TECHNICAL STANDARDIZATION AND INNOVATION IN A CHANGING GEOPOLITICAL LANDSCAPE

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TECHNICAL STANDARDIZATION AND INNOVATION IN A CHANGING GEOPOLITICAL LANDSCAPE

Tim Nicholas Rühlig

1. INTRODUCTION

> *Technical standards are of strategic importance. Europe's technological sovereignty, ability to reduce dependencies and protection of EU values will rely on our ability to be a global standard-setter.*[1]

The European Commission, widely perceived as a technocratic organization, seldom unveils highly technical strategies and legislation with a great sense of urgency. Not so in early 2022, when European Commissioner Thierry Breton could have hardly attributed more strategic expectations to the European Union's (EU) new technical standardization strategy. Only a few years earlier, most Europeans would have considered technical standard setting largely nonpolitical. What had happened?

In 2020, two incidents came as wake-up calls to Europe. At first, when considering developing new technical standards for lithium batteries that are central to energy transformation, the EU realized that the People's Republic of China (PRC) had already advanced not only in terms of production but also in terms of standard setting. Being reminded of the widespread saying that he who owns the standards owns the market, Europe understood that its late coming threatened the continent's competitiveness in the central field of the green transition.[2] Only a few months later, the Financial Times reported a Chinese attempt to rewrite the international standard for the internet protocol. If implemented, the rather decentralized character of the internet would be turned into a more hierarchical structure that eases state oversight, control and censorship.[3] These cases made clear that Europe's decreasing ability to set technical standards had negative implications for the technological competitiveness of the EU as well as political costs potentially infringing on fundamental values.

The urgency of this challenge is particularly severe considering the ongoing digital transformation. Technical standards generate interoperability. Never has the connectedness of technologies and products

1. European Commissioner for the Internal Market, Thierry Breton, upon the presentation of the new European Standardization Strategy in Brussels, 2 February 2022. Online available at https://ec.europa.eu/commission/presscorner/detail/en/ip_22_661 (accessed: 3 August 2022).
2. Crompton, P. (2020). "The new Global Committee on Lithium Standards Will Be Led by China". Online available at https://www.bestmag.co.uk/indnews/new-global-committee-lithium-standards-will-be-led-china (accessed: 24 April 2021).
3. Murgia, M. and Gross, A. (2020). "China and Huawei Propose Reinvention of the internet". London: Financial Times. Online available at https://www.ft.com/content/c78be2cf-a1a1-40b1-8ab7-904d7095e0f2 (accessed 30 April 2020).

been more important than now. Therefore, it is no wonder that the first concrete case of change in Europe emerged with regard to radio equipment:

In late summer 2022, the European Commission published a new mandate for the development of a technical standard supporting the Radio Equipment Directive (RED) that sparked a controversy. Previously, it would have been expected that the European Telecommunications Standards Institute (ETSI) would develop the technical standard. In 2022, the European Commission decided to mandate the two other European Standardization Organizations (ESOs), namely, the European Committee for Standardization (CEN) and the European Committee for Electrotechnical Standardization (CENELEC), with this task.[4]

While this may sound like a minor and rather technical detail, the European Commission's decision was a highly political one responding to the geopolitical turn of technical standardization. Supposedly, the EU was concerned with the influence of non-European companies, not least the Chinese technology giant Huawei, on technical standards. In ETSI's Technical Committee (TC) on Cyber, which was normally in charge of such a mandate, non-European tech firms are strongly represented.[5] The members of CEN and CENELEC, in turn, are National Standard Bodies (NSBs) representing the standardization community from the organizations' European member states.

Critics of the European Commission's decision argue that technical standardization is predominantly cooperative in nature. Standardization is driven by the technical contributions of mostly private sector actors to be discussed not by politicians but by leading engineers in their field and judged upon technical criteria. To them, the strength of standardization lies in its nonpolitical character and in ETSI's global reputation as an inclusive and transparent standard-developing organization (SDO).[6]

The European Commission counters that the RED is not a random piece of legislation but a highly critical one. The mandated technical standards are supposed to become harmonized European Norms (hENs) that are voluntary on paper but will serve as the de facto technical operationalization to comply with European regulation. In other words, the standards will be almost equal to European legislation in their effective force. Since the technical standards mandate comprises cyber security, the protection of privacy and protection against fraud, they are hardly peripheral but rather highly sensitive.[7]

While the European Commission aims to adapt to the new geopolitical realities, many EU member states hesitate to take a clear position. Sweden, for example, remains largely skeptical, fearing that the existing system could be dismantled. In Germany, many public officials share such skepticism while the new administration is supporting the EU's actions. This makes Germany a somewhat ambivalent actor. In contrast, Dutch public officials appear to unitedly support the European Commission's efforts.

4. European Commission (2022). Commission Implementing Decision on a Standardisation Request to the European Committee for Standardisation and the European Committee for Electrotechnical Standardisation as regards Radio Equipment in Support of Directive 2014/53/EU of the European Parliament and of the Council and Commission Delegated Regulation (EU) 2022/30. Online available at https://ec.europa.eu/transparency/documents-register/detail?ref=C(2022)5637&lang=en (accessed 10 September 2022).
5. At the time of the EU's decision, both US and Chinese company representatives were part of ETSI's technical leadership in the relevant bodies.
6. Author interviews with representatives from SDOs and industry, June-August 2022, several cities.
7. Author interview with representatives of the European Commission, June–August 2022, Brussels.

This controversy around the role of ETSI in technical standards supporting the RED is illustrative of a broader dilemma faced by European stakeholders in technical standardization. On the one hand, they aim to preserve the existing bottom-up approach that is driven by private sector actors. Europe is a world power in technical standardization and has profited from the existing system. On the other hand, I will argue Europe needs to adapt to an ongoing top-down geopolitical turn of technical standard setting with the aim of shaping its future course. In the United States (US), but even more so in the PRC, state institutions are taking a growing interest in technical standardization. The ability to shape technical standards is increasingly recognized as a source of state power and has become an arena of rising power competition over high technology. If Europe does not adapt to this trend, I argue that it may very well fall victim to political interest-driven standardization policies of non-European states. China is a particular source of concern since it neither shares European values and interests that are enshrined in technical standards nor is it a security ally of the EU.

A world power in technical standardization, the EU needs to respond to this geopolitical turn of technical standardization. European policymakers seek to strike a balance: On the one hand, they aim to preserve a privately driven bottom-up system that has played to its advantage for decades. On the other hand, the EU wants to make sure it does not fall victim to the ongoing top-down geopolitical turn in international technical standard setting but instead adapts to the new realities.[8]

Instead of determining whether the European Commission or its critics are right about the technical standards mandate related to the RED, this chapter explains the geopolitical turn of technical standardization and reveals Europe's resulting dilemma between the need to preserve the existing system and adapt to the geopolitics of standards. For this, it first contextualizes the geopolitical turn of technical standardization, explains why it is counterintuitive and summarizes how it manifests in policy documents of the EU, the US and the PRC (Section 2). Next, the chapter identifies China's state-centric approach to technical standardization as a particular concern for Europe (Section 3). Identifying four dimensions of technical standardization power, the chapter further details how the ability to shape technical standards translates into state power and thereby explains why states have a growing interest in it (Section 4). As indicated, the geopolitical turn of technical standardization is far from uncontested and bears risks. Hence, the chapter concludes by identifying fragmentation and politicization as risks stemming from this development, discussing the dilemmas resulting from the new geopolitics of technical standardization and closes with policy recommendations for European policymakers and businesses (Section 5).

