Public Policy,[8] this research approaches China's policymaking through investigating how government and non-government actors are engaged in a set of 'patterned actions' and 'competent performances' that lead to knowledge integration, including perceptions of AI's ethical risks.

This article's theoretical and empirical contributions are threefold. First, it contributes to practice theory, particularly CoP approaches, by exploring their application in the context of an authoritarian regime yet to be evaluated in the literature. It is important to highlight that the Chinese AI CoP is different from common CoPs developed in organic, spontaneous ways.[9] Although it conforms to the

[3]'Xi Jingping yaoqiu tuidong xinyidai rengongzhineng jiankang fazhan zhengzhiju jiti xuexi [Xi Called for Promoting the Healthy Development of A New Generation of AI: Group Study of the Political Bureau]' (*CCTV*, 2018), accessed September 9, 2022, https://baijiahao.baidu.com/s?id=1615845925658912776&wfr=spider&for=pc.

[4]Alexandra Mousavizadeh, Alexi Mostrous and Alex Clark, 'The Arms Race: A Groundbreaking New Index Ranking 54 Countries' (2019), accessed October 30, 2022, https://www.tortoisemedia.com/2019/12/03/global-ai-index/.

[5]Graham Allison and Eric Schmidt, *Is China Beating the U.S. to AI Supremacy?* (Belfer Center for Science and International Affairs 2020), accessed October 30, 2022, https://www.belfercenter.org/sites/default/files/2020-08/AISupremacy.pdf; Lewis A. Dunn, 'Adversarial Strategic Competition between China and the United States: Understanding and Mitigating its Risks', China International Strategy Review 3(1), (2021), p. 1; Jascha Bareis and Christian Katzenbach, 'Talking AI into Being: The Narratives and Imaginaries of National AI Strategies and Their Performative Politics', Science, Technology, & Human Values 47(5), (2022), p. 855.

[6]Jessica Fjeld and others, *Principled Artificial Intelligence: Mapping Consensus in Ethical and Rights-Based Approaches to Principles for AI* (Berkman Klein Center, 2020); Seán S. ÓhÉigeartaigh and others, 'Overcoming Barriers to Cross-cultural Cooperation in AI Ethics and Governance', Philosophy & Technology 33(4), (2020), p. 571; Christopher Wilson, 'Public engagement and AI: A values analysis of national strategies', Government Information Quarterly 39(1), (2022), p. 1.

[7]Barry Naughton, 'Chinese Industrial Policy and the Digital Silk Road: The Case of Alibaba in Malaysia', Asia Policy 15(1), (2020), p. 23; James Butcher and Irakli Beridze, 'What is the State of Artificial Intelligence Governance Globally?', The RUSI Journal 164 (5–6), (2019), p. 88.

[8]Etienne Wenger, *Communities of Practice: Learning, Meaning, and Identity* (Cambridge University Press, 1998); Etienne Wenger, Richard McDermott and William M. Snyder, *Cultivating Communities of Practice: A Guide to Managing Knowledge* (Harvard Business School Press, 2002); Emanuel Adler, 'The Spread of Security Communities: Communities of Practice, Self-Restraint, and NATO's Post—Cold War Transformation', European Journal of International Relations 14(2), (2008), p. 195.

[9]Igor Pyrko, Viktor Dörfler and Colin Eden, 'Thinking Together: What Makes Communities of Practice Work?', Human Relations 70(4), (2017), p. 389.

three major components of a CoP—an ongoing mutual engagement, a sense of joint enterprise, and a shared repertoire among its participants[10] – power asymmetry that favors government actors persists throughout decision-making processes, while non-government actors gain new roles and responsibilities over time.

Second, this research contributes to studies on Chinese policymaking. China's decision-making process defies easy categorization. Scholars of China studies increasingly warn against oversimplifying Chinese decision-making as a top-down process while overlooking policy inputs from the 'bottom'.[11] However, this policy process fits uncomfortably into standard definitions of bottom-up decision-making given that top political elites retain the power to decide policy outcomes. The authors contend that CoP theories help China studies grapple with the emergence of a hybrid form of decision-making that features the co-production of knowledge, which is achieved without diminishing the role of the government.

Finally, this research offers an important step towards developing a global agenda for ethical AI.[12] The field of ethical AI is still emergent, and it is hoped that the findings of this research can be a resource to advance the conversation on ethical AI across cultures and spur more attention to common ground between China and other major AI developers around the world.

The remainder of this article proceeds in four steps. The first section sets out the core concepts behind CoPs and explains how the research builds on, but also departs from, conventional CoP approaches. The following empirical section contains a detailed review of how China has approached safe and ethical AI. Its perspectives on AI are broken down into three periods, namely periods of scant awareness (2015–2016), emerging views (2017–2018), and articulated views (2019 onwards). The third section then traces how members of the community learn together through situated-learning and problem-solving at both the domestic and international levels. These processes drive the shift in Beijing's awareness, perceptions, and practices towards ethical AI over time. The final section concludes by offering policymaking implications that seek to consolidate the findings from the previous sections.

2. Conceptual Framework: A Chinese AI Community of Practice

The concept of communities of practice (CoPs) has its roots in organization and management studies, where it was defined as 'groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis'.[13] Three characteristics set CoPs apart from other informal networks:[14] First, a CoP is organized around a domain of shared interest, or a joint enterprise. Becoming a member implies a commitment to the domain and a shared competence that distinguishes members from non-members. Second, CoP members mutually engage in joint activities, information sharing, relationship building and, in these processes, learn together. Third, CoP members are practitioners and not merely observers. They actively test ideas, usually through developing a shared repertoire of communal resources, in the form of 'routines, words, tools, ways of doing things, stories, gestures, symbols, genres, actions, or concepts'.[15]

[10]Wenger (n 8) 72.

[11]Baogang He and Mark E. Warren, 'Authoritarian Deliberation: The Deliberative Turn in Chinese Political Development', Perspectives on Politics 9(2), (2011), p. 269; Sebastian Heilmann, Lea Shih and Andreas Hofem, 'National Planning and Local Technology Zones: Experimental Governance in China's Torch Programme', The China Quarterly 216, (2013), p. 896; Jinghan Zeng, 'China's Artificial Intelligence Innovation: A Top-Down National Command Approach?', Global Policy 12(3), (2021), p. 399.

[12]Stefan Larsson, 'On the Governance of Artificial Intelligence through Ethics Guidelines', Asian Journal of Law and Society 7(3), (2020), p. 437; Alexa Hagerty and Igor Rubinov, *Global AI Ethics: A Review of the Social Impacts and Ethical Implications of Artificial Intelligence* (Cornell University arXiv.org, 2019); Anna Jobin, Marcello Ienca and Effy Vayena, 'The Global Landscape of AI Ethics Guidelines', Nature Machine Intelligence 1(9), (2019), p. 389.

[13]Wenger, McDermott and Snyder (n 8) 4.

[14]Wenger (n 8) 72.

[15]ibid 82–83.

The emphasis on joint enterprise, collective action, and practically derived learning does not imply that conflict and contestation are irrelevant to CoPs. Instead, the process of defining and organizing collective action involves constant battles over status, identity, and preferred ways of doing things.[16] Contestation between members may challenge collective knowledge and spur reflections about established practices.[17]

The voluminous literature on CoPs has explored the process of knowledge integration and production in myriad social settings, but this research is among the first to apply CoPs to China.[18] China's AI decision-making features the formulation of a CoP where multi-stakeholder communication channels are increasingly promoted in recognition of the diverse number of sectors and actors that impact on AI.[19] The Chinese AI CoP specifically brings together government officials from a range of departments (e.g. Ministry of Science and Technology, Ministry of Information and Industry, Cyberspace Administration of China, the State Council), academics from universities and research institutes, and business representatives to co-produce knowledge on AI governance (see Figure 1).

