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TECHNO-ECONOMIC GOVERNANCE IN THE 21ST CENTURY: CONVERGING MODELS FOR WIPO AND THE WTO?

GABRIELE GAGLIANI*

The economic and societal impact of Artificial Intelligence (AI) and the consequent race for AI dominance undertaken by several countries around the globe has led to discussions and negotiations on its regulation at the international level. This article focuses on AI-related activities and initiatives at the World Intellectual Property Organization (WIPO) and the World Trade Organization (WTO). Given its characteristics and relevance for the economy and society as a whole, AI offers a vantage point to explore the governance models adopted by international organisations. As such, although several international organisations are currently addressing AI, the article will focus mainly on two of them, WIPO and the WTO, as these are the two organisations largely responsible for dealing with questions connected to AI-related innovation, creativity and appropriability (under intellectual property (IP) law and policy) as well as circulation and diffusion (under trade rules concerning AI and data). The article shows that despite historically different governance models, with WIPO featuring open discussions with Members, stakeholders, and civil society, and the WTO relying on a rather State-centred/inter-governmental approach, development at both organisations has led to some convergence. Indeed, comparable activities and initiatives have been launched at both WIPO and the WTO. In any case, given the relevance of, and the link between, IP and trade rules for the development of AI systems (as these systems rely on data that is often traded internationally and, concurrently, produce data when they carry out their tasks), the article argues that only a highly-integrated approach based on strict coordination between these organisations can result in an effective international regulatory framework tackling the most pressing challenges of AI.

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* Lecturer, Bocconi University, Milan, Italy. Adjunct Professor, Case Western Reserve University School of Law, Cleveland, Ohio, USA. Ph.D., Université Paris-Saclay and Università degli Studi di Palermo. LL.M. in International Economic Law and Policy (IELPO), Universitat de Barcelona. The author may be reached at gabriele.gagliani[at]unibocconi.it.

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I. INTRODUCTION

The digital and technological revolutions of the last couple of decades have profoundly changed the economy and society. The advent and current developments of AI are prominent amongst recent technological advancements. AI brings big promises with it, but at the same time raises important challenges. Though developments in the field of AI and its regulation may bridge the digital divide between and within countries, the global race for AI dominance may also end up widening the digital gaps between and within countries.

The need to adopt (at least, some) common, international rules on AI is thus pressing. In this context, rules on innovation, creativity, and appropriability (i.e., IP law and policy) as well as on the diffusion and circulation of AI and data (which are needed for AI to work and improve and are, concurrently, produced by AI while carrying out tasks) are especially important. WTO and WIPO, being the primary international organisations tasked with international IP and trade law and policy, may have a special role to play in AI regulation. Besides, it may be interesting to compare WIPO and the WTO, given their (at least, traditionally) different governance models.

Along these lines, this article explores and sheds light on AI-related activities and initiatives at WIPO and the WTO. In other words, the article goes into the techno-economic governance models of and at these two organisations in respect of AI.

The term "governance" here is intended broadly as:

> the sum of the many ways individuals and institutions, public and private, manage their common affairs. It is a continuing process through which conflicting or diverse interests may be accommodated and cooperative action may be taken. It includes formal institutions and regimes empowered to enforce compliance, as well as informal arrangements that people and institutions either have agreed to or perceive to be in their interest.[1]

This article seems timely and relevant in light of the ongoing discussions and negotiations concerning AI (with no formal convention having been adopted on the subject till date), and the unprecedented implications of AI for the economy and society if compared to other topics discussed at WIPO and the WTO. Also, focusing on AI governance requires necessarily, a revision of the interplay of AI, IP and international trade in general.

The article argues that, historically, WIPO and the WTO have adopted different governance models. While stakeholders and civil society have had, traditionally, a role to play in WIPO negotiations, next to WIPO Members, the WTO has relied on a mainly Member-driven and Member-centred approach. Important developments have nonetheless taken place and some convergence (with an opening at the WTO towards stakeholders and civil society) has taken place, notably, in AI-related negotiations. While this convergence is certainly significant, given the relevance of, and the link between, IP and trade rules for the development of AI systems, the article argues that only a highly integrated approach based on strict coordination between these organisations can result in an effective international regulatory framework tackling the most pressing challenges of AI including, importantly, the digital divide.

Before proceeding, it is worth mentioning that, besides WIPO and the WTO, discussions on AI-related issues are currently taking place at several international organisations. These organisations will be referred to where appropriate. Moreover, as noted, this article focuses on AI but, given the strong connection between AI and data, attention will be also paid to data where appropriate.

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[1] UN COMM'N ON GLOB. GOVERNANCE, OUR GLOBAL NEIGHBORHOOD: THE REPORT OF THE COMMISSION ON GLOBAL GOVERNANCE 2-3 (1995).

The article will proceed as follows. First, it will briefly address the relevance of AI for the economy (Part II). Subsequently, it will focus on the interplay of AI, IP law and trade law, and WIPO and the WTO's activities and initiatives concerning AI (Part III and Part IV, respectively). Finally, Part V will articulate some general considerations on convergence, cooperation and coordination between these two Organizations and the way forward.

II. THE IMPACT OF ARTIFICIAL INTELLIGENCE ON THE ECONOMY

It seems commonly accepted that the term "Artificial Intelligence" was coined in the 1950s by John McCarthy, Professor of Computer Science at Stanford University.[2] Despite the strides made by science and technology in the field of AI since the 1950s, it is difficult to define AI "simply and robustly."[3] It may be said that AI encompasses several techno-scientific branches and that, conceptually, AI refers to "a growing resource of interactive, autonomous, and often self-learning (in the machine-learning sense . . .) agency, that can deal with tasks that would otherwise require human intelligence and interventions to be performed successfully."[4]

Along these lines, some have identified different AI paradigms (i.e., approaches used by researchers to solve AI-related problems, distinguishing amongst logic-based tools, knowledge-based tools, probabilistic methods, machine learning, embodied intelligence, and search and optimisation) as well as several possible AI problem domains (i.e., the capabilities of AI, distinguishing amongst reasoning, knowledge, planning, communication, perception, with the possibility to add creativity and motion).[5] Given this variety of possible applications of AI, it should not be surprising that AI has been applied in many sectors, ranging from transportation and manufacturing to healthcare, entertainment, and sports.[6]

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[2] Stephanie Dick, *Artificial Intelligence*, 1.1 HARV. DATA SCI. REV. 2 (2019).

[3] WOLFGANG ERTEL, INTRODUCTION TO ARTIFICIAL INTELLIGENCE 1 (Ian Mackie ed., Nathanael Black trans., 2017).

[4] Luciano Floridi, *What the Near Future of Artificial Intelligence Could Be*, 32 PHIL. & TECH. 1, 2 (2019).

[5] Francesco Corea, *AI Knowledge Map: How to Classify AI Technologies*, MEDIUM (Aug. 29, 2018), https://francesco-ai.medium.com/ai-knowledge-map-how-to-classify-ai-technologies-6c073b969020.