2. THE GEOPOLITICAL TURN OF TECHNICAL STANDARDIZATION IN CONTEXT

Technology has never been apolitical. Both states and companies have treated technological advances as crucial to national power and economic competitiveness. In recent years, however, high technology has turned into one of the central arenas of great power competition, primarily between the US and the PRC. Gone are the days when interdependence and globalization were interpreted as irreversible and "flattening" the world.[9] The "weaponization" of interdependence, as Farrell and Newman famously coined it,[10]

8. Rühlig, T. (2022). "The Rise of Tech Standards Foreign Policy. Brussels Goes Strategic". DGAP Online Commentary. Online available at https://dgap.org/en/research/publications/rise-tech-standards-foreign-policy (accessed: 3 August 2022).
9. Friedman, T. (2005). *The World Is Flat: A Brief History of the Twenty-first Century*. New York: Straus and Giroux.
10. Farrell, H. and Newman, A. L. (2019). "Weaponized Interdependence: How Global Economic Networks Shape State Coercion", *International Security*, 44.

is at the heart of this trend. This trend may have been rightly described as a geoeconomic turn. Since this paper focuses on its political dimension, I use the term geopolitics.[11]

Defensively, states aim to reduce their strategic technological and economic dependence. This may not lead to a full "decoupling" but focuses on a partial economic disentanglement that strives to preserve the ability to act autonomously without fear of being cut off from strategic technologies. Chinese President Xi Jinping's "dual circulation" policy is an example of this trend.[12] Offensively, dependencies are being used to block political rivals from accessing technologies that are crucial to their development. Means to weaponize strategic dependencies in fields such as 5G infrastructure or semiconductors range from export controls and national security reservations to industrial policies and competition law.[13] Technical standard setting has turned into one subject of this competition in the eyes of many—from both the public and private sector—in Europe, the US and the PRC.[14]

2.1 Turning strategic (1)—technical standards in the US

First, US concerns over China's growing footprint in international technical standardization are prominent and enjoy bipartisan consensus. It has also been reflected in legislative work. The *US Innovation and Competition Act*, for example, requires the secretary of state to assess Chinese influence in international SDOs and tasks the assistant secretary of commerce for communication and information with a report on existing barriers to US participation in the standardization activities of the International Telecommunication Union (ITU). Both are clearly formulated to provide information on how to counter China's growing influence. The creation of an interagency working group as well as the provision of grants to private sector entities to participate in standardization as well as obtaining technical leadership positions are the most obvious examples of how the US Congress aims to boost American influence based on strategic political reasoning. That the PRC is the primary target of US activities is not the least obvious from another passage of the Act that deals with regular dialogue between the United States and allied partners that include standard setting.[15] Further efforts from the US government to strengthen its footprint in international standardization are likely given that concerns over growing Chinese influence are widespread among political observers in Washington D.C.[16]

11. In this chapter, "geopolitics" describes the reemerging tendency of states to utilize control over essential items such as goods, data, people to create spheres of influence by means of crucial dependencies. When economic means are used, this can be described as geoeconomics. Hence, geoeconomics describes an essential component of geopolitics but is not identical.
12. Dual circulation, (guónèi guójì shuāng xúnhuán), is an official Chinese strategy first mentioned in May 2020 by the Standing Committee of the Chinese Communist Party's Politburo to reorient China's economy prioritizing domestic consumption and technological self-reliance.
13. Rühlig, T. (2020). "Who Controls Huawei? Implications for Europe". Online available at https://www.ui.se/globalassets/butiken/ui-paper/2020/ui-paper-no.-5-2020.pdf (accessed: 30 January 2022). Kleinhans, J.-P. and Baisakova, N. (2020). "The Global Semiconductor Value Chain. A Technology Primer for Policy Makers". Online available at https://www.stiftung-nv.de/sites/default/files/the_global_semiconductor_value_chain.pdf (accessed: 30 January 2022).
14. Seaman, J. (2020). "China and the New Geopolitics of Technical Standardization". Online available at https://www.ifri.org/sites/default/files/atoms/files/seaman_china_standardization_2020.pdf (accessed: 30 January 2022). de La Bruyère, E. and Picarsic, N. (2020). China Standards 2035. Beijing's Platform Geopolitics and "Standardization Work in 2020". Online available at https://www.horizonadvisory.org/china-standards-2035-first-report (accessed: 30 January 2022). Yan, X. (2020). "Bipolar Rivalry in the Early Digital Age", *Chinese Journal of International Politics*, 13, 318.
15. United States Congress (2022). United States Innovation and Competition Act of 2021. Online available at https://www.congress.gov/bill/117th-congress/senate-bill/1260/text (accessed 4 August 2022).
16. de La Bruyère, E. and Picarsic, N. (2020). "China Standards 2035. Beijing's Platform Geopolitics and "Standardization Work in 2020"'. Online available at https://www.horizonadvisory.org/china-standards-2035-first-report (accessed: 30 January 2022).

2.2 Turning strategic (2)—technical standards in China

Indeed, US efforts react to the PRC's activities in technical standard setting. In October 2021, the Chinese government and the Central Committee of the Chinese Communist Party (CCPCC) jointly published a new "Standardization Outline" (the Outline).[17] It is rare that the CCPCC, one of the most influential organs of the Chinese Communist Party (CCP, the Party), issues documents of such a technical nature. Since Party organs are far more influential in China than the central government, the joint publication is indicative of the importance given to technical standardization by the leadership of the party-state. Shortly after the Outline was released, the country followed up with a "Five-year Plan for Promoting the High-Quality Development of the National Standards System" (the Five-year Plan), providing further details of the Outline's implementation.[18] The Outline and the Five-year Plan comprise a wide range of components to further increase Chinese influence on standard setting, including the following:

- Binding investments in innovation to standardization efforts in strategic sectors ranging from digital technologies to mobility, infrastructure, energy and biotechnology;
- Strengthening of China's role in international standardization for the purpose of increasing the resilience of supply chains and rising influence in international SDOs;
- Attracting industry consortia to China with the purpose of developing technical standards of global importance;
- Deepening of standardization cooperation with countries participating in the Belt and Road Initiative (BRI).

Similar to the US, the PRC documents clearly position standardization efforts in the context of global competition, although unleashing the potential of private sector actors is also on China's agenda.

2.3 Turning strategic (3)—technical standards in the EU

When unveiling its new technical standardization strategy in February 2022,[19] the European Commission was faced with these political circumstances. In reaction, the European Commission suggested a new high-level forum of standardization to facilitate regular exchanges among all relevant stakeholders. It further proposed inventing a hub of excellence within the European Commission to pool existing competences. An amendment of the European standardization regulation further suggests that foreign companies should effectively be banned from being included in the development of hENs that support European regulation.[20] The example cited at the beginning of the introduction could be the first example of the impact of this policy change.

