CO-REGULATION OR CAPITULATION ? ADDRESSING CONFLICTS ARISING BY AI AND STANDARDIZATION

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Co-regulation or Capitulation?
Addressing conflicts arising by AI and standardization

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Summary

While an enormous number of business models and opportunities based on artificial intelligence (AI) turn it into an essential technology for competitiveness in the digital age, risks arise as well, recognized globally in a vast amount of policy statements. An adequate regulation that reconciles high-level ethics, dynamic technological progress and enforceable rules calls for cooperation, which can be found in legally referenceable technical standards. Such co-regulation reduces frictions between static rules and dynamic technology and allows for a flexible and dynamic legal framework for AI. But standard-setting is subject to strong competition and not without conflict. The implications of competition for AI-standards and differing ethics and values on AI-standardization are not yet clear. Competition due to diverging ethical approaches and ambitions means that standardization is more than a merely technical issue. While this aspect is reflected in part by AI-standards presented in this paper, important specifications and guidance for foreseeable collisions and conflicts are missing. This has to be accounted for in emerging regulation of AI. Further concretization with regard to the structure, competencies and boundaries of co-regulation is necessary. This paper pursues these issues with a focus on conflict and convergence in the regulatory framework of AI applications across jurisdictional boundaries. It provides insight in emerging AI-standards and obstacles for cooperation in national approaches to AI, thereby offering a starting point for further research regarding regulatory frameworks that incorporate AI-standards as an instrument of co-regulation. This paper shows that standards form already an important instrument in AI-regulation and outlines three approaches how to advance this development, indicating that the challenges for co-regulation of AI can most likely be mastered.

A. INTRODUCTION

[1] Measurable advantages in business operations turn AI into an essential technology for competitiveness in the digital age[2]. Growing industry adoption raised the question of rules for AI and sparked the publication of countless policy papers and research regarding ethical development and deployment of AI-systems[3], moving the discussion far beyond *Asimov's* "robot laws". The need for regulation that reconciles high-level ethics, dynamic technological progress and enforceable rules calls for multi-stakeholder cooperation in the process of developing and enforcing rules, which can be found in co-regulation. This encompasses in the broadest sense all variations of regulation between state-exclusive and industry self-regulation[4]. Combining abstract legislation with concrete technical standards constitutes one form of such co-regulation, reducing frictions between static rules and dynamic technology. In general, technical standards can allow for a flexible and dynamic legal framework in three ways: They are embedded or referenced in legislation and regulation, or they can serve as guidelines in the application and interpretation of general legal terms and concepts[5]. For AI, standards that address terminology, processes and products could determine how AI has to be developed, implemented and evaluated by industry and supervisors. This could create a level playing field globally while being voluntary and innovation-friendly[6].

[2] However, due to its far-reaching effects, standard-setting is subject to strong competition and not without conflict. The implications of competition for AI-standards and how the ethical dimension of AI affects

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2 For common examples in finance see Cavanillas/Curry/Wahlster, «The Big Data Value Opportunity» in Cavanillas/Curry/Wahlster, *New Horizons for a Data Driven Economy*, Springer, 2016, pp. 3, 4; Frost/Gambarcorta/Huang/Shin/Zbinden, *BigTech and the changing structure of financial intermediation*, BIS Working Paper, 2019.

3 Jobin/Ienca/Vayena, *Artificial Intelligence: the global landscape of ethics guidelines*, arxiv 2019; Russell, «Provably beneficial artificial intelligence» in De Grey/Rossiter, *The Next Step: Exponential Life*, BBVA OpenMind, 2017; Bostrom/Yudkowsky, «The Ethics of Artificial Intelligence», in Ramsey/Frankish, *Cambridge Handbook of Artificial Intelligence,* Cambridge 2014; Wallach/Allen, *Moral Machines,* Oxford 2009.

4 See Hoffmann-Riem, «Artificial Intelligence as a Challenge for law and Regulation» in Wischmeyer/Rademacher, *Regulating Artificial Intelligence*, Cham 2020, p. 18-22, 24; Barraud, «La corégulation d'Internet (ou comment répondre á la plurinormativité par l'internormativité) - une contribution francaise», (2018) *Les Cahiers de Droit* Vol. 59, pp. 91-97.