However, employing the concept of CoPs in an authoritarian setting has some implications for social learning and the co-production of knowledge that need to be explored. Chinese CoPs mark a significant departure from conventional CoPs in the power asymmetry that favors government officials, reflecting in their structural domination in setting CoP boundaries and neutralizing resistance.

In terms of boundary-setting, government actors play a crucial role in organizing and stabilizing the community. CoPs bear the imprints of the social environment they are embedded in although members' dispositions and expectations can change in situated learning and practices.[20] While in the traditional sense CoPs are informal, organic, and self-organizing, Chinese CoPs situated in a hierarchical structure are comparatively more 'manicured'. The central government takes an active paternalistic role in gatekeeping who can be included or excluded in decision-making and problem-solving processes. These processes can lead to changes in the boundaries, composition, and structure of CoPs, leading to a direction more favoured by the government.

Relating to neutralizing resistance, government actors in a power asymmetry can mostly authoritatively select and help diffuse certain practices over others.[21] As outlined above, the development of like-mindedness through the CoP does not imply that interactions need to be harmonious.[22] In situations of differing interests, conventional CoPs with a flatter power structure go through constant interaction and mutual learning during which disagreements can be revealed and agreements hammered out. In Chinese CoPs, government actors can obtain cooperation through incentives and pressure. Non-government actors that intend to be included in the decision-making circle and gain political influence can also voluntarily adapt to government demands.

This is not to suggest that Chinese CoPs' knowledge-production processes will be highjacked by government officials. Constant interaction will make joint knowledge construction possible as practitioners become more familiar with each other and develop a greater acknowledgment of the validity of each other's competence. In an ever-more connected AI governance sphere with highly heterogenous actors featured in this study, the Chinese CoP must contend with a diverse array

[16]Michael Barnett and Raymond Duvall, 'Power in International Politics', International Organization 59(1), (2005), p. 39; Davide Nicolini, *Practice Theory, Work, and Organization: An Introduction* (Oxford University Press, 2013).
[17]Wenger (n 8) 78.
[18]Previous CoP studies referring to Chinese cases are concentrated in the field of educational sciences with one exception—Reza Hasmath and Jennifer Y. J. Hsu, 'A Community of Practice for Chinese NGOs', Journal of Chinese Political Science 25, (2020), p. 575.
[19]Zeng (n 11) 403.
[20]Iver B. Neumann and Vincent Pouliot, 'Untimely Russia: Hysteresis in Russian-Western Relations over the Past Millennium' Security Studies 20(1), (2011), p. 105.
[21]He and Warren (n 11) 270–271; Carles Boix and Milan W. Svolik, 'The Foundations of Limited Authoritarian Government: Institutions, Commitment, and Power-Sharing in Dictatorships', The Journal of Politics 75(2), (2013), p. 300.
[22]Nicolini (n 16) 89–92.

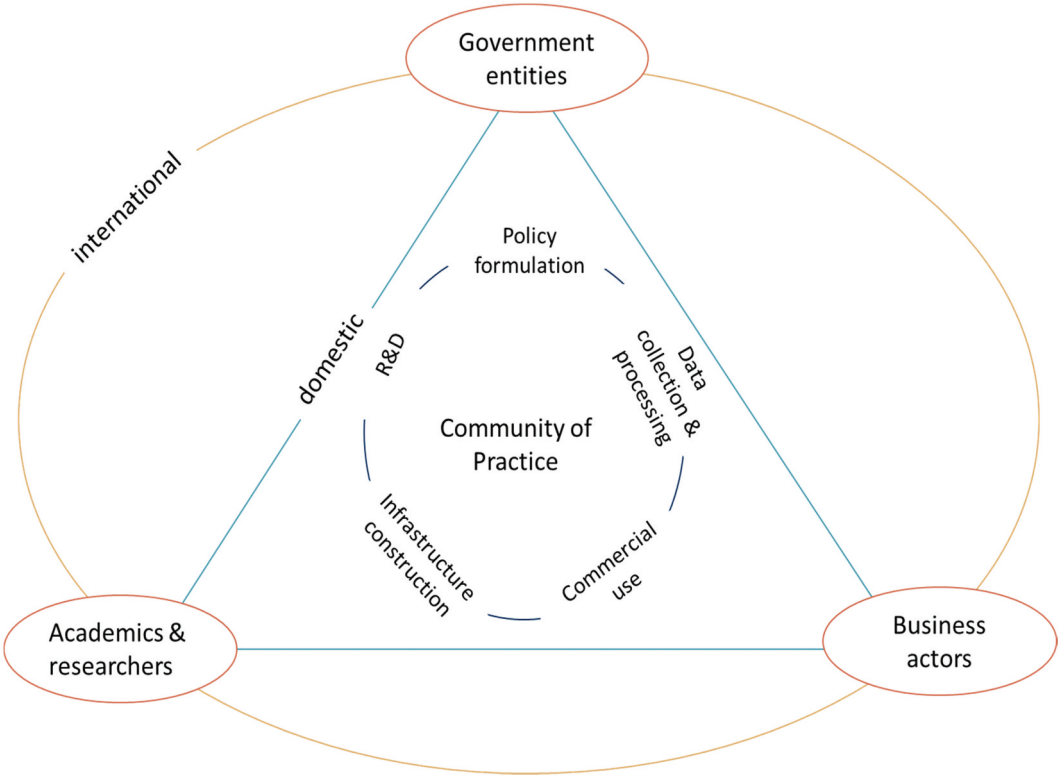

Figure 1. Chinese AI community of practice and joint problem-solving at domestic and international levels.

of competing interests within the group.[23] With economic, social, and political challenges impacting the survival and development of the CoP, members are expected to become more active in learning from each other and coping with common problems.

Learning and problem-solving will be both domestically and internationally sourced. Through repeated interactions in adapting to domestic and international changes, the nature and the extent of mutual engagement between members are refined and the community is then reconfigured. CoP members in this process also progressively make clearer the core values and basic norms that establish the parameters of their association, manifest in a three-stage evolution of AI ethics in this study (to be elaborated in the next section). The empirical section focuses on situated-leaning and joint problem-solving practices at both domestic and international levels—working on common case-problems, building tools together, developing policies and regulations, among other things—that lead to the development of a shared repertoire, including AI ethics. It meanwhile unpacks how the hierarchical political structure penetrates and is mediated by, interaction within the CoP.

Some caveats are in order. This research focuses on the national-level policymaking processes although a great number of AI initiatives have been promulgated at the provincial/municipal and township levels in China.[24] Its focus is justified by the decisive role of central government in setting policy directions for issues as vital as the development of emerging technologies. Further, while actors are divided into three main categories for analytical purposes, the authors acknowledge actors within each category are not monolithic. A more detailed analysis of the competition within each

[23]Rory Truex, 'Authoritarian Gridlock? Understanding Delay in the Chinese Legislative System', Comparative Political Studies 53(9), (2020), p. 1455; Jinghan Zeng, 'Artificial Intelligence and China's Authoritarian Governance', International Affairs 96(6), (2020), p. 1441.
[24]Zeng, 'China's Artificial Intelligence Innovation' (n 11) 403–408.

group is out of the scope of this article. The macro approach adopted here is to situate China's policymaking processes in relation to AI in a broader picture that features a wide scope of partnerships and tensions.