Additional financial resources, including tax breaks or instruments particularly devoted to small and medium-sized enterprises (SMEs) that are not part of the documents released by the European Commission, remain on the table in the ongoing European discussion.

17. Chinese State Council (2021). Online available at http://www.gov.cn/zhengce/2021-10/10/content_5641727.htm (accessed: 4 August 2022).
18. Center for Security and Emerging Technology (2022). "14th Five-Year" Plan for Promoting the High-Quality Development of the National Standards System". Online available at https://cset.georgetown.edu/publication/14th-five-year-plan-for-promoting-the-high-quality-development-of-the-national-standards-system/ (accessed 4 August 2022).
19. European Commission (2022). "An EU Strategy on Standardisation - Setting global standards in support of a resilient, green and digital EU single market". Online available at https://ec.europa.eu/docsroom/documents/48598 (accessed 4 August 2022).
20. European Commission (2022). Proposal for a Regulation amending Regulation (EU) No 1025/2012 as regards the decisions of European standardisation organisations concerning European standards and European standardisation deliverables. Online available at https://ec.europa.eu/docsroom/documents/48599 (accessed 4 August 2022.

All these documents released by the US, the PRC and the EU treat the ability to shape technical standardization as a crucial competitive and security strategic asset to obtain technological leadership and gain power advantages over political rivals.

2.4 The geopolitical turn of standard setting—a counterintuitive development

To anyone working in the field of technical standard setting, however, this development is counterintuitive. Granted, technical standards have always been political. However, the exclusionary logic that aims to diminish the role of entities based on the territory of a political rival remains in sharp contrast to the very nature of technical standards. Being a form of private self-regulation, broad market acceptance based on a consensus in its development is widely regarded as foundational to the effectiveness of technical standards.

Technical standards are omnipresent but highly technical product specifications that establish basic safety conditions and interoperability. Consider the example of USB. Everyone knows the term for this standard for cables, connectors and protocols that enables charging and the exchange of data on a wide range of devices. Similarly, Wi-Fi is a famous family of radio technology standards that enable wireless local area networking (WLAN) for all sorts of technological equipment. In summary, technical standards allow products of all kinds to be applicable in a wide range of contexts across countries and manufacturers. Without technical standards, the technologies of the two suppliers would hardly be complementary. This is why technical standards facilitate international trade and are conducive to innovation and competition.

Technical standards may be omnipresent, but they are voluntary technical specifications. This is not to say that technical standards can result in enormous commercial force. Many products that do not comply with given technical standards cannot be sold on world markets because they only work in isolation and not in concert with other products. Imagine a mobile phone that only communicates with a certain share of other phones. It is not difficult to imagine that such a solution would not be adopted by the market or consumers. While one might describe these effects as inherently political, the very subject is highly technical.

Technical standards aim to harmonize products and technologies. In contrast to intellectual property rights and patents, a good standard is available and accepted globally.[21] Since standards are voluntary, they are only effective when they are adopted by the market. Where technical standards consist of patented technologies, patent holders are obliged to license their standardessential patents (SEPS) under fair, reasonable, and nondiscriminatory terms (FRAND). Courts around the globe are enforcing FRAND terms on patent holders. Hence, technical standards apply a very different logic than, for example, export controls or punitive tariffs that aim to exclude competitors from supply or hinder market access.

Technical standards are predominantly developed by private sector actors. Technical standards may be the result of market concentration. In that case, the technical specifications of a limited number of actors shape the ecosystem. Prominent examples include the operating systems of Microsoft and Apple. Computer software that does not run on Microsoft's Windows and Apple's iOS will only gain niche status on the global market. We speak of de facto standards.

21. Deron, L. G. (2022). "Chinese Standards and the New Industrial Markets". Online available at https://www.irsem.fr/institut/actualites/research-paper-no-98-2020.html (accessed: 30 January 2022).

Where such market concentration does not exist, SDOs that overwhelmingly consist of representatives of private industry develop technical standards. In these SDOs, TCs and their subgroups consult over different technical solutions and normally decide by consensus or a broad majority. The results are referred to as formal standards. Hence, technical standardization has often been portrayed as an example of private selfregulation.

Consequently, the geopolitical turn of technical standardization is anything but a given and significantly deviates from the very nature of standard setting as it has emerged over the last few decades.

This is not to argue that the political nature of technical standards had previously been ignored. Studies influenced by realist accounts of international relations have been most explicit in de-scribing standards as an expression of state power, ultimately by attributing significance to the distribution of power rather than standardization.[22] Even researchers who regard contemporary standardization as a particularly efficient alternative to established international organizations do not deny its political character.[23] However, even when standard setting is understood as a form of hybrid authority involving private and public actors, the focus lies on private sector actors that have the necessary technical expertise to influence standard setting.[24] Even the enforcement of technical standards by means of certification and accreditation is primarily left to private actors.[25]

The predominance of private sector actors in international technical standardization is both the result of the fact that they possess more technical expertise and can be traced back to the domestic standardization approaches of the most influential countries, namely the US and the EU.[26] As a result, the growing influence of standardization in power competition and the rising engagement of state actors – not least due to China's rise – is challenging the very nature of technical standardization. Sitting idly by and watching is not an option for the European Union.

As the ongoing transformation is closely linked to the PRC's rise in international standardization and China's distinct approach to standard setting, the next section turns to this phenomenon.

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22. Bishop, A. D. (2015). "Standard Power: The New Geopolitical Battle". Online available at https://nationalinterest.org/feature/standard-power-the-new-geopolitical-battle-14017 (accessed: 9 September 2019). Drezner, Daniel W. (2005). "Globalization, Harmonization, and Competition. The Different Pathways to Policy Convergence", *Journal of European Public Policy*, 12(5), 841–859. Krasner, S. D. (1991). "Global Communications and National Power. Life and the Pareto Frontier "World Politics, 43(3), 336–366.
23. Berstein, S. (2011). "Legitimacy in Intergovernmental and Non-state Global Governance", *Review of International Political Economy*, 18(1), 17-51. Boström, M. (2006). "Regulatory Credibility and Authority Through Inclusiveness. Standardization Organizations in Cases of Eco-labelling", Organization, 13(3), 345-367.
24. Brunsson, N. and Jacobsson, B. (2002). *A World of Standards*. Oxford, Oxford University Press. Busch, L. (2011). *Standards. Recipes for Reality,* Cambridge: MIT Press. Büthe, T. and Mattli, W. (2011). *The New Global Rulers. The Privatization of Regulation in the World Economy.* Princeton: Princeton University Press. Graz, J.-C. (2019). *The Power of Standards. Hybrid Authority and the Globalisation of Services.* Cambridge: Cambridge University Press. Henson, S. and Reardon, T. (2005). "Private Agri-food Standards: Implications for Food Policy and the Agri-food System", *Food Policy*, 30(3), 241-253. O'Rourke, D. (2006). "Multi-stakeholder Regulation: Privatizing or Socializing Global Labor Standards?", *World Development*, 34(5), 899–918. Schepel, H. (2005). *The Constitution of Private Governance. Product Standards in the Regulation of Integrating Markets*, Oxford: Hart Publishing. Timmermanns, S. and Epstein, S. (2010). "A World of Standards but not a Standard World: Towards a Sociology of Standards and Standardization", *Annual Review of Sociology*, 36(1), 69-89. Werle, R. and Iversen, E. J. (2006). "Promoting Legitimacy in Technical Standardization", *Science, Technology & Innovation Studies*, 2(1), 19-39.
25. Fouilleux, E. and Loconto, A. (2017). "Voluntary Standards, Certification, and Accreditation in the Global Organic Agriculture Field. A Tripartite Model of Techno-politics", *Agriculture and Human Values*, 34(1), 1-14.
26. Nicolaidis, K. and Egan, M. (2001). "Transnational Market Governance and Regional Policy Externality: Why Recognize Foreign Standards?", *Journal of European Public Policy*, 8(3), 454-473. Tate, J. (2001). "National Varieties of Standardization", in: Hall, P. A. and Soskice, D. (eds.), *Varieties of Capitalism. The Institutional Foundation of Comparative Advantage*, Oxford: Oxford University Press, 442-473.