[6] Techjury.net, *How AI is Being Deployed Across Industries*, ROBOTICS BUS. REV. (Apr. 5, 2019), https://www.roboticsbusinessreview.com/ai/infographic-how-ai-is-being-deployed-across-industries/#:~:text=Applications%20of%20AI%20in%20various,aerospace%2C%20and%20so%20much%20more.

Some sectors, such as the financial services industry and healthcare, are apparently using AI systems already more than others. As noted by some commentators in respect of financial services, "[w]ithin the financial services industry, AI applications include algorithmic trading, portfolio composition and optimisation, model validation, back testing, robo-advising, virtual customer assistants, market impact analysis, regulatory compliance and stress testing."[7] As for healthcare, most AI technologies "have immediate relevance to the healthcare field", spanning from diagnosis and treatment applications to patient engagement, adherence applications and administrative applications.[8]

Along these lines, while in 2018, observers noted that "[t]he AI revolution is not in its infancy, but most of its economic impact is yet to come",[9] the 2021 AI Index Report of Stanford University points out that AI can now generate "everything", and industry (e.g., businesses in healthcare and pharma, automotive, and assembly) is now playing a growing role in AI development.[10] Yet, already in 2018, a study of the United States (US) National Bureau of Economic Research, which concluded that more empirical research is needed to better understand the impact of AI on the economy, found that the use of AI and robotics improves productivity while effects on labour (i.e., AI-induced labour disruptions) are mixed.[11] In addition, observers have held that, compared to small and mid-size companies, big companies have an advantage in the implementation of AI and, therefore, "AI is likely to help big companies get bigger."[12] In this context, a recent survey has showed that employees and professionals of companies using AI and machine learning, consider that the quality of data used by AI systems is the main reason for

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[7] Bruce G. Buchanan, *Artificial Intelligence in Finance*, THE ALAN TURING INST. 11 (Apr. 2019), https://www.turing.ac.uk/sites/default/files/2019-04/artificial_intelligence_in_finance_-_turing_report_0.pdf; *see* International Monetary Fund, *Fintech: the Experience So Far*, IMF POL'Y PAPER 8, 35, 51 (Jun. 2019), https://www.imf.org/en/Publications/Policy-Papers/Issues/2019/06/27/Fintech-The-Experience-So-Far-47056/.

[8] Thomas Davenport & Ravi Kalakota, *The Potential for Artificial Intelligence in Healthcare*, 6(2) FUTURE HEALTHCARE J. 94, 95 *passim* (2019).

[9] Jacques Bughin et al., *Notes from the AI Frontier: Modeling the Impact of AI on the World Economy*, MCKINSEY GLOBAL INST. DISCUSSION PAPER (2018), https://www.mckinsey.com/featured-insights/artificial-intelligence/notes-from-the-ai-frontier-modeling-the-impact-of-ai-on-the-world-economy#.

[10] Daniel Zhang et al., *AI Index 2021 Annual Report* 4, STAN. U. HUMAN-CENTERED ARTIFICIAL INTELLIGENCE, 41, 80 *passim* (2021), https://aiindex.stanford.edu/report/.

[11] Jason Furman & Robert Seamans, *AI and the Economy*, 26 (Nat'l Bureau of Econ. Research, Working Paper No. 24689, 2018), https://www.nber.org/system/files/working_papers/w24689/w24689.pdf.

[12] THOMAS H. DAVENPORT, THE AI ADVANTAGE: HOW TO PUT THE ARTIFICIAL INTELLIGENCE REVOLUTION TO WORK 32 (2018).

failures regarding these systems' implementation.[13] Indeed, inconsistencies in the standards used for data collection, problems to access (reliable) data as well as compliance and privacy issues in the field of data, inevitably affect the successful implementation of AI systems.

Following these forecasts, according to some analysts, several countries including France, Germany, Japan, Russia, South Korea, the United Kingdom (UK) and, more prominently, China and the US, have undertaken a race for AI dominance:

> what makes the AI industry unique is that it is actually not a new thing, but rather evolved over decades, even prior to the development of the modern digital computer. As a result, many technology developments, investment, and intellectual property exists outside the US and China. Countries that have been involved with AI since the early days are realizing the strategic nature of AI and doubling down on their efforts to retain a stake in global AI share and maintain their relevance and importance.[14]

Other big economies, such as India, have high stakes in AI but have also encountered challenges in the adoption of AI systems on a large scale.[15] Notably, these challenges relate to the investments needed in research on, and implementation of, AI; as well as awareness concerning the possible uses of AI in order for it to be strategically employed and widely diffused across the economy and society.

This global race for AI dominance adds complexity to the questions raised by AI in respect of IP and trade. Indeed, as highlighted by the Secretary-General of the International Telecommunication Union (ITU) in a study published in 2019 concerning how United Nations (U.N.) agencies are using AI, "[f]or AI to be a force for good, it must face complex questions about trust and address challenges ranging from job displacement to autonomous weapons and potential bias in algorithms. What is clear is that no nation, company or organization can meet

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[13] Kyle Wiggers, *Employees Attribute AI Project Failure to Poor Data Quality*, VENTUREBEAT (Mar. 24, 2021), https://venturebeat.com/2021/03/24/employees-attribute-ai-project-failure-to-poor-data-quality/.

[14] Kathleen Walch, *Why The Race For AI Dominance Is More Global Than You Think*, FORBES (Feb. 9, 2020), https://www.forbes.com/sites/cognitiveworld/2020/02/09/why-the-race-for-ai-dominance-is-more-global-than-you-think/?sh=6a07a3ab121f.

[15] Manomita Chakraborty, *Artificial Intelligence: Growth and Development in India*, ANALYTICS INSIGHT (Jan. 6, 2021), https://www.analyticsinsight.net/artificial-intelligence-growth-and-development-in-india/#:~:text=As%20the%20fastest%20growing%20economy,AI%20researchers%20and%20start%2Dups.

these challenges alone."[16] Along these lines, the article will now focus on AI-related activities and initiatives at WIPO and the WTO, respectively.

III. WIPO AND THE REGULATION OF AI

A. AI and IP Law

The advent and fast-paced development of AI raise a number of challenges for the IP system. Notably, AI risks unhinging the premises and assumption that the IP protection system has relied on for centuries. As pointed out by some scholars:

> [t]raditionally, the justification of IP rights builds on either deontological or utilitarian economic grounds. The advent of AI, however, might change the underlying paradigms. On the one hand, AI leads to a potential decline in human effort necessary for the generation of intangible goods. This affects the anthropocentric deontological justification theories. On the other hand, AI changes certain market conditions and thus impacts utilitarian welfare theories.[17]

As a result, the interplay of AI and IP raises multiple issues. Taking into account that "AI relies heavily on software and data", a recent study, carrying out a literature analysis on AI and IP, has focused on the IP protection of AI systems, the use of data for training AI, the protection for AI-generated inventions and creations, and the interplay between transparency and explainability and IP.[18] Some of these questions are not new since, already in the 1960s, questions arose on whether computers could be authors or inventors and computer-generated inventions and works could be afforded IP protection.[19] Similarly, in the 1990s, leading scholars addressed authorship in relation to machines in depth.[20] Still, there

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[16] INT'L TELECOMM. UNION, UNITED NATIONS ACTIVITIES ON ARTIFICIAL INTELLIGENCE (AI) 7 (2019), https://www.itu.int/dms_pub/itu-s/opb/gen/S-GEN-UNACT-2019-1-PDF-E.pdf [hereinafter ITU].