The account in this article is based on three sources of data: First, participant observations were carried out by one of the authors who has been involved in formal and informal multi-stakeholder consultation meetings on AI issues. Second, group interviews with representatives from seven Chinese AI companies—namely, Huawei, SenseTime, PingAn Technology, Dajiang, IntelliFusion, Tencent and Megvii—were conducted in July—October 2019 and August 2021.[25] Third, secondary sources have been collected. These include documentation of meetings held among multiple stakeholders on AI from 2015, reports of relevant government and non-government organizations, and news articles.

3. Policy Analysis: An Overview of China's AI Ethics

China's science and technology (S&T) have, from the start, been promoted and directly managed by the state. Successive Chinese leadership since Deng Xiaoping has adopted a technonationalist policy to encourage indigenous innovation and technology transfer.[26] Today, President Xi Jinping's support of S&T development is by far the most politically and financially vigorous. Xi sees a direct connection between S&T progress and his 'China Dream' – the rejuvenation of the nation.[27] As China entered a stage of slower growth marked as the 'new normal', he sees frontier technologies, especially AI, as both a useful tool to transform and upgrade traditional industries and the next economic growth engine. By 2015, the Xi administration felt sufficiently confident to enter the race for technological leadership, proposing the *Made in China 2025* and *Internet Plus* initiatives.

China has made major inroads in developing AI policy and regulation frameworks following the two initiatives. China's approach to AI ethics can be generally broken down into three phases: Stage I (2015–2016), Stage II (2017–2018) and Stage III (2019 onwards). (See Table 1 for a list of most important Chinese policies on AI).

The earliest policy documents China developed signify clear recognition of AI's high potential, however, not its high risk. This period from 2015 to 2016 is therefore a stage of *scant awareness* (Stage I) of ethical concerns of AI. Both *Made in China 2025* and *Internet Plus* and several other strategic initiatives enacted in this phase show that China has put a strong focus on digitalization and making its economy future-proof. The heart of *Made in China 2025* is intelligent manufacturing, namely applying the tools of information technology to production. The 2015 *Guidelines of the State Council on Actively Promoting the 'Internet Plus' Action* consistently encourages the integration of cloud computing, big data, and Internet of Things technologies into various industries. The 2016 *Three-Year Action Plan for 'Internet Plus'* released by the National Development and Reform Commission includes a section on setting up common standards across 'Internet Plus' sectors to foster a 'sound industrial ecosystem'. However, this section mainly contains some overarching goals of responsible R&D, socially responsible corporate behaviors, and public oversight. Overall, no policy documents of this stage make specific reference to ethics (*lunli*). The focus within this stage seems to be solely on the benefits of AI technologies in upgrading Chinese industry, making it more efficient and integrated so that the country can move up the global value chains.

[25]The interviewees are not cited directly based on prior agreement. Additional information was collected through reports submitted to one of the authors by companies that were sanctioned on 9 October 2020 by the US Industry and Security Bureau, including Dahua Technology, Hikvision, IFLYTEK, Megvii Technology, Sense Time, Xiamen Meiya Pico Information, and Yitu Technologies.

[26]Evan A. Feigenbaum, 'Who's Behind China's High-Technology "Revolution"?: How Bomb Makers Remade Beijing's Priorities, Policies, and Institutions', International Security 24(1), (1999), p. 95.

[27]Yao Song, Guangyu Qiao-Franco and Tianyang Liu, 'Becoming a Normative Power? China's Mekong Agenda in the Era of Xi Jinping', International Affairs 97(6), (2021), p. 1709.

Table 1. Chinese Policies on AI (selective).

Stage	Year	AI related policies, regulations and laws	Institutions
Stage I	2015	Made in China 2025	State Council
	2015	The Guidelines of the State Council on Actively Promoting the 'Internet Plus' Action	State Council
	2016	Outline of the 13th Five-Year Plan for National Economic and Social development	National People' s Congress
	2016	Robot Industry Development Plan (2016–2020)	National Development and Reform Commission
	2016	Three-Year Action Plan for 'Internet +'	National Development and Reform Commission
	2016	The 13th Five-Year National Plan for Science and Technology and Innovation	State Council
Stage II	2017	Cyber Security Law	National People's Congress
	2017	New Generation AI Development Plan	State Council
	2017	Three-Year Action Plan for Promoting a New Generation of AI Industry Development	Cyber Administration of China
	2017	Opinions of the General Office of the State Council on Promoting Closer Civil-Military Integration in the National Defense Science and Technology Industry	State Council
	2018	The White Paper of AI Standardization	Standardization Administration of China
	2018	Action Plan for AI Innovation in Universities	Ministry of Education
	2018	E-Commerce Law of the People's Republic of China	Standing Committee of the National People's Congress
Stage III	2019	New Generation AI Governance Principles—Developing Responsible AI	National New Generation AI Governance Specialist Committee (Ministry of Science and Technology)
	2019	Provisions on the Cyber Protection of Children's Personal Information	Cyberspace Administration of China
	2019	The White Paper of AI Standardization	Standardization Administration of China
	2019	Guidelines for the Construction of the National New Generation AI Innovation and Development Pilot Zones	Ministry of Science and Technology
	2020	Suggestions on Promoting the Integration of Disciplines and Accelerating the Cultivation of Postgraduates in the Field of AI	Ministry of Education
	2020	Guidelines for the Construction of the National New Generation AI Innovation and Development Pilot Zones (revised edition)	Ministry of Science and Technology
	2020	Guidelines for the Construction of National Standard System of New Generation AI	Standardization Administration of China, Cyber Administration of China, NDRC, MOST, and MIIT
	2020	Guidelines for Promoting the Development and Application of Autonomous Driving Technologies	Ministry of Transport
	2021	Civil Code of China	National People's Congress
	2021	Data Security Law	National People's Congress
	2021	Security Protection Regulations on Critical Information Infrastructure	State Council
	2021	Personal Information Protection Law	National People's Congress
	2021	Code of Ethics for New Generation AI	National New Generation AI Governance Committee (Ministry of Science and Technology)
	2021	Position Paper of the People's Republic of China on Regulating Military Applications of AI	Ministry of Foreign Affairs
	2021	Law of the People's Republic of China on Scientific and Technological Progress	Standing Committee of the National People's Congress
	2021	The White Paper of AI Standardization	Standardization Administration of China

Policy instruments developed between 2017 and 2018 reveal a stage of *emerging views* of AI ethics (Stage II). The *New Generation AI Development Plan* (AIDP) issued by the State Council in 2017 is a major step for carrying out China's innovation-driven development strategy and making the country a global leader in S&T. The plan illustrates a three-step strategy to turn the country into a global center for AI innovation and to become a world leader in AI technology and its applications

by 2030.[28] Notably, it also includes a three-step plan to establish a system of laws, regulations, and ethics, starting from a preliminary regulation system to be established by 2020, that will be further codified and completed by 2025 and 2030, respectively. The AIDP should be interpreted as a 'wish list' of AI development,[29] which does not set out concrete measures for implementation.