3. THE NEW GEOPOLITICAL PRACTICE OF TECHNICAL STANDARDIZATION: THE CASE OF CHINA

3.1 China's growing footprint in formal standardization

China's influence in both formal and de facto standardization is growing.[27] In established technical standardization bodies, the PRC has been successful in obtaining leadership positions, both at the institutional and technical levels. In most SDOs, China is still lagging behind European and US representation, but the PRC's influence is rising. From 2011 to 2018, China's share of TC and SC secretariat positions in ISO grew from five percent to 8.21 percent. In the same period, its share of WG secretariat positions increased from two percent to 6.58 percent.[28] Today, only Germany and the United Kingdom participate in slightly more TCs than China.[29] While rather a high number of Chinese standard contributions are rejected at an early stage due to quality issues, Chinese actors are learning quickly and become more successful in formulating their technical standard proposals. In some emerging technologies, most prominently 5G and 6G, Chinese actors have not only been ahead of their competitors in terms of standard contributions but also declarations of SEPs.[30]

3.2 China's growing footprint in de facto standardization

Strength in de facto standardization is more difficult to measure. However, qualitative research indicates that at least in the transport and infrastructure sector, China's BRI has helped to grow market share and, thereby, has supported the spread of Chinese technical standards. This not only increases the opportunities for Chinese de facto standardization but also makes standard setting an explicit part of the PRC's BRI policy. In 2015, China's main macroeconomic agency, the National Development and Reform Commission (NDRC), issued the first 'Action Plan for Harmonization of Standards along the Belt and Road' (the Action Plan) for 2015–2017.[31] The Action Plan explicitly states that China will strive to internationalize its domestic standards in BRI countries and prioritize several economic sectors. In a first step, the Action Plan stipulates that 500 national standards developed under the Standards Administration of China and sectoral standards developed by national ministries should be translated into foreign languages to make them accessible to international audiences. At the end of 2017, the NDRC issued a new Action Plan for 2018–2020 that essentially builds on and perpetuates the 2015 Action Plan.[32]

These Action Plans are not empty rhetoric. In June 2019, the PRC officially announced that it had signed 85 cooperation agreements on technical standardization with 49 countries and regions along the Belt and

27. For a more detailed discussion of China's growing footprint in technical standardsetting, see Rühlig, T. (2022). "Chinese influence through technical standardization power", *Journal of Contemporary China*. Online available at: https://doi.org/10.1080/10670564.2022.2052439 (accessed: 4 August 2022).
28. Information privately obtained from the German Institute for Standardization (DIN).
29. Seaman, J. (2020). "China and the New Geopolitics of Technical Standardization". Online available at https://www.ifri.org/sites/default/files/atoms/files/seaman_china_standardization_2020.pdf (accessed: 30 January 2022).
30. For the example of 5G, please see Pohlmann, T. et al. (2020). "Studie zur Untersuchung und Analyse der Patentsituation bei der Standardisierung von 5G. Studie im Auftrag des Bundesministeriums für Wirtschaft und Energie" [Study to examine and analyze the patent situation in the standardization of 5G. Study on behalf of the Federal Ministry for Economic Affairs and Energy]. Berlin: IPlytics.
31. SAC (Standards Administration of China) (2015). "Action Plan to Connect "One Belt, One Road" through Standardization (2015-2017)". Online available at www.followingthemoney.org/wp-content/uploads/2017/06/2015_Leading-Group-for-the-BRI_Action-Plan-to-Connect-BRI-through-Standardization-2015-2017_E-1.pdf (accessed: 19 February 2019).
32. SAC (2018). Online available at www.sac.gov.cn/zt/ydyl/bzhyw/201801/t20180119_341413.htm (accessed: 26 October 2018).

Road.[33] Several of these agreements contain mutual recognition clauses, which imply that the signatory countries will adopt domestic technical standards in some economic sectors.

3.3 China's domestic state-centric standardization approach

Strikingly, not only is China's growing influence a concern to many European and US observers, but the PRC also has a deviating technical standardsetting system that is essentially state-centric.

Until 2018, China's domestic standardization was formally entirely public. All three types of technical standards—national, local, and sectoral—were developed under the auspices of ministries or local governments. With the growing importance of private companies, private firms were increasingly involved in standard setting but were always within the institutional framework of state ministries and local governments. A significant share of what China referred to as standards (*guóbiāo*) was mandatory.

The new Standardization Law that came into force on January 1, 2018, institutionalized the increasing role of the private sector in Chinese standardization. Technical standards are now developed in two tiers, one state-driven and one market-driven. National, local and sectoral standards continue to exist, representing the state tier. All local and almost all sectoral standards are voluntary, and the number of mandatory national standards was reduced from more than 10,000 to approximately 2,000, according to policy documents from the Standards Administration of China (SAC). In the market tier, industry associations are encouraged to issue association standards, and a national registry for enterprise standards has been established.[34] China's state-tier standard setting contrasts with both the EU and the US systems in that China's standards are developed in state institutions, not private SDOs. China's market tier might appear similar to the US system, but a closer look reveals that Chinese market tier standardization is also state-centric. Interviews with both Chinese and European industry representatives participating in standard setting in China show that many SDOs have close ties to the party-state and receive informal guidance. In the absence of clear boundaries between private and public actors, private SDOs are far from free of party-state influence. Both formally private and state-owned companies rely on resources allocated by state-controlled actors, for example, loans, land-use rights, subsidies, and procurement.[35] Furthermore, party-state support is essential for technical standards developed in the market tier to become influential.

One might question why the PRC's state-centric approach is problematic. Both the importance of the Chinese market and its domestic standards, as well as international effects, are crucial.