[17] Reto M. Hilty et al., *Intellectual Property Justification for Artificial Intelligence*, MAX PLANCK INST. FOR INNOVATION & COMPETITION RESEARCH PAPER No. 20-02 3-4 (2020).

[18] Maria Iglesias et al., *Intellectual Property and Artificial Intelligence: A Literature Review*, EUR. COMMISSION 5-6 (2019), https://ec.europa.eu/jrc/en/publication/intellectual-property-and-artificial-intelligence-literature-review.

[19] Christian Hartmann et al., *Trends and Developments in Artificial Intelligence: Challenges to the Intellectual Property Rights Framework,* EUROPEAN COMMISSION 19 (2020), https://op.europa.eu/en/publication-detail/-/publication/394345a1-2ecf-11eb-b27b-01aa75ed71a1/language-en.

[20] Jane C. Ginsburg, *People Not Machines: Authorship and What It Means in the Berne Convention*, 49 IIC – INT'L REV. IP & COMP. L. 131 (2018).

seems to be a common view that the challenges raised by AI in the field of IP today are ground-breaking.[21]

Thus, AI brings to the fore questions on the IP system concerning its very foundations. In respect of AI, some commentators have wondered "what should we reward and for how long? Are the costs of 'monopolies' greater than the benefits?"[22] Others have aptly summarised the widely differing views on AI and the IP concept of authorship and inventorship pointing out that "[w]hile some believe that IP will cope with the forthcoming challenges without major adjustments or alterations, others see the system as a whole at stake."[23]

In this context, it should be noted that the important evolution of AI in the late 2000s and early 2010s, shifting from "simple automation to robust autonomous systems" has partially developed, with significant advancements, the fields of robotics and computer science.[24] As noted, amongst the several connections existing between different technological fields, the one between AI and data is particularly relevant. This is due to the fact that "[w]hile the sci-fi-sounding AI scenarios highlight the technology's incredible computational power, the practical, effective applications begin with data. Indeed, data is both the most underutilized asset of manufacturers and the foundational element that makes AI so powerful."[25] Along these lines, some have highlighted that the gaps and inconsistencies in the architecture of global data governance "have resulted in a lack of clarity that is undermining confidence in and adoption of new technologies".[26] As clearly pointed out in the European Union (EU) Regulation on the free flow of non-personal data: "the rapid development of the data economy and emerging

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[21] Andres Guadamuz, *Do Androids Dream of Electric Copyright? Comparative Analysis of Originality in Artificial Intelligence Generated Works*, 2 INTELL. PROP. Q. 169 *passim* (2017); Ryan Abbott, *I Think, Therefore I Invent: Creative Computers and the Future of Patent Law*, 57(4) B.C. L. REV. 1079 (2016).

[22] Jeremy A. Cubert & Richard G. A. Bone, *The Law of Artificial Intelligence Intellectual Property, in* RESEARCH HANDBOOK ON THE LAW OF ARTIFICIAL INTELLIGENCE 413 (Woodrow Barfield & Ugo Pagallo eds., 2018).

[23] Anne Lauber-Rönsberg & Sven Hetmank, *The Concept of Authorship and Inventorship under Pressure: Does Artificial Intelligence Shift Paradigms?*, 14 J. INTELL. PROP. L. & PRACT. 570 (2019).

[24] Ugo Pagallo et al., *The Rise of Robotics & AI: Technological Advances & Normative Dilemmas*, *in* ROBOTICS, AI AND THE FUTURE OF LAW 6 (Marcelo Corrales et al. eds., 2018).

[25] Willem Sundblad, *Data is the Foundation for Artificial Intelligence and Machine Learning*, FORBES (Oct. 18, 2018), https://www.forbes.com/sites/willemsundbladeurope/2018/10/18/data-is-the-foundation-for-artificial-intelligence-and-machine-learning/?sh=3b0463f651b4.

[26] William A. Carter & Erol Yayboke, *Data Governance Principles for the Global Digital Economy*, CSIS REPORT 1 (Jun. 4, 2019), https://csis-website-prod.s3.amazonaws.com/s3fs-public/publication/190604_handout_v2.pdf.

technologies such as Artificial Intelligence, Internet of Things products and services, autonomous systems, and 5G are raising novel legal issues surrounding questions of access to and reuse of data, liability, ethics and solidarity."[27] The EU Regulation also clarifies that:

> [t]he expanding Internet of Things, artificial intelligence and machine learning, represent major sources of non-personal data, for example as a result of their deployment in automated industrial production processes. Specific examples of non-personal data include aggregate and anonymised datasets used for big data analytics, data on precision farming that can help to monitor and optimise the use of pesticides and water, or data on maintenance needs for industrial machines.[28]

Hence, the regulation of AI is inextricably linked to the regulation of data and any questions on the possible IP-protection of data will have a bearing on AI.

In this regard, the former Director General (DG) of WIPO noted that the classical IP system is "far from obsolete" in the data-driven economy but "we do have to take note of the fact that advanced data-driven digital technology is clearly the dominant force in economic production and distribution within the digital economy."[29] To create an effective IP policy framework around data, policymakers should define "appropriate and legitimate practices with respect to the collection, storage and use of data."[30] sIn sum, the data economy is raising challenges for the IP system as well.

In light of the preceding remarks, it is not surprising for WIPO to take steps to address the intersection of AI and IP. It is therefore time to focus on WIPO's initiatives on the subject.

B. WIPO'S AI-Related Activities and Initiatives

The words of the current DG of WIPO may clearly sum up WIPO's approach to the regulation of AI: "'[a]s AI and computers drive greater interconnectivity across regional and global borders, it becomes even more important to strive for a

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[27] Commission Regulation 2018/1807, of the European Parliament and of the Council of 14 November 2018 on a Framework for the Free Flow of Non-Personal Data in the European Union, 2018 O.J. (L 303) 59-68.

[28] *Id.*

[29] *Intellectual Property in a Data-Driven World*, 5 WIPO MAGAZINE (2019).

[30] *Id.*

multilateral, multi-disciplinary approach' to any policy response."[31] Indeed, "AI-driven innovation and creation has to benefit all countries irrespective of whether they are at the forefront of adopting AI technologies."[32]

In this context, it may be safe to assert that WIPO has focused on AI with two main types of initiatives. First, WIPO has started to assess the interaction between AI and IP through 'study' initiatives. Following this action, in January 2019, WIPO issued a report titled 'WIPO Technology Trends 2019', focusing on AI. As pointed out by the former DG of WIPO, the aim of the report was to "contribute evidence and bring clarity to this important area of debate".[33] Importantly, the report is wide in scope and covers such varied topics as trends in AI, key players in AI-related patenting, market trends related to AI, key issues arising from AI and policy responses, and the future of AI and the IP system.