The 2018 *White Paper of AI Standardization* was developed by the Standardization Administration of China in cooperation with a vast number of industry leaders and researchers. It is progressive in emphasizing gaining the trust of the public by making AI safe, human interest-centric, respectful of privacy, and guided by a robust accountability system featuring consistency in rights and responsibilities. It extends the responsibility of privacy protection to the government, stating that public agencies need to use information 'properly' to protect personal data. However, what is seen as 'proper' remains flexibly interpretable. Details on how to incorporate these principles into standardization are also lacking.

The *E-Commerce Law* issued in the same year added details on information protection, specifying that 'relevant authorities shall take necessary measures to protect the security of the data and information provided by e-commerce operators, and keep personal information, privacy and trade secrets strictly confidential, and shall not disclose, sell or illegally provide data to others' (Article 25). Qualifiers such as 'shall take necessary measures' leave ample room for government actors to interpret their accountability. Thus, the strength of personal information protection is likely to be determined by the government's decisions surrounding data collection and usage. This can be a loophole for ethics violations considering significant exemptions are present in China for the collection and use of data on the basis of national security, public interest, or health, where concerns for privacy are often neglected.[30] Another loophole lies in the absent specification of applicable laws for regulating government access to data. Considering the influential power of the government, paired with a relatively weak judicial system, it raises the question as to whether there are enough safeguards to prevent governmental abuses of power.

From 2019, China developed more *articulated views* (Stage III) of AI ethics. The Ministry of Science and Technology (MOST) appointed the National New Generation AI Governance Specialist Committee in March 2019, consisting of a mixed group of prominent scholars, entrepreneurs, and government officials to provide advice on ethical issues related to AI.[31] By June 2019, the expert committee unveiled eight principles for 'safe, controllable and responsible use' of AI, entitled *New Generation AI Governance Principles—Developing Responsible AI*. They include 1) harmony and friendliness; 2) fairness and justice; 3) inclusiveness and sharing; 4) respect for privacy; 5) security and controllability; 6) shared responsibility; 7) open cooperation; and 8) agile governance.

Some of these principles such as privacy, fairness, justice, and inclusiveness bear some similarity to those developed in Western countries, but they may embody different connotations and philosophical assumptions in Chinese culture.[32] The juxtaposition of these concepts with 'harmony' implies that Chinese AI ethics place greater emphasis on social responsibility and community relations. As one of the Specialist Committee members, Zeng Yi, illustrated, harmony denotes not only inclusion, sharing, openness, and collaboration between cultures but also the coherency

[28]For more on China's positions on AI, see Zeng Yi, 'Rengongzhineng zuowei funenggongju ke tuijin quanqiu kechixufazhan mumiao de shixian [AI as the Enabling Tool to Promote the Achievement of Sustainable Development Goals]' Big Data, accessed October 30, 2021, http://bigdata.china.com.cn/2021-12/30/content_41839325.html.

[29]Huw Roberts and others, 'The Chinese Approach to Artificial Intelligence: An Analysis of Policy, Ethics, and Regulation', AI & Society 36(1), (2021), p. 59.

[30]ibid 70.

[31]MOST, 'Guojia xinyida rengongzhineng zhili zhuanyeweiyuanhui zhaokai diyici huiyi, keyibu fubuzhang Limeng chuxi [The National Expert Committee for the Governance of New Generation AI convened the first meeting]' 2019, accessed October 31, 2022, http://www.most.gov.cn/kjbgz/201903/t20190328_145889.html.

[32]Pascale Fung and Etienne Hubert, *Confucius, Cyberpunk and Mr. Science: Comparing AI ethics between China and the EU* (Cornell University arXiv.org, 2021).

between self and others.[33] This contrasts with AI ethics developed in Western contexts that prioritize individual rights and do not always put the collective at the forefront.[34]

The principle 'agile governance' also needs to be read with caution. Agile governance indicates the idea of flexibly adapting AI governance to technological development and to routinely engage multiple stakeholders. This is the way the Specialist Committee has proposed to balance the need to address the unintended consequences of AI while not risking the undermining of technological innovation with rigid or hastily introduced regulation.[35] However, it remains to be seen what form of trade-off is permissible under the principle of agile governance. For example, questions linger as to whether privacy will be dismissed when it comes into conflict with 'harmony with others' or contradicts development commitments and the goal of achieving technological leadership set in the AI policies of Stage I.

It is notable that the Specialist Committee put forward a more detailed set of AI ethics in 2021, the *Code of Ethics for New Generation AI*, in which the principles of harmony and agile governance are absent. Instead, the new Code of Ethics lays bare six basic ethical requirements, including enhancing human well-being, promoting fairness and justice, protecting privacy and security, ensuring control and credibility, strengthening responsibility, and enhancing ethical literacy. It also includes 18 specific ethical requirements for AI management, R&D, supply, use and other specific activities. Accordingly, relevant stakeholders are 'strongly advised' to develop specific measures and control mechanisms to enforce appropriate supervision throughout the lifecycle of AI. While providing a starting place for governance, a set of principles can only rely on the willingness and sense of responsibility of stakeholders to follow them in practice. It remains to be clarified as to how to operationalize these principles in relevant policies, laws, regulations, professional practices, and daily routines.[36] Additionally, the Chinese culture of prioritizing responsibility over freedom, obligation over rights, and the group over the individual[37] is likely to lead to different practices in deciding whose well-being will be optimized, than practices observed in Western contexts.

By 2021, some ethical principles have been codified into laws indicating China is opting for a more heavy-handed model to manage and guide the transformations led by AI. The 2021 *Civil Code of China* in its Chapter 6 outlaws the divulgence, sale, modification, and illegal provision of personal information to others, including by government agencies. The 2021 *Data Security Law* proclaims that data collection and processing shall abide by laws and regulations, respect social morality and ethics, observe business and professional ethics, be honest and trustworthy, fulfill data security protection obligations, undertake social responsibilities, shall not endanger state security and public interest, or damage the lawful rights and interests of individuals and organizations (Articles 7&8). The *Personal Information Protection Law* that also entered into force in 2021 adds guidelines on collecting biometric data and consent requirements. These stipulate that users need to give active consent for the collection of biometric data, either through a popup window, a prompt box, or other means. Service providers are also required to tell users about the purpose, method, and scope of collection of the data, along with offering other clarification information.

Legalizing AI ethics especially data protection is a necessary step in the right direction, but again, these laws have not addressed the loophole of allowing government agencies to circumvent the data protection responsibility in the name of national security and public interest. Another factor limiting the enforceability of these laws is related to the fact that AI applications by governments and private corporations often fall outside of public oversight. Mechanisms to improve transparency and ensure that the public can play a vital role in supervising the development and deployment of AI

[33]Hepeng Jia, 'Yi Zeng: Promoting Good Governance of Artificial Intelligence', National Science Review 7(12), (2020), p. 1954.
[34]Cf. e.g. 'Ethics Guidelines for Trustworthy AI' (EU, 2019), accessed October 31, 2022, https://ec.europa.eu/futurium/en/ai-alliance-consultation.1.html.
[35]Jia (n 33) 1955.
[36]Fjeld and others (n 6) 5.
[37]Danit Gal, 'Perspectives and Approaches in AI Ethics: East Asia' in *The Oxford Handbook of Ethics of AI*, ed. Markus D. Dubber, Frank Pasquale and Sunit Das (Oxford University Press, 2020), p. 614.

systems, and that appropriate stakeholders are sufficiently consulted for important AI applications, remain to be deliberated.