5 For example terms like "state of the art", "best available", "best practicable". See Büthe/Mattli, *The New Global Rulers*, Princeton 2011, pp. 6, 17, 205; Büthe/Mattli, «Setting International Standards», (2003) *World Politics* Vol 56, p.7; See for other jurisdictions and areas; Kablan/Oulai, «L'essence des approches du droit cyberspatial et l'opportunité de la co-régulation», (2009) *Revue générale du droit* Vol 39, pp. 37-39; Busch, «Towards a "New Approach" in European Consumer Law: Standardisation and Co-Regulation in the Digital Single Market», (2016) *EuCML*, pp. 197, 198; Peng, «Private Cybersecurity Standards? Cyberspace Governance, Multistakeholderism, and the (Ir)relevance of the TBT Regime», (2018) *Cornell International Law Journal* Vol. 51, pp. 450-453, 455.

6 Scherer, «Regulating Artificial Intelligence», (2016) *Harvard Journal of Law & Technology* Vol. 29, pp. 373, 387-388, 395; Hoffmann-Riem, «Artificial Intelligence as a Challenge for law and Regulation» in Wischmeyer/Rademacher, *Regulating Artificial Intelligence*, Cham 2020, pp. 21-23; Büthe/Mattli, *The New Global Rulers*, Princeton 2011, p. 4.

the relationship between cooperation and competition are not yet clear. While research about AI-regulation is emerging, it is largely abstract, focusing on regulatory experience[7], national frameworks[8] or cooperation[9]. This paper seeks to sharpen the view on AI-regulation by providing insight in where emerging co-regulation might find AI-standards (B) and how competition and obstacles for cooperation are rooted in national AI-strategies (C), thereby offering a starting point for conception of future regulatory frameworks and re-evaluation of instruments for co-regulation (D).

B. REGULATING AI WITH THE HELP OF STANDARDS

[3] Standards for AI are being suggested in various kinds of documents, ranging from ethical guidelines to technical specifications. For the aim of this paper and in the context of co-regulation in need for specific rules, standards will be understood only as more or less technical specifications, which from a process-oriented view can roughly be categorized into informal standards produced by companies and consortia in marked-driven processes, and formal standards developed in a network of state or state-accredited organizations following a set procedure[10].

I. INFORMAL STANDARDS FOR AI

[4] In the IT-sector, self-regulation by company-produced informal standards is common, making market dominance of companies a decisive factor for regulatory outcome[11]. Therefore, leading technology companies could direct the way their industry approaches AI. If this will be the case is uncertain as AI is still a field of dynamic development, but we can already observe the formation of standardization consortia[12]. For example, MLPerf is an approach to measure specific AI performance as fairly as possible, taking ethics into consideration[13]. On the other hand, as

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7 Cihon/Maas/Kemp, *Should Artificial Intelligence be Centralised? Design Lessons from History*, 7.2.2020, retrieved from < https://www.cser.ac.uk/resources/should-AI-governance-centralised>.

8 Scherer, «Regulating Artificial Intelligence», (2016) *Harvard Journal of Law & Technology* Vol. 29.

9 Cihon, *Standards for AI Governance*, Oxford 2019, retrieved from <https://www.fhi.ox.ac.uk/wp-content/uploads/Standards_-FHI-Technical-Report.pdf>.

10 For a different terminology see for example Belleflamme, «Coordination on formal vs. de facto standards: a dynamic approach», (2002) *European Journal of Political Economy* Vol. 18, p. 153.

11 See Büthe/Mattli, *The New Global Rulers*, Princeton 2011, pp. 27, 37.

12 For example World Wide Web Consortium (W3C), Industrial Internet Consortium (IIC), MLPerf, Alliance for Internet of Things Innovation (AIOTI), FIWARE.

13 MLPerf Training Rules, 2.1, see <https://github.com/mlperf/training_policies/blob/master/training_rules.adoc> and <https://mlperf.org/about/#philosophy>.

informal standards are criticized for a deficit of political accountability and regulatory structure[14], formal standardization is gaining momentum and could play an integral part in AI-regulation.

II. FORMAL STANDARDS FOR AI

[5] For AI as a global technology utilized by global actors, substantial standardization occurs on the international level, where standards are developed in centrally coordinated global organisations, in which countries can't be direct members. As early as 2017, the International Standards Organisation (ISO) and International Electrotechnical Commission (IEC) established a joint subcommittee working on AI-specific challenges, which already issued documents addressing the data aspect of AI[15], while other committees work on adherent issues[16].