As for the second important initiative on AI, in September 2019, WIPO held the first session of the WIPO Conversation on IP and AI. The idea behind this initiative has been to establish an 'open forum' for WIPO Members and stakeholders to exchange views on the IP system and AI, IP policy and AI and, in general, cooperation on IP and AI.[34] Moreover, this WIPO initiative appears to be 'incremental' in nature, building up and evolving, based on the observations and inputs provided by the participants. Indeed, according to WIPO, more than 250 submissions and comments were filed in relation to the compendium that WIPO developed on AI-related most-pressing IP issues.[35] Accordingly, based on the observations received, in May 2020, WIPO published a Revised Issues Paper on Intellectual Property and Artificial Intelligence (Revised Issues Paper).[36] The Revised Issues Paper highlights that:

> [t]he present paper constitutes the revised Issues Paper, which takes into account all comments received . . . As a result, while taking note of the many relevant follow-on questions raised in the submissions, a limited set was included in the revised document. Where opposing views were voiced in the submissions received,

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[31] *WIPO Director General Opens WIPO Conversation on IP and AI: Third Session*, WIPO (Nov. 4, 2020),   https://www.wipo.int/about-wipo/en/dg_tang/news/2020/news_0014.html [hereinafter *WIPO Third Session*].

[32] *Id.*

[33] *WIPO Technology Trends 2019 – Artificial Intelligence*, WIPO TECHNOLOGY TRENDS REPORT 7 (2019), https://www.wipo.int/tech_trends/en/artificial_intelligence/.

[34] *WIPO Conversation on Intellectual Property and Artificial Intelligence*, WIPO (Sep. 27, 2019), https://www.wipo.int/about-ip/en/artificial_intelligence/news/2019/news_0007.html.

[35] *WIPO Third Session*, *supra* note 31.

[36] WIPO, *Revised Issues Paper on Intellectual Property Policy and Artificial Intelligence*, WIPO Doc. WIPO/IP/AI/2/GE/20/1 REV. (May 29, 2020) [hereinafter *Revised Issues Paper*].

no changes were made to allow WIPO to maintain a neutral position.[37]

Importantly, the Revised Issues Paper takes note of the wide scope of the AI-related IP questions raised, and emphasises the need for a coordinated approach amongst international organisations: this is particularly relevant to address questions relating to AI and IP that fall, however, outside the mandate of the Organization (such as ethics, standards, and privacy).[38] Notably, besides collaborating with the ITU and the United Nations Educational, Scientific and Cultural Organization (UNESCO),

> WIPO is participating in the roundtables about AI and digital platforms set up in response to the recommendations made by the UN Secretary General's High-level Panel on Digital Cooperation in The Age of Digital Interdependence report. Also in response to this report, WIPO is taking part in the Road to Bern via Geneva dialogues on digital and data co-operation in the lead up to the 2020 UN World Data Forum.[39]

Respondents to the draft Revised Issues Paper raised several policy concerns. However, the limited arena of WIPO's mandate restricted the included questions to those concerning IP in the Revised Issues Paper. Acknowledging the coordinated approach mandated by AI issues, WIPO has begun coordinating with the related agencies. In fact, WIPO's Conversation on IP and AI will help corroborate different strands of these policy discussions. Illustratively, in the lead up to the 2020 U.N. World Data Forum, WIPO is participating in the Road to Bern via Geneva dialogues on digital and data co-operation *et al.*[40]

Based on the paper, a second session of the Conversation was held in July 2020. As the WIPO itself notes, "[o]ver 2,000 people of 130 countries, including representatives of member states, academic, scientific and private organizations, followed the deliberations" of this Second Session of Conversation.[41] A third session of the Conversation was held in November 2020.[42]

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[37] *Id.* at ¶ 3.

[38] *Id.* at ¶ 4.

[39] *Id.*

[40] *Id.* at ¶ 4.

[41] *WIPO's Second Session of Conversation on IP and Artificial Intelligence Ends with Outline of Next Steps*, WIPO (Jul. 9, 2020), https://www.wipo.int/pressroom/en/articles/2020/article_0014.html.

[42] *WIPO Third Session*, *supra* note 31.

Relatedly, WIPO has been actively developing and using AI systems to enhance IP-related work. The AI tools and activities developed by WIPO include "a machine translation tool (WIPO translate), a trademark image similarity search tool in the Global Brand Database, and an automatic patent classification tool (IPCCAT)" and the publishing of AI-related IP technology trends studies.[43]

Discussions and negotiations at WIPO have also focused on data. Discussions on the possibility to protect non-original databases not qualifying for copyright protection have been fruitless and go back, at least, to the 1996 WIPO Diplomatic Conference on Certain Copyright and Neighboring Rights Questions.[44] As for data protection, WIPO has organised a Virtual Symposium on Data Protection (together with the International Committee of the Red Cross) where the former DG of WIPO stressed upon the relevance of developing "a comprehensive, coherent framework for data protection, part of an overall data governance framework."[45] Along these lines, it is worth noting that the first dialogue on data protection was hosted by the World Health Organization (WHO) and the World Meteorological Organization in February 2020.[46] This testifies to the general interest for data protection and governance by different international organisations. Accordingly, the multiplicity of initiatives on data governance should be welcomed, since they might be conducive to a multilateral framework adequate to address a variety of data-related questions, such as the protection and respect of the right to privacy, thus bridging the digital divide between countries also in "qualitative" terms.[47]

C. Regulating AI At WIPO: A Consolidated Approach

The approach adopted by WIPO on AI is not new. As authoritatively pointed out already, almost twenty years ago:

> [a]s a result of rapid advances in technology, however, traditional treaty-making processes are now unsuited to the realities of intellectual property law . . . In order to ensure WIPO's continued relevance, viability, and legitimacy in an increasingly globalized

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[43] ITU, *supra* note 16, at 73.

[44] *Protection of Non-Original Databases*, WIPO, https://www.wipo.int/copyright/en/activities/databases.html.

[45] *WIPO Director General Opens Virtual Symposium on Data Protection*, WIPO (Apr. 22, 2020), https://www.wipo.int/about-wipo/en/dg_gurry/news/2020/news_0024.html.