3.4. The externalization of China's state-centric approach

Academic research indicates that states tend to externalize their domestic standardization approaches in (re)shaping the international system of standard setting.[36] As I have argued elsewhere in more detail, the

33. Office of the Leading Group for Promoting the Belt and Road Initiative (2019). "The Belt and Road Initiative. Progress, Contributions and Prospects". Online available at www.chinaembassy.se/eng/zgxw/t1675676.htm (accessed: 22 September 2019).
34. SAC (2020). Online available at: www.sac.gov.cn/sxxgk/zcwj/202101/t20210122_347055.html (accessed: 6 February 2021).
35. Milhaupt, C. J. and Zheng, W. (2015). "Beyond Ownership: State Capitalism and the Chinese Firm", *The Georgetown Law Journal*, 103(3), 665-722.
36. Nicolaidis, K. and Egan, M. (2001). "Transnational Market Governance and Regional Policy Externality: Why Recognize Foreign Standards?", *Journal of European Public Policy*, 8(3), 454-473. Tate, J. (2001). "National Varieties of Standardization", in: Hall, P. A. and Soskice, D. (eds.). *Varieties of Capitalism. The Institutional Foundation of Comparative Advantage*, Oxford: Oxford University Press, 442-473.

same holds for the PRC, which is utilizing its state-centric approach in the international context, thereby making the international standardization system more state-centric.[37]

In the formal standardization of 5G and 6G, the PRC makes use of its state-centric model in four different dimensions. First, China uses significant financial resources from the state to support the research and development (R&D) of supposedly private firms. Huawei, a national champion with close ties to the party-state (though not state-owned), has rapidly expanded its technical expertise.[38] Strikingly, the Chinese firm benefits from party-state support. In 25 years, Huawei has received as much as US$ 75 billion in tax breaks and cheap loans. Huawei received US$ 46 billion in cheap loans, credit lines and other support from state lenders alone. Between 2008 and 2018, the company saved US$ 25 billion in taxes due to state incentives to promote the tech sector.[39]

Second, since China has identified first-mover advantage as an effective tool to shape standardization, the PRC has made early commercialization a central feature of its industrial policy.[40] In 5G, the PRC has not only sponsored the world's largest 5G trial area in the Yangtze River Delta,[41] but the state-controlled mobile operators have been instructed to roll out the most innovative version of 5G, known as standalone 5G. The financial risks of this decision have effectively been socialized in China.[42]

Third, striving to increase the participation of Chinese actors, the PRC has handed out scholarships and other financial rewards to fund standardization efforts from Chinese firms. Local and regional governments in China provide annual stipends of up to US$ 155,000 to companies that develop technical standards.[43]

Fourth and finally, the party-state has actively engaged in coordination among Chinese actors to ensure that firms from the PRC speak with one voice in international SDOs and always vote as a block. In the field of 5G, for example, the PRC founded the IMT 2020 (5G) Promotion Group, which comprises Chinese public agencies (Ministry for Industry and Information Technology, Ministry of Science and Technology and the National Development and Reform Commission), research institutes (Beijing University of Posts and Telecommunications) and all sorts of Chinese tech companies for coordination purposes in 2013.[44]

In de facto standardization, China has also externalized its state-centric approach. Here, three mechanisms have been decisive. First, the party-state has fostered its prospects by facilitating mergers and acquisitions and, thus, the enlargement of firms. Big companies with a high market share are well positioned to gain

37. Rühlig, T. and ten Brink, T. (2021). "The externalization of China's technical standardization approach", *Development and Change*, 52(5), 1196-1221.
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39. Rühlig, T. (2020). "Who Controls Huawei? Implications for Europe". Online available at https://www.ui.se/globalassets/butiken/ui-paper/2020/ui-paper-no.-5-2020.pdf (accessed: 30 January 2022). Yap, C.-W. (2019). "State Support Helped Fuel Huawei's Global Rise". Online available at www.wsj.com/articles/state-support-helped-fuel-huaweis-global-rise-11577280736 (accessed: 9 February 2020).
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42. Eisenstark, R. (2018). "Why China and the US Are Fighting over 5G". Online available at https://technode.com/2018/03/30/5g/ (accessed: 11 April 2019). Rühlig, T. and Björk, M. (2020). "What to Make of the Huawei Debate? 5G Network Security and Technology Dependency in Europe". Stockholm: The Swedish Institute of International Affairs.
43. Pop, V. et al. (2021). "From Lightbulbs to 5G, China Battles West for Control of Vital Technology Standards". Online available at https://www.wsj.com/articles/from-lightbulbs-to-5g-china-battles-west-for-control-of-vital-technology-standards-11612722698 (accessed: 4 August 2022).
44. Chen, S.-Z. and Kang, S.-L. (2018). "A Tutorial on 5G and the Progress in China", *Frontiers of Information Technology & Electronic Engineering*, 19(3), 309-321.

the status of de facto standard-setters. In recent years, the average size of SOEs has grown considerably, which helps China to establish more de facto standards.

Second, the party-state supports de facto standard setting by facilitating market dominance. Package deals of the BRI often combine financing of infrastructure projects with the condition to execute the projects by Chinese companies that use Chinese technical standards.

Third, the results are long-term lock-in effects. For example, countries building their railways using Chinese technical standards will depend on Chinese manufacturers for decades to come. If, in a specific country, exclusively Chinese vendors produce according to Chinese technical standards, potential competitors, including from Europe, are essentially excluded from markets in BRI countries since their products are compatible with the existing technology. Producing two types of equipment, one in accordance with European standards and the other in line with Chinese standards, is noneconomic for most producers in the rail industry. Chinese experts are aware of these effects.[45]

While being locked into de facto standards is not a new phenomenon, China's state-centric approach involves more than just economic dependencies. Railways, for example, are critical infrastructure. Their functioning is crucial for supply reliability, the logistics of production, people's mobility, including cultural and social participation, and, thus, public stability and security. If countries build critical infrastructure based on Chinese standards, there might be strings attached.

All this indicates that the ongoing competition over technical standardization is not just about the share of influence but also contests the very nature of the existing standardization system. Previously largely a domain of private self-regulation, China has not only a state-centric system domestically, but party-state presence also shapes its international practices. The state-centric system and its execution through national champions and state-owned firms make a close linkage between political goals and technical standards relatively easy for the PRC.

4. FOUR DIMENSIONS OF TECHNICAL STANDARDIZATION POWER

China's growing ability to shape international technical standards and the fact that its state-centric vision allows for a direct link between strategic objectives and technical standard proposals is not without consequences. Technical standard setting may have been rather absent from the agenda of states for several decades. However, technical standards translate into a power resource in at least four dimensions.