[6] In parallel, there are initiatives on the national level as well. In 2019 the German standardization organisation DIN published **DIN SPEC 92001-1** regarding quality assessment and risk evaluation of (ethically) critical AI-systems[17]. For the USA, the American National Standards Institute (ANSI) publishes standards developed by accredited private organizations[18] such as the Institute of Electrical and Electronics Engineers (IEEE), whose **IEEE P7000-series** is expected to have significant impact. Its first document on AI establishes an impact assessment[19] with further projects addressing transparency, privacy, bias and value-based AI[20]. Similarly, the Standards Council of Canada published the privately developed AI-standard **CAN/CIOSC 101:2019** for design and usage of AI-Systems, introducing minimum requirements for the organizational structure of AI-companies

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14 Cath/Wachter/Mittelstadt/Taddeo/Floridi, «Artificial Intelligence and the 'Good Society'», (2018) *Sci. Eng. Ethics* 24, pp. 505, 507, 513, Saurwein/Just/Latzer, «Governance of Algorithms: options and limitations», (2015) *info* Vol 17 No. 6, pp. 35, 41.

15 Publications of ISO/IEC JTC 1/SC42 address big data terminology, reference architecture, Use cases and derived requirements, trustworthiness of AI and a Standards roadmap, while work in development addresses issues from Governance implications, over terminology and an Assessment of robustness to Bias in AI systems, Risk Management and computational approaches, see <https://www.iso.org/committee/6794475/x/catalogue/p/1/u/0/w/0/d/0>.

16 Software and processes, programming languages, graphics and data representation, cybersecurity and privacy protection, see ISO/IEC JTC 1 SC 7, 22, 24 and 27.

17 While it doesn't contain specific requirements concerning ethical conduct, it introduces a differentiation with regard to risk and criticality, referring to the relevance of AI-systems to safety, security, privacy or ethics, see DIN SPEC 92001-1:2019-04 - Artificial Intelligence - Life Cycle Processes and Quality Requirements Part 1: Quality Metamodel, pp. 6, 15, 16.

18 For example the AI-standard ANSI/CTA-2089 for terminology in health care.

19 IEEE 7010-2020 - IEEE Recommended Practice for Assessing the Impact of Autonomous and Intelligent Systems on Human Well-Being.

20 See Koene/Smith/Egawa/Mandalh/Hatada, IEEE P70xx, Establishing Standards for Ethical Technology, Proceedings of KDD, KDD'18, 2018.

and for processes to implement ethical considerations, without specifying ethical requirements itself[21].

III. STANDARDS BETWEEN COOPERATION AND COMPETITION

[7] Despite the early stage of AI-standardization, this selection of AI-documents indicates that standardization is being taken seriously on the global and national level and that ethical issues are considered essential for AI. Regulatory frameworks could soon utilize AI-standards as a form of co-regulation.

[8] But as the race for AI-standards has started, competition is emerging, illustrated by the different approaches between formal and informal standardization. Another form of competition, between states, seems at first sight contradictory to the harmonizing function of international standards that reduce barriers to trade in global markets across jurisdictions[22]. In this spirit, the Agreement on Technical Barriers to Trade obliges members of the World Trade Organization to use international standards as the technical basis of domestic laws and regulations[23]. Indeed, this indicates how standards spread globally : They provide a first-mover advantage to the initiator, which results in a strong incentive to push national standards globally in support of domestic champions[24]. Complaints against voting blocs illustrate the competition inherent to international standardization[25]. For AI, another aspect could prove to be an obstacle for international cooperation: The underlying conflicts could be reinforced by diverging values. Standards influence technological design, which impacts social interactions and is influenced by values of the designer, even though the technical language of standards might

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21 For example AI-risk officers, CAN/CIOSC 101:2019, pp. 9, 12; The Conference Board of Canada, *Getting Aligned. How Adopting Standards Affects Canada's Productivity and Growth*, Standards Council Canada, 2015, p. 5.

22 Büthe/Mattli, *The New Global Rulers*, Princeton 2011, p. 6.

23 WTO, Agreement on Technical Barriers to Trade, Art. 2.4 TBT and Annex 3 F TBT.

24 Büthe/Mattli, *The New Global Rulers*, Princeton 2011, p. 4, 9; Egan, «Setting Standards: Strategic Advantages in International Trade», (2002) *Business Strategy Review* Vol. 13 (1), pp. 51, 59; Cihon, *Standards for AI Governance*, Oxford 2019, p. 22, retrieved from <https://www.fhi.ox.ac.uk/wp-content/uploads/Standards_-FHI-Technical-Report.pdf>.

25 Egan, «Setting Standards: Strategic Advantages in International Trade», (2002) *Business Strategy Review* Vol. 13 (1), p. 61.

make this aspect less visible[26]. As standards are not purely technical, differences in ethics and values might lead to further conflicts.