[46] *Id.*

[47] Claire Provost, *Poorer Countries Need Privacy Law as They Adopt New Technologies*, THE GUARDIAN (Dec. 4, 2013), https://www.theguardian.com/global-development/2013/dec/04/poorer-countries-privacy-laws-new-technology.

world, the Organization must adapt its traditional rulemaking
processes by adopting more rapid, transparent, effective, and
politically acceptable means of norm creation.[48]

Changes in rulemaking at WIPO could be seen at the time, in the use of soft-law
instruments (i.e., non-binding agreements in the form of guidelines,
recommendations, resolutions, etc.) and the change of participants in the law-
making process in the Organization (with the presence, for instance, of non-
governmental entities, like the Internet Corporation for Assigned Names and
Numbers (ICANN)).[49]

Similarly, in order to ensure that different views and experiences are represented
and taken into account during negotiations, sessions of the WIPO
Intergovernmental Committee on Intellectual Property and Genetic Resources,
Traditional Knowledge and Folklore (IGC) have featured presentations by
representatives from indigenous and local communities.[50] Along these lines, a gap
analysis on traditional knowledge protection has been carried out by the WIPO
Secretariat taking into account all comments received by IGC participants.[51]

More specifically, the Marrakesh Treaty on to Facilitate Access to Published Works
for Persons Who Are Blind, Visually Impaired, or Otherwise Print Disabled
(Marrakesh Treaty) provides a good example of stakeholder involvement in treaty-
making.[52] The lead negotiator for the US apparently pointed out that stakeholders
were very active during negotiations and tried to "broaden" negotiations beyond
their core purpose.[53] In addition, a number of parallel initiatives involving
stakeholders have accompanied and added to the negotiation of the Marrakesh
Treaty. These initiatives have included a Stakeholder Platform for Visually
Impaired Persons (Stakeholder Platform), the launch of Trusted Intermediaries

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[48] Edward Kwakwa, *Some Comments on Rulemaking at the World Intellectual Property Organization*,
12 DUKE J. COMP. & INT'L L. J. 179, 179 (2002).
[49] *Id.* at 187, 193.
[50] *Intergovernmental Committee – Presentations on Indigenous and Local Community Experiences*,
WIPO, https://www.wipo.int/tk/en/igc/panels.html.
[51] WIPO, *The Protection of Traditional Knowledge: Updated Draft Gap Analysis*,
Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional
Knowledge and Folklore, Thirty-Seventh Session (Aug. 27 – 31, 2018), WIPO Doc.
WIPO/GRTKF/IC/37/6.
[52] Marrakesh Treaty to Facilitate Access to Published Works by Persons Who Are Blind,
Visually Impaired, or Otherwise Print Disabled, Jun. 27, 201352 I.L.M. 1312 (2013).
[53] William New, *Negotiators, Stakeholders Tell Tale of WIPO Marrakesh Treaty Negotiation, Look
To Implementation*, IP WATCH (Sep. 20, 2013), https://www.ip-
watch.org/2013/09/20/negotiators-stakeholders-tell-tale-of-wipo-marrakesh-treaty-
negotiation-look-to-implementation/.

Global Accessible Resources, and the Enabling Technologies Framework jointly run by two international standards bodies.[54] Amongst the latter, the Stakeholder Platform has brought together representatives of visually impaired persons and representatives of right holders.[55] Likewise, WIPO also launched a public-private partnership, the Accessible Books Consortium, including representatives of print-disabled persons, libraries for blind persons, standard-setting bodies, and representatives of authors, publishers, and collective management organisations.[56] As signalled by scholars, consultations with visually impaired and print-disabled persons and organisations providing services to these persons should form an integral part of all stages of the Marrakesh Treaty implementation process.[57]

Therefore, to sum up, WIPO's approach to the interaction of AI and IP represents the consolidation of a methodology that it has been using for a long time now. Still, the wider implications of AI for the economy and society and the huge challenges for IP make it necessary to understand how AI-related regulatory efforts are occurring in other international organisations. In this context, we will look into the particular case of the WTO.

III. THE WTO AND THE REGULATION OF AI

A. AI and International Trade Law

Trade-related rules on IP rights are, perhaps, the first aspect of trade law that comes to mind focusing on the interplay of AI and international trade law. The Preamble of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement) includes references to "technological objectives" and the need to enable least-developed country Members (LDCs) "to create a sound and viable technological base".[58] As it is known, the TRIPS Agreement has

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[54] *Landmark Treaty Opens Doors for the Visually Impaired*, WIPO MAGAZINE (Aug. 2013), https://www.wipo.int/wipo_magazine/en/2013/04/article_0001.html.

[55] Catherine Saez, *Parallel WIPO Initiative On Access For Visually Impaired Steps Up*, IP WATCH (Mar. 4, 2014), https://www.ip-watch.org/2014/03/04/parallel-wipo-initiative-on-access-for-visually-impaired-community-steps-up/.

[56] ACCESSIBLE BOOKS CONSORTIUM, https://www.accessiblebooksconsortium.org/portal/en/index.html.

[57] Laurence R. Helfer et al., THE WORLD BLIND UNION GUIDE TO THE MARRAKESH TREATY: FACILITATING ACCESS TO BOOKS FOR PRINT-DISABLED INDIVIDUALS 66-67 (2017).

[58] In the parts quoted in the text, the Preamble of the TRIPS Agreement reads as follows:
> [r]ecognizing the underlying public policy objectives of national systems for the protection of intellectual property, including developmental and technological objectives; Recognizing also the special needs of the least-developed country Members in respect of maximum flexibility in the

incorporated provisions of, and built upon, prior WIPO-administered IP conventions. Hence, the provisions incorporated from prior WIPO conventions "have become parts of the TRIPS Agreement and as provisions of that Agreement have to be read as applying to WTO Members".[59] The adoption of trade-related IP rules at the WTO has led many to suggest a forum-shifting process taking place in IP law-making from WIPO to the WTO.[60] The idea of forum-shifting may be, however, reconsidered in light of a common agenda at, and the complementarity of, both Organizations.[61] Notably, in the field of technology, some scholars argued, in the 1990s, that the attempt by the US to negotiate a protocol to the WIPO-administered Berne Convention on the Protection of Literary and Artistic Works to address the IP protection of AI, computer software, databases, computer-produced works, and sound recordings after the adoption of the TRIPS Agreement, proved that WIPO still had a key role in international IP rule-making and in supplementing any action taken as part of the TRIPS Agreement, even after the adoption of the TRIPS Agreement at the WTO.[62]

In any event, self-evidently, both WIPO Conventions and the TRIPS Agreement constitute the relevant framework for AI-related IP issues. Two recent decisions by the European Patent Office (EPO) concerning AI-generated inventions illustrate this point well and may signal the need for, at the least, a coordinated approach between WIPO and the WTO on AI regulation.[63] In the EPO patent cases, two

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domestic implementation of laws and regulations in order to enable them to create a sound and viable technological base.

See, Agreement on Trade-Related Aspects of Intellectual Property Rights, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, 1869 U.N.T.S. 299, 33 I.L.M. 1197 (1994) [hereinafter TRIPS Agreement].

[59] Referring specifically to the Berne Convention, Panel Report, *US — Section 110(5) Copyright Act (US-Section 110(5) Copyright Act)*, ¶ 6.18, WTO Doc. WT/DS160/R (adopted on Jul. 27, 2000); referring to the Paris Convention, Panel Report, *Australia — Certain Measures Concerning Trademarks, Geographical Indications and Other Plain Packaging Requirements Applicable to Tobacco Products and Packaging (Australia — Tobacco Plain Packaging)*, ¶ 7.1758, WTO Doc. WT/DS467/R, WTO Doc. WT/DS458/R, WTO Doc. WT/DS441/R, WTO Doc. WT/DS435/R (adopted on Aug. 28, 2018).