Economically, a growing proportion of technical standards consist of patented technology. While SEP holders commit to licensing their patented technology on FRAND terms, this does not imply that the distributary effects are low. Licensing SEPs can be costly. US Qualcomm, for example, earned €5.2 billion by licensing technology in 2017, accounting for more than 20 percent of the company's revenue. The share of Sweden's Ericsson is, however, much smaller, standing at 3.3 percent.[46]

The distributary effects of technical standards are not limited to the payment of royalties for SEPs. Companies that fail to establish their technological solutions as technical standards must redesign their products to comply with standards. This results in switching or adaptation costs. In an extreme example, Sony lost all its investment in the development and production related to the Betamax standard to the

45. Interview, senior researcher in a leading think tank, Beijing, November 2019.
46. Information obtained by the author from the company.

triumphant VHS format of video screening. Observers calculate that the lost battle cost Sony a three-digital million sum. Another example is China's unsuccessful attempt to establish a rival standard for the third generation of mobile communication. Chinese observers agree that one reason Huawei emerged as the Chinese market leader in later generations of mobile infrastructure equipment is that it did not apply the indigenous Chinese 3G standard and, therefore, did not need to absorb significant financial losses.

In short, the ability to shape technical standards may have an enormous impact on the profitability of firms and on the technological and economic competitiveness of countries.

Legally, technical standards represent an enormous force despite being voluntary on paper. For example, the Agreement on Technical Barriers to Trade (TBT), among other pieces of world trade law, treats international standards as crucial benchmarks for the facilitation of international trade and as important qualifications of what accounts as a legitimate exception. This is more crucial than one might think given that approximately 80 percent of trade is affected by technical standards and associated technical regulations.[47]

Rather than being often enforced, the fact that international standards could be used as a benchmark under WTO law serves its purpose. One of the relatively few examples of disputes is the EU's conflict with Mexico over deviating standards contradicting ISO 6486-1/2 of ceramics.

Technical standards can also have extraterritorial effects. When a standard is referenced in a legally binding document of a major economy, global manufacturers need to adapt to that standard if they choose the easiest and cheapest way to gain market access. Companies try to avoid production redundancies based on different standards. Harmonizing global fabrication is the most efficient. Often, this results in the application of the strictest standard globally and beyond any given area of jurisdiction.

A famous example from Sweden is IKEA. To avoid producing slightly different furniture for different markets, IKEA's standardization and regulation department compares standards from around the world with the purpose of developing a global IKEA standard that is compliant with all relevant specifications in all markets. As a result, IKEA furniture complies with the strictest technical standards of the world in all of its markets.

In terms of *security*, technical standards can create lock-in effects. Standards generate interoperability only in the areas where they are applied. Hence, technical standards can create geographically bifurcated or fragmented technological corridors. Decades ago, economists were already studying lock-in effects resulting from dominant technologies, particularly if they enabled complementary technologies (network effects/externalities).[48] Such studies have convincingly demonstrated that the hurdles are high to change such dominant technical standards.[49] Countries that rely on a specific standard in a crucial technological field (e.g., for its critical infrastructure) find it hard to freely choose a supplier. In particular, when such lock-in effects create dependencies from state-owned enterprises, countries may find themselves in a situation where such dependencies undermine their ability to act autonomously and thereby affect their security. An example is the abovementioned case of Chinese railway standards along the BRI. For example, digital

47. OECD (2019). "Regulatory Reform and International Standardisation. Working Party of the Trade Committee". TD/TC/WP(98)/FINAL (1999).
48. Bonardi, J.-P. and Durand, R. (2003). "Managing Network Effects in High-tech Markets", *The Academy of Management Journal,* 17.
49. Arthur, W. B. (1989). "Competing Technologies, Increasing Returns, and Lock-in By Historical Events", *The Economic Journal*, 99.

signaling systems that require constant updating and that need to be interoperable can only be maintained by Chinese state-owned railway equipment suppliers.

Some observers further argue that those who develop a technology are likely to have a deeper knowledge of how it works, including its vulnerabilities. Once internationally standardized, a technology spreads globally. When this concerns critical digital infrastructure, the developer of the technology in question possesses prime knowledge of its flaws that can be used to undermine an adversary's (cyber)security.[50] Other observers counter that standardization is a process of maximum transparency in which it is hardly possible to hide security-relevant flaws from the eyes of the engineers of potential adversaries. From this perspective, a high degree of standardization increases (cyber)security by providing international transparency. Whichever perspective is more accurate, technical standardization influences the degree of (cyber)security in critical digital technologies.[51]

An example of the security implications of ambiguous technical standards is cameras in industrial cleaning robots. While such cameras and the data these cameras collect are required for their autonomous functioning, the pictures could contain information on the industrial equipment used in a factory, including sensitive information and intellectual property. While most consumers trust that the pictures being taken by the cameras are blurred and do not provide such information, the standards, in fact, are vague. Suppliers might rightly claim to comply with all relevant standards while collecting sensitive information that they could sell to or share with competitors. In state-directed economies such as China, such scenarios are not unthinkable.

Ideationally, technical standards can inscribe political and ethical values into technology. Technical standards shape what is perceived as "normal" technology. Therefore, several critical scholars have described technical standards as social institutions in their own right.[52] For instance, a technical standard can prioritize performance over privacy or vice versa. At a time when emerging technologies are increasingly penetrating all spheres of public and private life, ethical, political and security questions are playing a growing role in technical standardization. Algorithmic bias and data privacy are just two examples of ethical underpinnings in technical standardization.[53]

One prominent example is China's effort to make WAPI an alternative to Wi-Fi as the international standard for WLAN. While WAPI offered better performance, it had weaknesses in terms of privacy protection. Only the decision of international SDOs to accept only Wi-Fi as an international standard made the protection of privacy a norm built into WLAN technology.

In sum, the ability to shape technical standardization carries enormous power resources to states in economic, legal, security and ideational terms. China's state-centric links party-state interests closely to the standardization agenda. This makes the PRC an important driving force of the geopolitical turn of technical standardization with vast consequences for technological competitiveness for Europe and European businesses.

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50. Medin, M. and Louie, G. (2019). "The 5G Ecosystem. Risks & Opportunities for DoD". Online available at https://media.defense.gov/2019/Apr/03/2002109302/-1/-1/0/DIB_5G_STUDY_04.03.19.PDF (accessed: 30 January 2022).
51. Author interviews with European engineers involved in the development of 5G. February-November 2019, several cities.
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53. Seaman, J. (2020). "China and the New Geopolitics of Technical Standardization". Online available at https://www.ifri.org/sites/default/files/atoms/files/seaman_china_standardization_2020.pdf (accessed: 30 January 2022).

5. CONCLUSIONS AND RECOMMENDATIONS

Technical standards, long a domain of cooperation and competition among private sector actors, have undergone a geopolitical turn in recent years. The US and the PRC, but also to a lesser extent the EU, have identified the power that underlies technical standards and aim to utilize it in the power struggle over high technology.

The European Commission has adapted to the new realities, proposing a new standardization strategy and suggesting an amendment to the standards regulation. In Germany, but even more so in Sweden, these changes have been met with plenty of skepticism. Critics worry that the new geopolitics of standard setting could jeopardize the entire system. Sweden's rather small but export-oriented economy fears that it might be squeezed into geopolitical frictions with heavy consequences.

These fears are not unfounded. The politicization of technical standards could lead to suboptimal solutions if technical criteria are not treated as decisive for adoption by the country of origin. This contradicts any principle of peer review underlying standard setting and hampers innovation, as technical standardization experts from Europe frequently underscore.