4. The Chinese CoP and Ethical Considerations of AI

Overall, China's AI ethics have come a long way, springing up from scant awareness to articulated views, despite their limitations. This section draws linkage between China's shifting AI ethical accounts and the reconfigurations of the AI CoP over time. The changes in the CoP's boundaries, composition, and structure occurred in varying situated-learning and problem-solving practices—from AI research and development to integration of AI in specific economic sectors—at both the domestic and international levels.

4.1. A Nascent CoP Spearheaded by the Government

Chinese S&T policymaking, from the start, has been the purview of the country's most prominent technicians and industrial planners working within, or having close links with, the government.[38] Arising from the state's dominance, pre-2000s' innovation in the private sector was generally weak.[39] The development of AI, however, devolved the locus of Chinese technical innovation to local and non-state agents, especially the commercial sector. Most private tech start-ups were funded by venture capital firms from overseas, notably Silicon Valley.[40] Many of them, including Tencent and Alibaba, grew to possess more value than any state-owned enterprises that dominated the Chinese economy for three decades.

The changes within the tech sector happened so fast that the Chinese government has been playing catch up the entire time. When the Xi administration identified AI as the main focus of China's high-tech system, heeding the need to pursue quality economic growth as labor costs increase, leadership was fully aware of the challenges to keep pace with technology development. Although nationally directed strategic approaches still stand front and center on the S&T agenda, for example, from readings of major tech policy documents like the *Made in China 2025* and *Internet Plus* initiatives, 'a prudent yet accommodative regulatory approach' seems to have been tacitly agreed by Chinese leadership.

Chinese Premier, Li Keqiang, made the most elaborate explanations of this approach in 2018 at the World Economic Forum Annual Meeting of the New Champions in Tianjin, which is worth quoting at length:

> In the beginning we may only have limited knowledge of the workings of emerging industries, which can be vastly or even completely different from traditional ones. Therefore, mechanically following old regulatory methods will not work . . . Instead, we have established *a prudent yet accommodative regulatory approach*.
>
> Our approach is this: As long as new forms of business and new models do not go against laws or regulations, cross the line of security or damage public interest, we will *take an accommodative attitude* toward their innovations by leaving sufficient space for their development. If we are not immediately certain about the prospect of these new forms of business and new models, we will *allow time to prudently observe their performances instead of imposing a regulatory straitjacket right away* . . . Any regulatory measures to be taken will be carefully assessed to make sure that they serve the purpose of both deterring malpractices and guiding the sound and orderly development of new forms of business [emphasis added].[41]

[38]Feigenbaum (n 31) 99.
[39]Yanmei Zhu, Xinhua Wittmann and Mike W. Peng, 'Institution-based Barriers to Innovation in SMEs in China', Asia Pacific Journal of Management 29(4), (2012), p. 1131.
[40]K. C. Fung and others, 'Digital Silk Road, Silicon Valley and Connectivity', Journal of Chinese Economic and Business Studies 16(3), (2018), p. 313.
[41]'Embracing the New Industrial Revolution' (*China Daily*, 2018), accessed November 1, 2022, http://www.gov.cn/xinwen/2018-09/19/content_5323722.htm.

This new regulatory approach presumes the Chinese government put prominent scientists, researchers, and principal industrial cadres (both public and private) in the driver's seat to pursue an innovation-oriented economy. Concomitantly, the leadership shall pledge resources to facilitate the development and commercialization of new technologies, allow room for the development of non-state initiatives, and commit to practical regulations enlightened by the technological reality.

This new regulatory style became the origin of China's AI CoP. Important as an integral part of the emerging AI CoP was a shared domain of interest and interdependence between members: Private companies were enthusiastic cooperators with the government on digital initiatives, incentivized by the appeal of gaining substantial resources and influence over policymaking that favor business development; Academics were aspired to leverage their knowledge to influence policymaking; Government agencies through a closer engagement with non-state parties could access technical expertise and exert influence over the entire AI field. All of these strands converged in the formulation of a CoP, bound together by a sense of 'joint enterprise',[42] namely a strategic vision of national high-tech progress.

The government played a vital role in deciding who can be included or excluded in the CoP, especially through picking partners for cooperating on massive, nationally directed strategic technology programs. Some important steps towards a nascent CoP include the creation of 19 national data labs in 2016 by the National Development and Reform Commission, as part of the *Made in China 2025* program; and the development of four national AI innovation platforms in autonomous driving, smart cities, medical imaging, and natural language processing in 2017, led by Baidu, Alibaba, Tencent, and iFlyTek, respectively.[43]

The government-led CoP was able to unite members in an effort to put the country at the forefront of cutting-edge technological areas despite heterogeneity in their interests. From the standpoint of private companies, the partnership with the government is both a privilege and a burden. MOST's designation in developing an AI platform, for example, amounts to recognition of a company's special status in a certain sector. Official state support and praise can lead to the early creation of monopoly in that sector, to the obvious benefit of companies such as Baidu, Alibaba and Tencent.[44] However, as tech companies are pulled closer to the government, the once proudly independent, innovative, and entrepreneurial start-ups will open companies' operation to penetration by the government. Conforming to national policies and priorities may also hurt company interest in certain cases.[45] This is to suggest that there are differences in values, interests, and practices within the CoP. However, these differences do not preclude shared practices and co-production of knowledge towards a common goal.

4.2. The Spread of Ethical Awareness Among CoP Members

The formulation of CoP where discussions were not confined to exchanges within the government (or between the government and Track II actors) ultimately proved to be important for the spread of ethical awareness in China. This is because tech experts from academia and the private sector have become pivotal points of contact for new assessments of AI impacts in the 2010s.

Even in 2015 and 2016 (Stage I) when ethical considerations in AI development were scant, information about the unintended effects of innovation began to seep into China. A first stream of that reassessment took place among scientists and engineers after a series of international forums.

[42]Andrew Cox, 'What are Communities of Practice? A Comparative Review of Four Seminal Works', Journal of Information Science 31(6), (2005), p. 527.

[43]Jeffery Ding, 'Deciphering China's AI dream' 2018), accessed November 1, 2022, 21, https://www.fhi.ox.ac.uk/wp-content/uploads/Deciphering_Chinas_AI-Dream.pdf.

[44]Barry Naughton, 'Chinese Industrial Policy and the Digital Silk Road: The Case of Alibaba in Malaysia', Asia Policy 15(1), (2020), p. 23.

[45]Interview with representatives of Chinese AI companies (Shenzhen, 24 July 2019). The interviewees were reticent on the details of the negative side of working with the government due to the sensitive nature of this topic.

The 2015 World Economic Forum in Dalian, and the 2017 AI for Good Summit organized by International Telecommunication Union and UNESCO are a few international events that led to exchanges on ethical issues. Foreign scientists and politicians offered new ideas about the role of ethics in high-tech development writ large.