C. CONFLICTING APPROACHES TO AI AND ETHICS

[9] A review of 84 documents on AI and ethics identifies eleven shared principles, out of which transparency, fairness, beneficence, accountability and privacy are dominant[27]. Another analysis identified twelve ethical principles in 100 documents[28]. While both reviews find fairness and transparency to be central[29], the findings differ substantially. Furthermore, a differentiation between the issuers of the documents changes the results; transparency and accountability being predominantly shared principles among public actor policies[30]. Apart from transparency, no consensus on ethics for AI is found - and even shared principles require interpretation and concretization[31]. The strategic positions to ethics and standardization of major global players illustrate political competition for regulatory approaches to AI more clearly.

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26 See Reidenberg, «Governing Networks and Rule-Making in Cyberspace», (1996) *Emory Law Journal* Vol. 45, pp. 918, 927-928 ; Reidenberg, «The Rule of Intellectual Property Law in the Internet Economy», (2007) *Houston Law Review* Vol. 44, pp. 1075-1076 ; Orwat/Bless, «Values and Networks», (2016) *ACM SIGCOMM Computer Communication Review* 46 no. 2, p. 25; Koops, «Criteria for Normative Technology» in Brownsowrd/Yeung, *Regulating Technologies*, Oxford and Portland 2008, p. 157 ; regarding growing challenges Reidenberg, «Lex Informatica: The Formulation of Information Policy Rules through Technology», (1997) *Texas Law Review* Vol. 76, p. 592; Selbst/Boyd/Friedler/Venkatasubramanian/Vertesi, *Fairness and Abstraction in Sociotechnical Systems*, 2018, pp. 2-3, 8 retrieved from <https://dl.acm.org/doi/pdf/10.1145/3287560.3287598> ; Kroes/van de Poel, «Design for Values and the Definition, Specification, and Operationalization of Values», in van den Hoven/Vermaas/van de Poel, *Handbook of Ethics, Values, and Technological Design*, Dordrecht 2014, pp. 168-170 ; Büthe/Mattli, *The New Global Rulers*, Princeton 2011, pp. 12, 33, 41, 45.

27 Tansparency, fairness, beneficience, accountability, privacy, harmlessness and safety, freedom with autonomy and self-determination, trust, dignity, sustainability, solidarity. Dominance meaning being mentioned in more than half of the documents, Jobin/Ienca/Vayena, *Artificial Intelligence: the global landscape of ethics guidelines*, arxiv 2019, pp. 3, 7.

28 Accountability, safety, human control, reliability, stability, fairness, diversity and non-discrimination, sustainability, transparency, multi stakeholder engagement, lawfulness and compliance, privacy and data protection, Perrault/Shoham/Brynjolfsson/Clark/Etchemendy/Grosz/Lyons/Manyika/Mishra/Niebles, «The AI Index 2019 Annual Report», Stanford University, 2019, p. 148.

29 Jobin/Ienca/Vayena, *Artificial Intelligence: the global landscape of ethics guidelines*, arxiv 2019, p. 6; Perrault/Shoham/Brynjolfsson/Clark/Etchemendy/Grosz/Lyons/Manyika/Mishra/Niebles, «The AI Index 2019 Annual Report», Stanford University, 2019, p. 148.

30 Cath/Wachter/Mittelstadt/Taddeo/Floridi, «Artificial Intelligence and the 'Good Society'», (2018) *Sci. Eng. Ethics* 24, pp. 505, 523. See also Greene/Hoffmann/Stark, «Better, Nicer, Clearer, Fairer: A Critical Assessment of the Movement for Ethical Artificial Intelligence and Machine Learning», *Proceedings of the 52nd Hawaii International Conference on System Sciences 2019*, retrieved from <https://scholarspace.manoa.hawaii.edu/bitstream/10125/59651/0211.pdf>; Zeng/Lu/Huangfu, *Linking Artificial Intelligence Principles*, arxiv 2018, retrieved from <https://arxiv.org/pdf/1812.04814.pdf>.

31 Yeung/Weller, «How is Transparency understood by legal scholars and the machine learning community?» in Bayamligolu/Baraliuc/Janssens/Hildebrandt, *Being Profiled: Cogitas Ergo Sum*, Amerstam 2018, pp. 37, 39; Zeng/Lu/Huangfu, *Linking Artificial Intelligence Principles*, arxiv 2018; Jobin/Ienca/Vayena, *Artificial Intelligence: the global landscape of ethics guidelines*, arxiv 2019, pp. 7, 13, 14; Perrault/Shoham/Brynjolfsson/Clark/Etchemendy/Grosz/Lyons/Manyika/Mishra/Niebles, «The AI Index 2019 Annual Report», Stanford University, 2019, p. 149; Haas/Gießler/Thiel, «In the realm of paper tigers», AlgorithmWatch, 28.4.2020, retrieved from <https://algorithmwatch.org/en/ai-ethics-guidelines-inventory-upgrade-2020/>.