[60] Laurence R. Helfer, *Regime Shifting: The TRIPS Agreement and New Dynamics of International Intellectual Property Lawmaking*, 29(1) YALE J. INT'L L. 1, 6 (2004); Frederick M. Abbott et al., INTERNATIONAL INTELLECTUAL PROPERTY IN AN INTEGRATED WORLD ECONOMY 4 (2019); Andrea Wechsler, *WIPO and the Public-Private Web of Global Intellectual Property Governance*, 32 EUI WORKING PAPERS MWP 3 (2012).

[61] Gabriele Gagliani, *The WIPO-WTO Relationship: Moving beyond the Forum-Shifting Theory?*, INT'L ORG. L. REV. (ADV. ART.) 1 (2020).

[62] Michael Doane, *TRIPS and International Intellectual Property Protection in an Age of Advancing Technology*, 9(2) A. U. INT'L L. REV. 465, 489-490 (1994).

[63] *Guidelines for Examination – 3.3.1. Artificial Intelligence and Machine Learning*, EUR. PATENT OFFICE (EPO) (Mar. 2021), https://www.epo.org/law-practice/legal-

patent applications had been filed to the patent office of the UK and were then forwarded to the EPO, without the indication of the inventor.[64] Following the invitation to remedy this deficiency, the applicant (the same in both cases) indicated that the inventor in both cases was a machine.[65] In both cases, he clarified that,

> the machine should be recognized as the inventor and that the applicant, as the owner of the machine, was an assignee of any intellectual property rights created by this machine. This is in line with the purpose of the patent system which is to incentivise disclosure of information, commercialisation and development of inventions. The applicant further argued that acknowledging machines as inventors would facilitate the protection of the moral rights of human inventors and allow for recognising the work of the machine's creators.[66]

The two proceedings were consolidated.[67]

The EPO informed the applicant that the designation of the inventor was deficient.[68] Interestingly, besides arguing that the European Patent Convention (EPC) does not require that an inventor be human,[69] the applicant alleged that "[p]atentability requirements are laid down exclusively in Articles 52 – 57 EPC, in line with the TRIPS Agreement and the Strasbourg Agreement" and inventions made by AI systems could not be excluded from patentability.[70] In addition,

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texts/html/guidelines/e/g_ii_3_3_1.htm (In respect of the patentability of AI systems, it should be mentioned that according to the EPO guidelines "[AI] and machine learning are based on computational models and algorithms . . . Such computational models and algorithms are per se of an abstract mathematical nature, irrespective of whether they can be 'trained' based on training data"); *Guidelines for Examination – 3.3. Mathematical Methods*, EPO (Mar. 2021), https://www.epo.org/law-practice/legal-texts/html/guidelines/e/g_ii_3_3.htm (therefore, "[m]athematical methods play an important role in the solution of technical problems in all fields of technology. However, they are excluded from patentability under Aty.52(2)(a) when claimed as such (Art.52(3))").

[64] EPO, *EP3563896 — Devices and Methods for Attracting Enhanced Attention*, at ¶ 1, Application No. 18 275 174.3 (filed on Nov. 7, 2018) [hereinafter EPO, *EP3563896*]; EPO, *EP3564144 — Food Container*, at ¶ 1, Application No. 18 275 163.6 (filed on Oct. 17, 2018) [hereinafter EPO, *EP3564144*].

[65] EPO, *EP3563896*, *supra* note 64, at ¶ 2-3; EPO, *EP3564144*, *supra* note 64, at ¶ 2-3.

[66] EPO, *EP3563896*, *supra* note 64, at ¶ 5; EPO, *EP3564144*, *supra* note 64, at ¶ 5.

[67] EPO, *EP3563896*, *supra* note 64, at ¶ 7; EPO, *EP3564144*, *supra* note 64, at ¶ 6.

[68] EPO, *EP3563896*, *supra* note 64, at ¶ 9; EPO, *EP3564144*, *supra* note 64, at ¶ 8.

[69] EPO, *EP3563896*, *supra* note 64, at ¶ 11; EPO, *EP3564144*, *supra* note 64, at ¶ 10.

[70] EPO, *EP3563896*, *supra* note 64, at ¶ 12; EPO, *EP3564144*, *supra* note 64, at ¶ 11.

> [t]he applicant argued that not accepting AI systems or machines as inventors would exclude inventions made by AI from patentability, contrary to Articles 52 - 57 EPC, Article 27 TRIPS and the Strasbourg Agreement. Moreover, according to the Applicant, if there is a patentable invention, then patent law presumes that there was an inventor.[71]

The EPO rejected the arguments of the applicant. Besides focusing on the EPC, the EPO referred to the stances of EPO Contracting States, the practice of other national patent offices, and national laws, and pointed out that "the understanding that the inventor is a natural person appears to be an internationally applicable standard."[72] Moreover, the EPO distinguished between the assessment of the formal requirement of the designation of the inventor from the substantive examination of the subject matter referring only to the EPC (rather than the TRIPS Agreement and the Strasbourg Agreement, as the applicant had done).[73]

In this context, it should be noted that, though the case concerned copyright (rather than patents), apparently, a Chinese court has decided that an article written by an AI program qualifies for copyright protection, thus opening the door to copyrighted AI creations.[74] This may testify to a looming fragmentation in the regulation of AI that only a common international framework approach may address.

More generally, and not surprisingly, the international framework that the applicant relied on in the EPO cases, related to the TRIPS Agreement. In addition, bilateral and plurilateral trade agreements (outside the WTO) commonly include chapters on IP and, increasingly, digital trade issues. Some studies have concluded that the number of detailed e-commerce provisions in trade agreements have been growing, however, they are still heterogeneous in terms of language, structure and scope.[75] Still, some agreements/provisions may be illustrative of more general trends or issues. As a case in hand, in the field of AI, the Australia – Singapore Digital Economy Agreement is worthy of attention as it establishes that "[t]he Parties also recognise the importance of developing ethical governance

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[71] EPO, *EP3563896*, *supra* note 64, at ¶ 36; EPO, *EP3564144*, *supra* note 64, at ¶ 35.

[72] EPO, *EP3563896*, *supra* note 64, at ¶ 30; EPO, *EP3564144*, *supra* note 64, at ¶ 29.

[73] EPO, *EP3563896*, *supra* note 64, at ¶ 37; EPO, *EP3564144*, *supra* note 64, at ¶ 36.

[74] Andres Guadamuz, *Chinese Court Rules that AI Article Has Copyright*, INFOJUSTICE (Jan. 22, 2020) http://infojustice.org/archives/41972.