Awareness of security, privacy, and ethics issues associated with AI grew as Chinese companies began to act more globally. This included collaboration with foreign business partners, as well as sourcing and recruiting technology talent overseas. Baidu, for example, have AI R&D operations in the US and Europe.[46] Alibaba invested $15 billion between 2017 and 2020 in building a high-tech research team spread across the world, titled the Discovery, Adventure, Momentum and Outlook Academy. Tencent also set up an AI research lab in Seattle in 2017.[47]

The awareness of AI's ethical risks was spread through engagement within the AI CoP as well as with wider AI communities at various government initiated international/domestic forums. The World Internet Conference in Wuzhen, World AI Conference in Shanghai, Zhong Guan Cun Forum in Beijing, the Hong Kong AI Summit and World Robot Conference in Beijing are but a few examples of the numerous AI-themed forums organized in China where CoP members exchanged ideas. Private initiatives such as the Global Festival for AI Ideas organized in 2017 by Bytedance, the parent company of video sharing app TikTok, also facilitated learning between leading international and Chinese AI scientists, policymakers, industry executives, and investors.[48]

The spread of ethical awareness among CoP members led to changes in policymaking in Stage II (2017–2018), which show some more careful thought for proactive measures that should be taken to address the unintended consequences of AI applications. For example, at the ninth collective study session of the Political Bureau of the Communist Party Central Committee in 2018, Xi stressed the need to strengthen research and the prevention of the risks of AI to 'safeguard the interests of the people and national security, and ensure that AI is safe, reliable and controllable'.[49] Wan Gang, former Minister of Science and Technology, made several public remarks over the need to work on laws and regulations to tackle issues related to ethics, job structure, personal privacy, and national security that AI development may bring.[50]

Parallel progress was made in academia and the private sector. Chinese researchers highlighted the importance of AI ethics in a range of papers and reports.[51] Tencent announced its 'available, reliable, comprehensible, controllable' principles for AI in 2018 and released a report on *Technology Ethics in a Digital Society* in 2019.[52] Baidu joined the Partnership on AI in October 2018, which is an international consortium tasked to develop ethical guidelines for AI research, including ensuring research does not violate international law and human rights.[53] Megvii published the *AI Application Guidelines* in July 2019 that includes six dimensions of regulations intended to steer the sustainable

[46]'China, Driverless Vehicles and Cities of the Future' (*China.org.cn*, 2018), accessed November 1, 2022, http://www.china.org.cn/opinion/2018-07/14/content_56647579.htm.

[47]Wang Ying, 'Placing the Chips on Artificial Intelligence' (*China Daily*, 2017), accessed November 1, 2022, http://usa.chinadaily.com.cn/china/2017-12/01/content_35165525.htm.

[48]'Bytedance Hosts First "Global Festival for AI Ideas" to Drive Global Dialogue on the Power of AI Technology for Social Good' (*PR Newswire Asia*, 2017), accessed November 1, 2022, https://en.prnasia.com/releases/apac/Bytedance_Hosts_First_Global_Festival_for_AI_Ideas_to_Drive_Global_Dialogue_on_the_Power_of_AI_Technology_for_Social_Good-196079.shtml.

[49]'Set up a National Ethics Committee for Science and Technology! Xi Jinping has Charted the Course for Standardizing the Development of Cutting-Edge Science and Technology' (*CRJ Online*, 2019), accessed November 2, 2022 http://news.cri.cn/20190726/5f1b2be6-b567-71de-72b5-4fd245926280.html.

[50]'China Eyes Wider Application of AI Technologies' (*People's Daily*, 2018), accessed November 2, 2022, http://en.people.cn/n3/2018/0314/c90000–9437000.html.

[51]e.g., Zeng Yi, Lu Enmeng and Huangfu Cunqing, *Linking Artificial Intelligence Principles* (Cornell University arXiv.org, 2019); *Beijing AI Principles* (Beijing Academy of Artificial Intelligence, 2019); Fu Ying, 'Understanding the AI Challenge to Humanity' (*China-US Focus*, 2019), accessed November 2, 2022, https://www.chinausfocus.com/foreign-policy/understanding-the-ai-challenge-to-humanity.

[52]'Zhineng shidai de jishu lunliguan-chongsu shuzi shehui de xinren [Technological Ethics in the Age of Intelligence: Rebuilding Trust in Digital Society]' (*Tencent AI Lab*, 2019), accessed November 2, 2022, https://tisi.org/10890.

[53]Wenjun Wu, Tiejun Huang and Ke Gong, 'Ethical Principles and Governance Technology Development of AI in China', Engineering 6(3), (2020), p. 302.

development of AI, namely reliability and security, accountability, fairness and diversity, timely correction, data security, and privacy protection.[54]

CoP members were not necessarily on the same page despite sharing concerns over the ethical risks of AI. A typical case in point are the remarks made by Baidu's chief executive Li Yanhong over the Chinese public's lax attitude on privacy in 2018 – '… they are able to trade privacy for convenience, safety and efficiency' – which trigged both public outrage and government concerns over data abuse.[55] Chinese companies, being profit-oriented in nature, are benefiting from weak data protection, which has allowed for the collection of large volumes of personal data to power better consumer experiences and marketing strategies. In contrast, the government on the one hand developed reservation about private companies' unbounded data collection, but on the other hand, engaged in mass data collection for national security and control, for example, to build the Social Credit System. This equally may lead to personal data breaches and misuse. The convergence of practitioners' expectations of what is appropriate AI use is an ongoing, contested process. Before clearer ideas of AI ethics take shape in the practices of using AI and responding to AI challenges, vague statements on ethics as those included in Stage II policies are more likely to emerge.

4.3. Joint Problem-Solving and CoP Restructuring

The transition of China's ethical considerations to Stage III (2019 onwards), when policy aspirations to tackle AI's ethical risks were articulated beyond the rhetorical level, was only made possible by the AI CoP's joint problem-solving and restructuring.

Internationally, CoP members were pressured to take AI ethics seriously in jointly responding to some common challenges. Especially as the rivalry between China and the US extended to technology, since the Trump Administration, the US has introduced several plans to bolster security reviews of frontier technologies to prevent China from accessing technology of strategic military importance.[56] Close links between AI companies and the Chinese government, which have brought the CoP to life, however, spurred scrutiny over Chinese companies' motives and ethical positions. For example, rhetoric such as giving Chinese AI companies access to data and systems is tantamount to providing information to the Communist Party abounded.[57] This type of rhetoric has limited the Chinese AI industry's international expansion. Combating this rhetoric became a proximate cause of joint problem-solving by the AI CoP in Stage III.

Another issue that loomed large was privacy. Tougher privacy restrictions, represented by the *EU General Data Protection Regulation*, were introduced worldwide around 2018. Chinese companies, in cooperation with the Chinese government and researchers also needed to take action to address concerns of their Western counterparts over their greater leeway to access and mine personal information.[58]

CoP members' ongoing responses to these international challenges both seemingly encompass shallow practices of ethics-washing and deeper-level self-reflection on AI governance approaches. Take China's sharp reactions to the renewed US Entity List as an example. In October 2019, the US Department of Commerce added 20 Chinese government organizations and eight tech companies to the 'Bureau of Industry and Security Entity List' to punish Beijing for its treatment of Muslim minorities. This action bars these entities from purchasing components from US companies without

[54]'Kuangshi fabu rengongzhineng yingyong zhunze changdao AI jishu jiankang kechixu fazhan [Megvii Released "AI Application Guidelines" to Advocate for the Healthy and Sustainable Development of AI Technology]' (*China News*, 2019), accessed November 2, 2022, https://baijiahao.baidu.com/s?id=1638457497885732541&wfr=spider&for=pc.

[55]Roberts and others (n 29) 69.

[56]Louise Lucas and Emily Feng, 'China's Push to Become a Tech Superpower Triggers Alarms Abroad' (*Financial Times*, 2017), accessed November 2, 2022, https://www.ft.com/content/1d815944-f1da-11e6-8758–6876151821a6.