I. THE EUROPEAN APPROACH

[10] According to the EU-Commission, AI-regulation should follow a "European Approach" aligned to European values[32]. A risk-based approach to AI-regulation will focus on criticality and individual impact. Additionally, product liability law, an area especially relevant for standards, might be substantially extended[33]. Regarding foreseeable competition in AI, standardization is regarded as a central regulatory instrument for supporting technical leadership of Europe[34]. The European Parliament aims at guarding industry from non-EU standards as well[35]. This follows a general trend, as the EU seeks stronger influence in global IT-standardization[36].

II. THE US-APPROACH

[11] AI is considered central for global US-leadership as well and American values are to be promoted in a competitive AI-strategy that favours innovation over regulation[37]. This aims at avoiding enforceable technical specifications[38] and restraining regulatory action[39]. Similar to the EU, risk-based regulation is suggested, however with an emphasis on mitigating competitive disadvantages for US-companies by allowing flexible implementation and enforcement of principles[40]. Therefore, standardization that leaves the leading role to the private sector is preferable to other regulatory instruments[41]. While the USA seems to avoid formal standardization that could be referenced in enforceable regulation and prefers private standardization that protects established

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32 EU-Commission, COM(2018) 320 final, 15.5.2018, pp. 5, 9, 11.

33 EU-Commission Expert Group on Liability and New Technologies – New Technologies Formation, *Liability for Artificial Intelligence*, 2019.

34 EU-Commission, COM(2018) 320 final, 15.5.2018, pp. 5, 9, 11; EU-Commission, Joint Initiative on Standardisation, p. 2.

35 European Parliament, Resolution of 16 February 2017 with recommendations to the Commission on Civil Law Rules on Robotics, 2017.

36 EU-Commission, White Paper Modernising ICT Standardisation in the EU - The Way Forward, COM(2009) 324 final, 2009; EU-Commission, Communication - European Standards for the 21st Century, (2016) 358 final, 2016; EU-Commission, Communication - ICT Standardisation Priorities for the Digital Single Market, COM(2016) 176 final, 2016.

37 White House, Executive Order 13859 Maintaining American Leadership in Artificial Intelligence, 2019; White House, Memorandum for the Heads of Executive Departments and Agencies, 2020, pp. 4, 7.

38 White House, Memorandum for the Heads of Executive Departments and Agencies, 2020, p. 5.

39 See Regulatory Impact Analysis, White House, OMB Circular A-4, Regulatory Analysis, 17.9.2003; White House, Memorandum for the Heads of Executive Departments and Agencies, 2020, pp. 11-13.

40 White House, Memorandum for the Heads of Executive Departments and Agencies, 2020, pp. 4, 5.

41 White House, Memorandum for the Heads of Executive Departments and Agencies, 2020, p. 7; White House, OMB Circular A-119, Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities, 27.1.2016.

US-champions, global leadership in AI-standards is a strategic goal[42]. In this light, the US standardization organisation ANSI seeks to fight the long-standing trend of a weak US-position in formal standardization and position government experts in leading positions on the international level[43]. Similarly, the US seeks influence by joining the G7 Partnership on AI following initial efforts of resistance[44].

III. THE CHINESE APPROACH

[12] China developed AI-strategies as early as 2016, underlining its ambition to lead in international rules and technology for AI[45]. The Chinese strategy for standardization reflects this position, being considered both a cornerstone of Chinese AI-regulation and a competition policy[46]. Furthermore, China too aims at implementing its ethics in AI-standards[47]. In this context, AI should allow societal advancement and control[48]. Given the existing Chinese Social Credit System[49], the scope of this view becomes clear. This also reflects the Chinese top-down and state-lead approach as well as the growing Chinese initiative in standard-setting[50].

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42 White House, *U.S. Leadership in AI: A Plan for Federal Engagement in Developing Technical Standards and Related Tools*, 2019; White House, *Executive Order 13859 Maintaining American Leadership in Artificial Intelligence*, 2019. See also Cath/Wachter/Mittelstadt/Taddeo/Floridi, «Artificial Intelligence and the 'Good Society'», (2018) *Sci. Eng. Ethics* 24, pp. 505, 513.

43 ANSI, Comments from the American National Standards Institute on National Institute of Standards and Technology Request for Information on Artificial Intelligence Standards, pp. 3, 6, 7; Mattli/Büthe, «Setting International Standards», (2003) World Politics Vol. 56, p. 24.