[75] José-Antonio Monteiro & Robert Teh, *Provisions on Electronic Commerce in Regional Trade Agreements* 71 (WTO Working Paper ERSD-2017-11, Jun. 2017), https://www.wto.org/english/res_e/reser_e/ersd201711_e.pdf.

frameworks for the trusted, safe and responsible use of AI technologies that will help realise the benefits of AI. In view of the cross-border nature of the digital economy, *the Parties further acknowledge the benefits of ensuring that such frameworks are internationally aligned as far as possible*" (emphasis added).[76]

In a similar vein, it has been pointed out by the UNESCO that "AI has a 'winner takes it all' dynamic that needs to be regulated: concentration of AI in the hands of few high-income countries will likely leave developing countries far behind. The latter will not benefit or very little from AI technologies and will lack ownership of such technologies."[77] The connection between AI-related ethical issues and IP (i.e., quasi-proprietary models) ones are self-evident. As noted, WIPO "supports the work that UNESCO has begun in the development of the first global normative instrument on the ethics of AI."[78]

In any event, the intersection of international trade rules and AI goes beyond the TRIPS Agreement. As pointed out by a study consulting trade experts and stakeholders about options for modernising trade rules at the WTO, several participants consider that, admittedly, the WTO was created for the industrial age, which is why, it mainly concerns "tariff reductions and liberalization to drive competition, innovation and trade."[79] However, these WTO rules now warrant corresponding upgradation, in light of our economy transitioning into a data-driven economy. Possession of supreme computing power is necessary to ensure present day economic dominance as "[w]hereas the old trade rules were instruments of the analog Cold War, the new strategic competition involves a battle over data and artificial intelligence".[80]

Hence, if the WTO wishes to maintain its role in preventing trade wars in the twenty-first century, multilateral trade rules have to be updated to be relevant in the new AI world. Along these lines, some commentators have noted that,

> [a]s AI applications proliferate and are deployed in international
> commerce, the regulatory framework for these applications will
> become a major challenge for the rules-based system in terms of

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[76] Digital Economy Agreement, Austl.–Sing., art. 31.2, Aug. 6, 2020, [2020] ATS 13 (entered into force Dec. 8, 2020).

[77] *Elaboration of a Recommendation on the Ethics of Artificial Intelligence*, U.N. EDUC. SCI. & CULTURAL ORG. (2019), https://en.unesco.org/artificial-intelligence/ethics.

[78] *Revised Issues Paper, supra* note 36, at ¶ 4.

[79] *Special Report: CIGI Expert Consultation on WTO Reform*, CTR. FOR INT'L GOVERNANCE INNOVATION 22 (2019), https://www.cigionline.org/publications/cigi-expert-consultation-wto-reform.

[80] *Id.*

standards, interoperability, disguised barriers to trade, mutual recognition and so forth. In many ways, AI regulation promises to be as contentious in the digital realm as sanitary and phytosanitary standards have proven to be in agricultural trade.[81]

Likewise, it has been stressed that AI-related conformity assessment measures and procedures may represent relevant barriers to trade.[82] Moreover, experts have signalled that the advent of AI "has the potential to reconfigure world trade patterns",[83] and the implications of the advent of AI may affect, more generally, trade in data and trade in technological goods.[84] Relatedly, other studies have highlighted that AI is relevant for digital services using software incorporating applied AI (thus falling under the purview of the General Agreement on Trade in Services (GATS)) and e-commerce.[85] Besides, as pointed out by one of the Deputy DGs of the WTO, adopting international standards concerning digital technologies, including AI, is crucial "to deepen interconnectedness and facilitate trade."[86] Finally, as noted at a 2018 event organised by the United Nations

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[81] Dan Ciuriak, *The WTO in the Digital Age*, CTR. FOR INT'L GOVERNANCE INNOVATION (May 4, 2020), https://www.cigionline.org/articles/wto-digital-age.

[82] Nigel Cory, *Response to the Public Consultation for the European Commission's White Paper on a European Approach to Artificial Intelligence*, INFO. TECH. & INNOVATION FOUNDATION 3 (Jun. 12, 2020), http://www2.itif.org/2020-eu-approach-ai.pdf.

[83] Avi Goldfarb & Daniel Trefler, *How Artificial Intelligence Impacts International Trade, Opinion Piece*, *in* WORLD TRADE REPORT 2018 – THE FUTURE OF WORLD TRADE: HOW DIGITAL TECHNOLOGIES ARE TRANSFORMING GLOBAL COMMERCE 140 (2019).

[84] Joshua P. Meltzer, *The Impact of Artificial Intelligence on International Trade*, BROOKINGS INST. (Dec. 13, 2018), https://www.brookings.edu/research/the-impact-of-artificial-intelligence-on-international-trade/.

[85] Kristina Irion & Josephine Williams, *Prospective Policy Study on Artifificial Intellligence and EU Trade Policy*, THE INST. FOR INFORMATION L. 3-4 (2019), https://www.ivir.nl/publicaties/download/ivir_artificial-intelligence-and-eu-trade-policy.pdf [hereinafter Irion & Williams].

[86] Deputy DG Alan Wolff, at a World Standards Cooperation meeting in Geneva, while discussing what international standards bodies can do in order to support the growth of the world trading system, stated that:

> Coherence is crucial for effective global governance. I think this is particularly important for international standards on innovative technologies. International standards in new areas like Additive Manufacturing, Artificial Intelligence, Robotics and Augmented/Virtual Reality provide a significant opportunity to deepen interconnectedness and facilitate trade, because we are working from a clean slate. On the other hand, competing or contradictory standards can build insurmountable walls, and can lead to fragmented regulatory approaches down the line. Our members, and their stakeholders, are worried about mounting incoherence in other areas of standards development (like

Conference on Trade and Development (UNCTAD) on "Intelligent Tech & Trade Tools", AI may facilitate trade negotiations, transactions and operations (such as trade logistics).[87]

B. The WTO's AI-Related Activities and Initiatives

Following the preceding remarks, it seems fitting to assert that AI has been the subject of, at least, three main types of activities and initiatives at the WTO: formal agreement negotiations (on e-commerce), studies, and discussions open to stakeholders. In this context, it is worth noting that AI has been just a part of wider discussions on digital trade and new technologies (as opposed to being the centre of activities and initiatives, as is the case at WIPO).

The negotiations on e-commerce find their roots in the 1998 WTO Ministerial Conference Declaration on Global Electronic Commerce instructing the WTO General Council to "establish a comprehensive work programme to examine all trade-related issues relating to global electronic commerce, including those issues identified by Members."[88] The 1998 Work Programme on Electronic Commerce (Work Programme) adopted by the General Council defined e-commerce (without prejudice to the outcome of the negotiations) as "the production, distribution, marketing, sale or delivery of goods and services by electronic means."[89] The Work Programme instructed the Council for Trade in Services, the Council for Trade in Goods, the Council for Trade-Related Aspects of Intellectual Property Rights (TRIPS), and the Committee for Trade and Development to examine and report

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food and health policy), which creates market access problems. In order to address these types of problems, coherence was agreed by members as one of the WTO TBT Committee principles for the development of international standards. It takes a concerted effort by standards developers to see this through.