[57]Yifan Yu, 'Why China's Ai Players Are Struggling to Evolve Beyond Surveillance' (*Nikkei Asia*, 2019), accessed November 2, 2022, https://asia.nikkei.com/Spotlight/The-Big-Story/Why-China-s-AI-players-are-struggling-to-evolve-beyond-surveillance.

[58]Douglas MacMillan, Sam Schechner and Liza Lin, 'U.S. and Chinese Companies Race to Dominate AI' (*The Wall Street Journal*, 2018), accessed November 2, 2022, https://www.wsj.com/articles/why-u-s-companies-may-lose-the-ai-race-1516280677.

approval from Washington, largely following the same blueprint applied by the US government against Huawei since February 2019.[59]

During and after the US Federal Bureau's investigation that put Chinese AI companies on the renewed entity list, Chinese policy circles began to warn against a long-term US–China technology war and a more uncertain environment facing Chinese businesses operating overseas. Numerous researchers suggested that enterprises drum up legal work on patent disputes, infringements and ethics.[60] Companies, such as the video surveillance firm Hikvision, and two facial recognition technology firms SenseTime and Megvii, responded by setting up AI ethics committees and issuing claims of integrity, human oversight, accountability, diversity, and privacy protection in AI development.[61] The Chinese government, in addition to denouncing US claims, pledged to commit more policy support and funding for AI research and applications to reduce its reliance on foreign technologies.[62] Chinese top leaders such as Xi Jinping and Foreign Minister Wang Yi urged for an inclusive approach to develop 'healthy' and 'secure' AI by proposing the *G20 AI Principles* and the *Global Initiative on Data Security* in 2020.[63]

Domestically, debates about ethics took on special urgency as CoP members began to confront mounting evidence of the negative impacts of AI.[64] Domestic challenges have been both a dividing and uniting factor. They are dividing in that governance efforts to mitigate technology threats to public welfare and regime legitimacy may not always fit easily into companies' ordinary business practices. Baidu and AliPay were forced to overhaul their data policies in 2019 for failing to comply with the *Cyber Security Law*. By 2020, the Chinese Ministry of Public Security banned 100 apps for user data privacy infringements, with 41 more being required to make changes relating to data collection and storage.[65] Similarly in July 2021, the Cyberspace Administration of China removed Didi Chuxing, China's largest mobile transportation platform, from app stores for its violations of regulations over the collection and use of personal data.[66] After the introduction of the 2021 *Personal Information Protection Law*, China's largest internet companies, including JD.com, Tencent and Alibaba, were again compelled to promulgate new privacy agreements and set up institutions to oversee the protection of personal information.[67] The nationalist push for data use and government actions on the basis of public interest have evoked dissent from the private sector, although these were quickly silenced by the government.[68]

Meanwhile, domestic ethical challenges are a uniting factor in that they emboldened policy-makers to develop and spread guidelines in closer cooperation with industrial representatives and researchers. Numerous multi-stakeholder teams were set up to regulate AI technologies. Take the

[59]Yuan Yang and Mercedes Ruehl, 'China's Leading AI Start-Ups Hit by US Blacklisting' (*Financial Times*, 2019), accessed November 2, 2022, https://www.ft.com/content/663ab29c-e9bd-11e9-85f4-d00e5018f06.

[60]Li Zheng, 'Meiguo tuidong zhongmei keji tuoguo de shenceng dongyin ji changqi qushi [The Underlying Motivation and Long-term Trend of "Decoupling" between China and the US]' (2020) 10(1) ×iandai guoji guanxi [Contemporary International Relations] 33; Chi ZhiPei, 'Meiguo duihua keji ezhi zhanlue de shishi yu zhiyue [The Implementation and Restriction of US Science and Technology Containment Strategy Against China]', Taipingyang xuebao [Pacific Journal] 28(6), (2020), p. 27.

[61]Sarah Dai, 'China Facial Recognition Unicorn Megvii Pledges to Guard Against Weaponization of AI on Road to IPO' (*South China Morning Post*, 2019), accessed November 2, 2022, https://www.scmp.com/tech/enterprises/article/3024395/china-facial-recognition-unicorn-megvii-pledges-guard-against.

[62]'Top 10 Open Innovation Platforms for Next Generation AI' (*China Daily*, 2019), accessed November 2, 2022, https://www.chinadaily.com.cn/a/201910/11/WS5d9fb341a310cf3e3556fca0.html.

[63]'Wang Yi: China proposes global Data Security Initiative' (*CGTN*, 2020), accessed November 2, 2022, https://news.cgtn.com/news/2020-09-08/Wang-Yi-China-proposes-global-data-security-initiative-TBYqRj0kYo/index.html.

[64]Interview with representatives of Chinese AI companies (Shenzhen, 24 July 2019). See also, Li Xia, 'Jiyu dashuju de suanfa shashu xianxiang de zhengce yingdui cuoshi [Policy Responses to the Phenomenon of Algorithm Killing Based on Big Data]', Zhongguo keji luntan [China Science and Technology Forum] (1), (2019), p. 3.

[65]ÓhÉigeartaigh and others (n 6) 578.

[66]Sophie You and Emilia Jin, 'China Removes Didi from App Stores: What We Learned from the Case and China's Cybersecurity Regime' (*China Briefing*, 2021), accessed November 2, 2022, https://www.china-briefing.com/news/china-removes-didi-from-app-stores-lessons-learned-chinas-cybersecurity-regime/.

[67]'Personal Information Protection Law Implementation, How to Use This Law? A Number of Experts Say So', *Tencent*, 11 November 2021, https://new.qq.com/omn/20211125/20211125A02K3B00.html.

[68]Interview with representatives of Chinese AI companies (Shenzhen, 24 July 2019).

case of ZAO, which is a deepfake face-swapping app that allows users to insert their faces in movies or TV series. Its launch in 2019 created widespread social concerns over the app's claim of having ownership over photos uploaded to the app and the associated risk of data leakage. The Ministry of Industry and Information Technology was directly involved in reviewing the use of ZAO only a few days after its launch.[69] The National Information Security Standardization Technical Committee subsequently established a multi-stakeholder team to compile a national standard for facial recognition technology, including scholars and entrepreneurs from tech firms, including SenseTime, Tencent, Ant Financial (the finance arm of Alibaba), Pingan Group, Xiaomi, and iFlyTek.[70]

The private sector, in seeking to address rising ethical issues raised by AI and paired with the desire to influence policymaking, was also actively involved in CoP problem-solving. For example, numerous business executives submitted proposals to the 2019 gathering of China's legislative and political advisory bodies, known as the 'two sessions', to advise on ethical regulations of emerging technologies.[71]

This process of joint problem-solving is demonstrated to be vital for the thriving of the CoP. While the initial work in establishing the community around 2015 could certainly have been useful, members were not ready to learn together and work on problems among themselves—especially because the CoP was initially instrumentally cultivated by the Chinese government that brought in members with officially assigned supporting roles. In particular, private companies were primarily concerned with business strategy instead of government initiatives. However, as CoP members found ways to meaningfully attend to their common problems, they were engaged in regular formal and informal discussions, sharing their views, establishing new working relationships, and developing tools and techniques as solutions to their problems.