44 US Department of State, *Joint Statement From Founding Members of the Global Partnership on Artificial Intelligence*, 15.6.2020, retrieved from <https://www.state.gov/joint-statement-from-founding-members-of-the-global-partnership-on-artificial-intelligence>.

45 Ministry of Industry and Information Technology, *Three-Year Action Plan for Promoting Development of a New Generation Artificial Intelligence Industry (2018–2020),* translated by Triolo/Kania/Webster, retrieved from <https://www.newamerica.org/cybersecurity-initiative/digichina/blog/translation-chinese-government-outlines-ai-ambitions-through-2020>; State Council, *A Next Generation Artificial Intelligence Development Plan*, 2017, translated by Sapio/Chen/Lo, retrieved from <https://flia.org/wp-content/uploads/2017/07/A-New-Generation-of-Artificial-Intelligence-Development-Plan-1.pdf>.

46 Zhang/Yang/Qian/Tang/Luo/Leng/Li/Han, «Artificial Intelligence and People's Consensus» in Jin, *Reconstructing Our Orders*, 2018, p. 24; Cihon, *Standards for AI Governance*, Oxford 2019, pp. 21, 23; Ding, *Deciphering China's AI Dream*, Oxford 2018.

47 SAC, «National Guidelines on AI Standards System Released», 17.8.2020, retrieved from <www.sac.gov.cn/sacen/events/202008/t20200817_346835.htm>. SECSEC, Guidelines for the Establishment of the New Generation of Artificial Intelligence Standards System, 25.8.2020, retrieved from <https://www.secsec.eu/guidelines-for-the-establishment-of-the-new-generation-of-artificial-intelligence-stamdards-system-released-by-sac-cac-ndrc-most-and-miit-in-china/framework-of-china-ai-standards>.

48 AI as "Moral Tools", Sun, «Artificial Intelligence and Ethical Principles» in Jin, *Reconstructing Our Orders*, 2018, pp. 31-38, 50, 69; see also, National Information Security Standardization Technical Committee, *Artificial Intelligence Security Standardization White Paper*, translated by CSET, 2019, retrieved from <https://cset.georgetown.edu/wp-content/uploads/t0121_AI_security_standardization_white_paper_EN.pdf>.

49 State Council, Guiding Opinions of the State Council on Establishing and Improving the System of Joint Incentive for Keeping Faith and Joint Punishment for Losing Faith and Accelerating the Advancement of the Development of Social Honesty, 2016, retrieved from < http://en.pkulaw.cn/Display.aspx?LookType=3&Lib=law&Cgid=272126&Id=22433&SearchKeyword=&SearchCKeyword=&paycode=>.

50 Murphree/Breznitz, «Innovation in China: Fragmentation, Structured Uncertainty, and Technology Standards», (2013) *Cardozo Law Review*, p. 203; Peng, «Private Cybersecurity Standards? Cyberspace Governance, Multistakeholderism, and the (Ir)relevance of the TBT Regime», (2018) *Cornell International Law Journal* Vol. 51, pp. 448-450; Peng, «Standards as a Means to Technological Leadership? China's ICT Standards in the Context of the International Economic Order» in Toohey/Picker/Greenacre, *China in the International Economic Order*, Cambridge 2015, pp. 128-129.

D. ADDRESSING CHALLENGES TO AI REGULATION

[13] Emerging conflicts due to political competition and differences in values are acknowledged in China[51] and in other countries, reinforcing the incentive to install government experts in relevant organizations as well as an alignment with strategic partners[52]. How the increased motivation for states to engage in standard-setting will affect cooperative regulation of AI has to be observed and evaluated. But experience in other areas shows that due to political competition different regulatory approaches persist[53]. Competition and conflicting values could prove as an obstacle for cooperation in setting international standards or result in competing national standards for AI. This raises concerns that a global landscape of AI-regulation fragmented by national strategies and industry initiatives could lead to a "race to the bottom", allowing companies to choose favourable regulation and leading to risks not being addressed[54]. Therefore, especially regarding fundamental value-based decisions, national legislation is called for[55]. While this could reinforce fragmentation, stricter local rules could also set a global benchmark, similar to EU-data protection law. In both cases, cooperation loses to competition.