This politicization could further lead to a fragmentation of the spheres of technical standards. Political geographies could also turn into technological demarcation lines. In other words, fragmentation into different technological spaces divided by political alliances and fault lines could deepen existing rivalries.

Such fragmentation has additional consequences for global competition, trade and innovation. A splintered technological world comes at the cost of interoperability and either reduces the market size for manufacturers or requires them to establish several distinct lines of production for different markets. In both cases, profits shrink, competitiveness shrinks and resources for innovation decrease.

For these reasons, critics of the European Commission's adaptation argue that public intervention and politicization could jeopardize a system that has worked to the benefit of all and, given Europe's stronghold in standard setting, to the EU's advantage in particular.

The critics overlook, however, that the geopolitical turn of standardization is already a reality. If nothing happens, the EU could fall victim to great powers, primarily China, utilizing the means at the disposal of its party-state not only to increase its impact on standard setting but also to further its political power. In other words, resisting adaptation to geopolitical realities will not prevent Sweden from becoming vulnerable to the politicization of standard setting. Only a constructive and cooperative approach in Europe in collaboration with the European Commission will serve Sweden's interests. At this stage, Sweden's business community and relevant government organs tend to be skeptical and stress the concerns they have with the European Commission's proposals. While Sweden's insistence on the value of the existing system is well grounded, it would be beneficial if geopolitical risks were to be taken more seriously. Swedish actors are comparatively slow in acknowledging these risks.
In this situation, the EU needs to strike the right balance between preserving the bottom-up system and allowing some top-down coordination and facilitation to avoid damaging European political interests. This is a delicate task that requires both policy-makers and industry to adapt to the new geopolitics of standard setting. Thus, I propose the following.

- *Make the high-level forum a success*: All stakeholders, public and private, share an interest in the coordination of strategic political goals responding to existing concerns and adapting them to the realities on the ground. For this, the European Commission has proposed a new high-level forum that

will include a preparatory structure bringing together these stakeholders. Active participation, as well as mirroring such high-level forums at the national level within EU member states, would be helpful.

- *Coordinate with like-minded partners and avoid undermining the bottom-up approach*: Technical standardization has already turned into a central field of transatlantic policy coordination in the EU-US Trade and Technology Council (TTC). While such coordination is not least helpful in the context of information exchanges identifying potential security and ideational challenges and resulting from Chinese standard proposals, they should also not overshadow the fact that standard setting needs to remain in the private domain. Hence, formats such as the TTC could be expanded to other like-minded states, but expectations should be kept low.
- *Invest in standardization knowledge and involve different stakeholders*: To this day, policies tend to be crafted based on limited knowledge of technical standardization and how China's state-centric system works. Standardizers, in turn, are hardly aware of the political agenda driving the PRC's efforts. Investing in research and its popularization as well as establishing a "standards tracker" that combines technical with political expertise would be helpful.
- *Insist on transparency and establish fundamental values as benchmarks for standards*: With more political representatives taking an increasingly direct and prominent role in standard setting, fundamental human rights should be acknowledged as a criterion, at least in strategic sectors such as artificial intelligence. The EU could advocate SDOs and standard-developing industry consortia to adopt a self-commitment to basic human rights. For example, the Internet Research Task Force (IRTF) has already developed human rights guidelines, and the Internet Engineering Task Force (IETF) has a similar solution for privacy considerations. Targeted support for the involvement of civil society groups should also help ensure that human rights remain an active focus of standardization.
- *Continue cooperation with China but insist on reciprocity and further reform*: Europe has been advocating for its own standardization system in China in the past and has also continued to cooperate with the PRC on concrete standardization proposals. Despite the geopolitics of standards, such cooperation is helpful and should not be abandoned. Technical standardization is based on cooperation. However, the EU should condition such cooperation to further Chinese reforms and insist on strict compliance with the PRC's obligations under the treaties of the World Trade Organization.
- *Strengthen the existing European standardization ecosystem*: Public investment in R&D should be further tied to technical standard proposals as deliverables. Academic training and support for small and medium-sized enterprises and civil society can further increase European strength in standard setting. Public funding for SMEs could be particularly helpful. While they tend to be overlooked in the geopolitics of standard setting, SMEs continue to be particularly successful in establishing their technical standards internationally if they decide to push for it. For small and medium-sized enterprises in particular, participation in standardization is often prohibitively expensive. In addition to membership fees in standardization organizations, personnel and considerable travel costs are incurred. Standards are developed over months, if not years, in numerous meetings held around the globe. Subsidies and tax deductibility for standardization activities may help. While no concrete policies have been adopted yet, Germany is currently considering several of these instruments to support standardization efforts. Equally, companies should make technical standardization a strategic concern. For example, in recruitment, technical standardization expertise hardly plays a role for European companies at this stage. This should change to maintain the existing advantages.

Meeting the challenges resulting from the new geopolitics of standardization requires striking a balance between adaptation and preservation of the existing system. Furthermore, only concerted efforts of both public actors and industry will maintain the EU's stronghold in this field.

Much remains to be understood in terms of the geopolitical turn of standard setting. Standardization ecosystems deviate by sector, and knowledge of the role and approach of China in emerging and foundational technologies remains particularly anecdotal. Another field requiring further analysis is de facto standardization in the BRI. Since concrete projects that are often nontransparent are the most effective tool, tracing the spread of standards in the BRI is demanding.

The geopolitical turn of standard setting is on, and we have yet to learn the full implications of this unfolding picture to which we must adapt in real time.

LIST OF ABBREVIATIONS

BRI	Belt and Road Initiative
CCP	Chinese Communist Party
CCPCC	Central Committee of the Chinese Communist Party
CEN	European Committee for Standardization
CENELEC	European Committee for Electrotechnical Standardization
DIN	German Institute for Standardization
ESOs	European Standardization Organizations
ETSI	European Telecommunications Standards Institute
EU	European Union
FRAND	Fair, reasonable and nondiscriminatory
hEN	Haromonized European Norm
IETF	Internet Engineering Task Force
IRTF	Internet Research Task Force
ITU	International Telecommunication Union
NDRC	National Development and Reform Commission
NSBs	National Standards Bodies
PRC	People's Republic of China
R&D	Research and Development
RED	Radio Equipment Directive
SAC	Standards Administration of China
SDO	Standard developing organization
SEPs	Standard-essential patents
SMEs	Small and medium enterprises
TBT	Technical Barriers to Trade
TC	Technical Committee
TTC	Trade and Technology Council
US	United States
WLAN	Wireless local area networking

EUROPE SHOULD BE HELD TO HIGH STANDARDS

Comments on Dr. Tim Rühlig's paper "Technical Standardization and Innovation in a Changing Geopolitical Landscape"

by
Mr. Håkan Jonsson, LL.M., Partner Hallvarsson & Halvarsson

I have been asked to provide some personal, perhaps political, views on PhD Tim Rühlig's excellent paper in last semester's SEF Dialogues volume, "Rethinking Boundaries and Revisiting Borders". Dr. Rühlig's paper is called "Technical Standardization and Innovation in a Changing Geopolitical Landscape" and focuses on a series of paradoxes in Europe's recent strategic developments in the field of standardization.