These ongoing recurrent problem-solving practices drove the transformation of comparatively unstable network connections between CoP members to a more institutionalized structure by 2019. This was manifest in MOST's New Generation AI Governance Specialist Committee, the Chinese Association for AI (CAAI)'s Professional Committee for AI Ethics, as well as a diverse array of expert groups vested by politicians with decision-making power over specific subsets of AI regulations. The aforementioned multi-stakeholder team set up to regulate facial recognition technology is just an example of these specific expert groups.

Apart from the establishment of more formal channels of communication and decision-making, joint actions of developing supporting tools and systems were expanded through institutions such as the 'AI Innovation and Development Pilot Zones' and 'National New Generation AI Open Innovation Platforms'.[72] These structures provide rapid, informal communication channels that allow CoP members from different sectors to circumvent the bureaucratic process of interagency coordination and decision-making in China.

4.4. The Formulation of a Shared Repertoire

As AI CoP members learn together in practice, they were found to gradually organize themselves around a shared repertoire of concepts, artifacts, routines, and ways of doing things.[73] In

[69]Lu Zhian, 'Facial Recognition App a Double-Edged Sword' (*China Daily*, 2019), accessed November 2, 2022, http://www.chinadaily.com.cn/global/2019-09/06/content_37508238.htm.

[70]ibid.

[71]They included Li Yanhong, Baidu's chief executive; Ma Huateng, Tencent's chairman; Zhang Jindong, Suning's chairman; Wang Xiaochuan, Sogou's chief executive; and Zhou Hongyi, Qihoo 360 Technology's chairman. See Qian Tongxin, 'China Pushes for Data Protection Legislation' (*Yicai Global*, 2019), accessed November 2, 2022, https://www.yicaiglobal.com/news/china-pushes-for-data-protection-legislation.

[72]Since 2019, MOST has granted 15 AI innovative development pilot zones, including Beijing, Shanghai, Shenzhen, Tianjin and Hangzhou, with another 5 to be set up by 2023. In the same year, MOST set up a 'national team' that involves 10 AI tech champions to lead the development of open innovation platforms for AI-related basic theory, core technologies, and software and hardware support systems, products, and applications.

[73]Wenger (n 8) 72–73.

practitioners' learning in daily activities and interactions with international stakeholders, values such as human-centrality, transparency, responsibility, privacy, equality, and justice are gradually seen as some of the necessary cautions for AI development. As these values were further circulated within the AI CoP, they were eventually incorporated into policies in Stage III.

Not only were the CoP members forging similar ideas about what ethics comprise, they also formulated a similar *modus operandi* in developing AI ethics. The authors observed some interesting parallels among CoP members in describing how to advance AI ethics. For example, the CAAI ethics committee defined the mission of AI ethics as about 'maximizing benefits, rather than just putting restraints on what can be deployed'.[74] Li Renhan, a member of the National Governance Committee for New Generation AI, concurred in commenting 'our regulatory and supervision mechanisms should steer it [AI] in the right direction and leave room for exploration and growth'.[75] Company representatives, such as those from Tencent, also expressed support for a balanced approach to AI regulation, with a view that AI ethics is meant to guide, not constrain business development in the long term.[76] Importantly, this rhetoric reflects a continuation of the 'prudent yet accommodative' approach that top Chinese leadership has taken when it comes to regulating emerging industries. This *modus operandi* in developing AI ethics gives comfort to the private sector that wants minimal regulations that could slow its technological development and therefore potentially impede its ability to grow profit; but also appeals to the government and academics that may want to ensure that necessary precautions are implemented while not stymieing rapid technology development.

The formulation of a shared repertoire should not blind us to the fact that practitioners within the CoP may disagree on the best way forward. Since AI is an emergent issue area, contested negotiation over ethics of its research, development, and use, namely what is right and wrong, are ongoing within the CoP. Government actors that are sitting at the top of this hierarchical CoP very often can override other stakeholders, reflected in Chinese AI ethics that have relatively weaker regulatory effects on the government. Despite this imbalanced relationship, it is certain that non-state actors' participation in the CoP will continue. This is not only because of the obvious appeal of government resources and support but also opportunities to gain greater influence on China's AI decision-making. Domestic and international challenges from AI-related developments and the establishment of the formal multi-stakeholder cooperation channels outlined above will also keep driving CoP members closer. In this way, CoP members will continue to learn together and negotiate boundaries for AI use to ensure the quality and effectiveness of future AI development. The Chinese approach to ethical AI is still in its infancy, and it will continually evolve in CoP members' situated-learning and problem-solving practices in AI governance.

5. Conclusion

This article builds on the concept of CoPs to examine the shared situated-learning and problem-solving processes at play in China's policymaking on AI ethics. It indicates important policy implications of nurturing communication and cooperation between stakeholders from different backgrounds to navigate rapidly changing and uncertain governance in the field of AI.

While perceptions and understandings of AI ethics are likely to be profoundly shaped by local cultural and social contexts, Chinese policies developed to cope with the unintended consequences of AI contain overlapping concepts with Western counterparts, such as the EU's *Ethical Guidelines for Trustworthy AI* (2019) and the US Department of Defense's *Five Principles of AI Ethics* (2019). They share the idea that AI must be used for the good of humankind, and that it must be used in ways that are safe, transparent, equitable, and responsible. As international law and norms on AI ethics are still

[74]Li Mi, 'China Focus: China Addresses Building Ethical AI' (*Xinhua*, 2019), accessed November 2, 2022, https://www.sohu.com/a/320823571_505819.

[75]Zhang Zhihao, 'Principles Set to Regulate AI Research, Applications' (*China Daily*, 2019), accessed November 3, 2022, https://www.chinadaily.com.cn/a/201906/18/WS5d08234ea3103dbf14328bb9.html.

[76]Interview with Tencent representatives (Beijing, 11 August 2021).

emergent, including those being deliberated at UNESCO and G20, and under the framework of the Convention on Certain Conventional Weapons (CCW), these shared values undergirding national policies can form the basis for constructive, transnational dialogue on AI governance between countries.

That said, how countries actually translate their AI ethics into action depends not so much on the principles 'on the book', as the oversight structures that are responsible for enforcing them 'on the ground'. Although recent AI ethical guidelines developed within China have real promise, it remains to be seen to what extent government actors can comply with the expected behaviors these guidelines outline, and be held accountable for misconduct given their disproportionate power in relative to other actors. The culture of opening governing processes to public scrutiny is generally lacking in China, which may constitute a significant obstacle to effective oversight and government agencies may forbear following AI ethics unless necessary. It is too early to assess China's enforcement and oversight structures, which could be a fruitful direction for future research.

Additionally, China's AI agenda represents the persistence of 'top-level design' state-centric approaches to technology development in contrast with the free-market approach in the West. Despite the broadening of AI CoP in China, policymaking on AI is still largely a reflection of the perspectives of elites that misses the voices of civil society. This is a view increasingly shared by some policy elites and scholars in China, including Xue Lan, the head of National New Generation AI Governance Specialist Committee.[77] As China is working towards setting rules and standards in AI, it is vital to address these concerns so its views can be better understood and accepted worldwide.

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[77]Xue Lan and Jia Kai, 'Rengongzhineng lunli wenti yu anquan fengxian zhili de quanqiu bijiao yu zhongguo shijian [A Global Comparison of Ethical Issues and AI's Safety Risks Management and Chinese Practices]', Gonggong guanli ping lun [Public Administration Review] (1), (2021), p. 122.