[14] However, the amount of cooperation possible will ultimately depend on the specific regulatory framework on both national and international levels. Three ways to mitigate emerging conflicts could be explored: First an openness of technology and standards for a pluralism of ethics, second a more detailed framework for AI-standardization on the

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51 Chinese Ministry of Science and Technology, «Next Generation Artificial Intelligence Development Plan issued by State Council», *China Science & Technology Newsletter No. 17*, 15.9.2017, retrieved from <http://fi.china-embassy.org/eng/kxjs/P020171025789108009001.pdf>; Zhang/Yang/Qian/Tang/Luo/Leng/Li/Han, «Artificial Intelligence and People's Consensus» in Jin, *Reconstructing Our Orders*, 2018, pp. 39, 63, 75; Wang/Yu/Li/Jin, «Artificial Intelligence and International Norms» in Jin, *Reconstructing Our Orders*, 2018, pp. 203, 205, 207, 217, 222, 225.

52 See for example Australia, Department of Industry, Innovation and Science «Australia's Tech Future», Canberra 2018, p. 45; Cave/Hoffman/Joske/Ryan/Thomas, «Mapping China's Technology Giants», Australian Strategic Policy Institute, Canberra 2019, p. 17; Standards Australia, *An Artificial Intelligence Standards Roadmap*, 2020, pp. 4, 19-26.

53 Büthe/Mattli, *The New Global Rulers*, Princeton 2011, p. 11; Cihon, *Standards for AI Governance*, Oxford 2019, p. 7, 15; Baum/deNeufville/Barrett/Ackerman, «Lessons for Artificial Intelligence from Other Global Risks» in Tinnirello, *The Global Politics of Artificial Intelligence*, Boca Raton, forthcoming; Kim/Lee/Kwak, «The changing patterns of China's international standardization in ICT under techno-nationalism: A reflection through 5G standardization», (2020) *International Journal of Information Management* Vol. 54, 102145.

54 Wagner, «Ethics as an escape from regulation» in Bayamlioglu/Baraliuc/Janssens/Hildebrandt, *Being profiled: cogitas ergo sum*, Amsterdam 2018, p. 86; Cihon, *Standards for AI Governance*, Oxford 2019, pp. 7, 17; Radaelli, «The puzzle of regulatory competition», (2004) *Journal of Public Policy* 24 no. 1, p. 1; Egan, «Setting Standards: Strategic Advantages in International Trade», (2002) *Business Strategy Review* Vol. 13 (1), p. 61.

55 Scherer, «Regulating Artificial Intelligence», (2016) *Harvard Journal of Law & Technology* Vol. 29, pp. 379-380; Wagner, «Ethics as an escape from regulation» in Bayamlioglu/Baraliuc/Janssens/Hildebrandt, *Being profiled: cogitas ergo sum*, Amsterdam 2018, p. 86; Hoffmann-Riem, «Artificial Intelligence as a Challenge for law and Regulation» in Wischmeyer/Rademacher, *Regulating Artificial Intelligence*, Cham 2020, p.7. See also Slaughter, «The real new world order», (1997) *Foreign Affairs* Vol. 76, p. 197.

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international level, and third increased guidance on the adoption and reception of standards on the national level.

[15] However, the amount of cooperation possible will ultimately depend on the specific regulatory framework on both national and international levels. Three ways to mitigate emerging conflicts could be explored: First an openness of technology and standards for a pluralism of ethics, second a more detailed framework for AI-standardization on the international level, and third increased guidance on the adoption and reception of standards on the national level.

[16] Limiting cooperation and standardization to strictly technical questions might limit emerging conflicts. However, since it is unlikely that completely undisputed areas of standard-setting can be identified, the scope of this approach seems limited. More promising is a strict approach to ethical pluralism implemented in AI-standards[56], as aimed for in CAN/CIOSC 101:2019[57]. Standardized impact assessments and risk evaluations leave room for diverse ethical specifications. Yet, to answer how neutral such frameworks really are, how to implement value-neutral standardization and how to reconcile this with regulating "by design"[58], further research would be required.

[17] Alternatively, the procedure of standard-setting could be adjusted[59] : International law could be leveraged for imposing stricter rules[60] for example regarding national delegations according to Annex 3 TBT-Agreement[61], restraining the influence of governments and favoring pluralistic national structures as a prerequisite for contributions to

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56 Jobin/Ienca/Vayena, *Artificial Intelligence: the global landscape of ethics guidelines*, arxiv 2019, pp. 16, 17; retrieved from <https://arxiv.org/pdf/1906.11668.pdf>.

57 Another way could be listing all ethical considerations, see the project ISO/IEC AWI TR 24368 - Information Technology - Artificial Intelligence - Overview of ethical and societal concerns.