I will comment on parts of Tim Rühlig's paper, and will also add a few related ideas of my own. I will claim:

- that standardization is underexplained and underestimated in politics
- that Europe has, by and large, gotten it right (even though I share some of Dr. Rühlig's China worries)
- that there are counterproductive elements in the strategy from the European Commission
- that a strategic policy framework for standardization must be limited to precisely that – just politicize the framework, never politicize content

First: **standardization matters**, but people don't realize that. Not even the politicians realize that. For an activity that underpins almost all walks of life, in particular economic activity; that makes people's lives easier in a very direct way; that provides almost every fourth Euro in our GDP growth; and that helps spread European values and defend the rules-based world order; standardization is little understood.

Underpins almost all walks of life: well, begin with the mere fact that I am writing these sentences from left to right, and from top to bottom on the page – and you are reading them in the same pattern. A standardization that obviously precedes the EU as well as CEN and CENELEC, but nevertheless definitely a piece of successful European standardization.

Makes lives easier: just think of your mobile phone charger. One end of the cord is standardized, the other one isn't. Travel around Scandinavia, Germany, France or large parts of continental Europe, and you will always be able to plug it into the socket. But at the other end of the cord, it has taken a decade to force a political solution down the throat of the industry to provide a joint solution for the connection to the phone.

Every fourth Euro of GDP growth: when ISO, the International Standards Organization, made a meta-analysis of existing published studies on the contribution of standardization to society, they found that most studies estimated the part of GDP growth that can be attributed to standardization to be between 17 and 29 percent.[54]

54. https://www.iso.org/files/live/sites/isoorg/files/store/en/PUB100456.pdf

Help spread European values and defend the rules-based world order – let me come back to that one.

Surely, by providing all this, standardization must be the talk of the town? Not very much so. A number of years ago, I did research for a text on standardization (that was never published), and looked at the number of mentions in Sweden's largest morning pink newspaper, the Dagens Industri. A comparison between a selection of household terms for economic activity and business showed the following number of articles in this paper for the year 2009:

"Design" – 540 articles
"Patent" – 179 articles
"Productivity" – 115 articles
"Innovation" – 91 articles
"Outsourcing" – 39 articles
"Standardization" – 2 articles

(Search words in Swedish: "design", "patent", "produktivitet", "innovation", "outsourcing", "standardisering")

Against this backdrop, Tim Rühlig is doing a great service to academic discourse, to economic policy analysis, and to the general debate, by being a prolific writer about the role of standards. And he is wise to include, also in this piece, a quite thorough explanation of what standards are, and how they work. People, including policymakers, simply don't know that.

In his recent research, Tim Rühlig has focused a lot on **China**. That is true for this paper as well. I would argue that he has every reason to do that. China is the economic power that is stepping up its standardization policy game the most, and the quickest – albeit from a low level. China, the home of the belt and road project, is the economic power with the clearest agenda for these actions. Last, but not least, when China has set a clear strategic goal, it usually achieves it. So, as Europeans, we have every reason to pay attention, and to try and do something strategy-wise ourselves. But what?

Here, my analysis differs slightly from that of Tim Rühlig, and certainly from that of the European Commission. I will explain why, but this needs a bit of a backdrop.

Europe has emerged in the last fifty or so years as the world's most efficient standard-setting economic actor. In a paper that I published for Swedish think-tank "Frivärld", "Inre marknad, yttre styrka", 2019 (Swedish only), I referred to a couple of things to show this.[55]

- smart and quick methods for legislation, including the innovative "New approach" for drafting laws, where standards play a key role
- the driver behind this has been a need to harmonize internally, but the end result is having an impact far beyond Europe's borders
- when Europe is quick in regulating a new phenomenon, others often chose to follow – for reasons of market access, or for reasons of sound policy
- when a number of European countries have gone through the exercise of merging their legislations, the end result is easy to replicate for other economic actors – the edges are rounded off through the process of amalgamating different legal traditions

55. https://frivarld.se/wp-content/uploads/2019/05/Inre-marknad-yttre-styrka.pdf

- there are several examples of others more or less copying European laws: China and others have copied product legislation such as the RoHS and WEEE directives; the data protection and integrity legislation GDPR is both hated and widely copied

The Economist, in its "Charlemagne" column, stated in 2007 that "Brussels is becoming the world's regulatory capital"[56] My point is that this is being achieved when we as Europeans are not trying. We are at our best as standard-setters when we do this for our own sake – to merge legislation, to regulate the internal market, to level out the European playing field. In contrast, every time we set about trying to create a global market leadership status for ourselves, or when we try to push our values on others through clauses in trade deals, we are far less successful. This is where I fear that an effect of the strong focus on China might lead us to try and do things to push back. That, I'm afraid, risks failing.

In other words, we have been the most successful when we have made the least effort. This also plays well with the fact that standards in Europe are mainly a bottom-up exercise (Rühlig's paper, page 16), while China attempts to impose standards from the top down (as it always tends to). So, we think our method is smarter, quicker, more democratic. It also provides a result reflecting our values – on environment, climate, social rights, gender equality, etc. This is part of what I mean by standards and regulation spreading European values and helping preserve the rules-based world order. When I wrote my paper for Frivärld, it was in the era of the Trump administration in Washington, and Europe was seen as the only world actor seeking to preserve the UN system, the Bretton Woods institutions, and basically the rule of law.

Tim Rühlig's paper is an excellent exposé over the current status, with the typical need to seek presenting policy objectives. As is so often the case with papers from the world of applied academics – like in the think-tank world, where solid and useful policy advice is the holy grail – he sometimes falls into the trap of trying to present hard choices, even where I see no such hard choices. But I may be wrong.

Instead, if you ask me, Europe has done most things right, is doing most things right, and looks set to continue doing most things right. We are quicker and more cohesive than the US in setting standards. We are better than China at setting standards bottom up, that are sought after and work for industry. Instead of big policy changes, I am all in favor of "just keep going". But such conclusions make for dull reading in a think-tank paper.

Given, there are things to watch out for. Listening to Swedish industry, they are increasingly worried about what they see as a politicization of standardization. The Commission strategy from February 2022 meant taking steps in the wrong direction in several ways. The politicians should strategize the system of standardization – not by adding strategic policy objectives to the content of standards, rather by making standards strategically integrated in regulation and in policy. Having CEN and CENELEC appointed for the RED Directive is, in my view, the right thing to do – it has bearing on strategy of the system. But if the mandate would have sought specific solutions, I would be against. This is also in line with the view of, for instance, the Swedish trade organization Teknikföretagen in several papers and op-ed articles.[57]

So, in a nutshell: make sure that standardization is integrated in a strategic policy context. But standardization as such works best when politicians look the other way.

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56. https://www.economist.com/europe/2007/09/20/brussels-rules-ok
57. One such example being: https://issuu.com/bdi-berlin/docs/221024_bdi_statement_standardisation_strategy

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