58 Stuart Russell proposes a "value function" for AI-systems, see Wolchover, «The Artificial Intelligence Pioneer has a few concerns», *Wired*, 23.5.2015, retrieved from: <https://www.wired.com/2015/05/artificial-intelligence-pioneer-concerns>; Russell, «Provably beneficial artificial intelligence» in BBVA OpenMind, *The Next Step: Exponential Life*, 2017while others are skeptical, Koops, «Criteria for Normative Technology» in Brownsowrd/Yeung, *Regulating Technologies*, Oxford and Portland 2008, p. 170; see also Reidenberg, «The Rule of Intellectual Property Law in the Internet Economy», (2007) *Houston Law Review* Vol. 44, p. 1095.

59 See for internet regulation Brown/Marsden, Regulating Code. Good Governance and Better Regulation in the Information Age, Cambridge, 2013, p. 198.

60 Compared for example to the ISO code of ethics and code of conduct, see <https://www.iso.org/files/live/sites/isoorg/files/archive/pdf/en/codeethics_2004-en.pdf> and <https://www.iso.org/files/live/sites/isoorg/files/store/en/PUB100397.pdf> and ISO Directive 1, Procedures for the technical work, 1.7.1., which refers simply to National Bodies.

61 WTO, Agreement on Technical Barriers to Trade, Annex 3 B, G. See also Mattli/Büthe, «Setting International Standards», (2003) *World Politics* Vol. 54, p. 42.

standardization[62]. This could limit political conflicts and foster cooperation. By contrast, new general international treaties for AI might not help cooperation but just add another layer of complexity[63] and are in any case not very promising in light of the power shift from institutions like the WTO to less formalized structures like the Organisation for Economic Cooperation and Development (OECD)[64], illustrated also by the initiatives of the G7 Partnership for AI[65].

[18] A completely contrasting approach could be applied at the national level that emphasizes stronger involvement of the state by creating competent national agencies for AI-regulation[66]. This could result in stronger regulatory guidance of co-regulation regarding the reception of AI-standards by evaluating, approving or extending them and requires the legislator to structure the process and to provide necessary incentives[67]. While national rules for fundamental value-based decisions become possible, standard-setting could remain unaffected and co-regulation supported.

E. CONCLUSION

[19] This paper showed that standards form an important instrument in regulatory approaches to AI globally by exploring AI-standards and corresponding strategies. While AI-standards could allow for co-regulation of AI, conflicts are emerging as it can be assumed that relevant actors will not give up their expressed ambition to influence standardization of AI. Differences in ethics and values could pose challenges to the cooperation

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62 In Western Europe and South America, private, non-profit organizations dominate while North America has a mixed landscape of standardization organizations and in Asia state-lead organizations dominate. However, the level of autonomy is difficult to ascertain. See <https://www.iso.org/members.html#:~:text=ISO%20members%20%20%20Country%2FTerritory%20%20,%20%202%20%2052%20more%20rows%20>.

63 Cihon/Maas/Kemp, *Should Artificial Intelligence be Centralised? Design Lessons from History*, 7.2.2020, retrieved from < https://www.cser.ac.uk/resources/should-AI-governance-centralised>.

64 See early Slaughter, «The real new world order», (1997) *Foreign Affairs* Vol. 76.

65 Installing the Secretariat of the G7 GPAI at the OECD, US Department of State, *Joint Statement From Founding Members of the Global Partnership on Artificial Intelligence*, 15.6.2020, retrieved from <https://www.state.gov/joint-statement-from-founding-members-of-the-global-partnership-on-artificial-intelligence>.

66 For initiatives regarding central digital agencies in Europe, see European Parliament, Resolution of 16 February 2017 with recommendations to the Commission on Civil Law Rules on Robotics, 2015/2103(INL), 16.2.2017; German Parliament, *Answer of the Government - Specific Goals and Measures of the Government in the area of Artificial Intelligence*, BT-Drs. 19/1982, 27.4.2018, p. 8; see also Hoffmann-Riem, «Artificial Intelligence as a Challenge for law and Regulation» in Wischmeyer/Rademacher, *Regulating Artificial Intelligence*, Cham 2020, p. 13; stronger involvement suggested early by Reidenberg, «Lex Informatica: The Formulation of Information Policy Rules through Technology», (1997) *Texas Law Review* Vol. 76, p. 592.

67 This has proven effective in German Cybersecurity Regulation, where the Federal Office for Information Security publishes standards on basis of ISO-standards in a sophisticated legal framework.

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necessary for setting standards and their suitability for national reception. As AI pushes for innovation in the regulator's toolbox, further research is necessary, for which this paper provided a starting point by outlining different levels of regulatory action, thereby indicating that challenges for co-regulation of AI can most likely be mastered.