See, Deputy Directors-General, *DDG Wolff: Standards Have Central Role to Play in Assisting Growth of World Trading System*, WORLD TRADE ORG. (Feb. 15, 2018), https://www.wto.org/english/news_e/news18_e/ddgra_15feb18_e.htm.

[87] *Intelligent Tech & Trade Tools: From Trade Logistics to a WTO E-Commerce Agreement*, UNITED NATIONS CONF. ON TRADE & DEV. (Apr. 16, 2018), https://unctad.org/meeting/intelligent-tech-trade-tools-trade-logistics-wto-e-commerce-agreement.

[88] World Trade Organization, Declaration on Global Electronic Commerce, Ministerial Conference of 18 and 20 May 1998, WTO Doc. WT/MIN(98)/DEC/2, (May 25, 1998).

[89] World Trade Organization, Work Programme on Electronic Commerce, Adopted by the General Council on 25 September 1998, WTO Doc. WT/L/274, at ¶ 1.3 (Sept. 30, 1998), https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/WT/L/274.pdf&Open=True.

on trade issues in connection with electronic commerce.[90] Interestingly, the Work Programme established that "[i]n undertaking their work, *these bodies should take into account the work of other intergovernmental organizations*. Consideration should be given to possible ways of obtaining information from relevant non-governmental organizations" (emphasis added).[91]

Although they did not explicitly mention AI, the trade-related e-commerce negotiations launched in 2019 by seventy-six WTO Members also concern the cross-border supply of AI and other AI-related issues.[92] The negotiations on e-commerce have, indeed, focused on several areas, including electronic signature and authentication, online consumer protection, open government data, services market access, source code, spam (and unsolicited commercial messages) and trade facilitation in goods.[93] Nonetheless, negotiations have not been easy given the largely differing regulatory approaches to e-commerce of trading powers such as China, the EU, and the US.[94] With regard to AI, e-commerce negotiations have focused, amongst others, on forced disclosure of source code of software and forced technology transfer.[95] These include protection/non-disclosure of algorithms since "to date an algorithm is commonly expressed in source code using a source language, whether this is hand-coded and text-based or visual and self-learning".[96] As a result, some have argued that "requiring access to software source code in the interest of accountability of AI" may raise issues of inconsistency in respect of international trade law.[97] Hence, WTO e-commerce rules may have a

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[90] *Id.* at ¶ 2.1.

[91] *Id.* at ¶ 1.4.

[92] Irion & Williams, *supra* note 85.

[93] Electronic Commerce, *E-Commerce Negotiations: Members Finalise "Clean Text" on Unsolicited Commercial Messages*, WTO (Feb. 5, 2021), https://www.wto.org/english/news_e/news21_e/ecom_05feb21_e.htm; Electronic Commerce, *Negotiations on E-Commerce Continue, Eyeing a Consolidated Text by the End of the Year*, WTO (Oct. 23, 2020), https://www.wto.org/english/news_e/news20_e/ecom_26oct20_e.htm#:~:text=WTO%20negotiations%20on%20trade%2Drelated,the%20participation%20of%2076%20members.&text=Participating%20members%20seek%20to%20achieve,many%20WTO%20members%20as%20possible.

[94] Ines Willemyns, *Agreement Forthcoming? A Comparison of EU, US, and Chinese RTAs in Times of Plurilateral E-Commerce Negotiations*, 23(1) J. INT'L ECON. L. 221, 222 (2020).

[95] Kristina Irion, *AI Regulation in the European Union and Trade Law: How Can Accountability of AI and High Level of Consumer Protection Prevail Over a Trade Discipline on Source Code?*, BUNDESVERBAND DER VERBRAUCHERZENTRALEN UND VERBRAUCHERVERBÄNDE & U. AMSTERDAM 48 (2021), https://www.vzbv.de/sites/default/files/downloads/2021/01/21/21-01-26_study_ai_and_trade.pdf.

[96] *Id.* at 56.

[97] *Id.* at 79.

bearing on the EU's ability to check the algorithms and data sets in high-risk AI systems development phases.[98] In addition, as shown by a study on stakeholders' views on the intersection between AI and IP, issues relating to the disclosure of information on AI systems may raise problems when AI is protected through trade secrets, as well as for data-related issues and the protection of databases and data-sets.[99] These considerations show the strict interconnection between AI-related IP and trade negotiations. To this, it should be added that e-commerce negotiations may have indirect effects on AI since, as noted, they also cover data. Indeed, in very simple terms, "[e]-commerce generates data – about the transaction and the customer - while online services themselves consist of valuable data."[100]

Similar considerations — concerning AI-related issues being addressed as a part of wider digital trade issues — extend to study activities and initiatives. By way of example, AI has been addressed in both the 2018 and 2020 World Trade Reports. The 2018 World Trade Report, focusing on digital technologies and global commerce, addressed only some AI-related issues amongst many other digital technologies.[101] Likewise, the 2020 World Trade Report, which focused on the digital age and stressed that international cooperation "may help maximize the positive international spill-overs of [innovation] policies, while minimizing their negative effects on trading partners", addressed AI issues amongst many others.[102] Finally, as further discussed below, with regard to the evolution of the WTO governance model, AI has been the subject of discussions with stakeholders (as a part of wider e-commerce discussions) in the WTO Public Forum and Trade Dialogues. This is significant, given the traditionally limited role of stakeholders and civil society at the WTO.[103] Indeed, following the Trade Dialogues model that

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[98] European Commission, *White Paper on Artificial Intelligence – A European Approach to Excellence and Trust*, COM (2020) 65 FINAL, 23 (Feb. 19, 2020), https://ec.europa.eu/info/sites/info/files/commission-white-paper-artificial-intelligence-feb2020_en.pdf.

[99] UNITED STATES PATENT AND TRADEMARK OFFICE, PUBLIC VIEWS ON ARTIFICIAL INTELLIGENCE AND INTELLECTUAL PROPERTY POLICY 36, 38, 41-42 (2019).

[100] Michael Kende & Nivedita Sen, *Cross-Border E-Commerce: WTO Discussions and Multi-Stakeholder Roles – Stocktaking and Practical Ways Forward* 6 (CTEI Working Paper No. 01, 2019), https://repository.graduateinstitute.ch/record/297080.

[101] *World Trade Report 2018 – The Future of World Trade: How Digital Technologies are Transforming Global Commerce*, WORLD TRADE ORG. (2019), https://www.wto.org/english/res_e/publications_e/wtr18_e.htm.

[102] *World Trade Report 2020: Government Policies to Promote Innovation in the Digital Age*, WORLD TRADE ORG. (2020), https://www.wto.org/english/res_e/publications_e/wtr20_e.htm.

[103] Jens Steffek & Claudia Kissling, *Civil society participation in international governance: the UN and the WTO compared* (University of Bremen, Collaborative Research Center 597: Transformations of the State, TranState Working Paper No. 42, 2006), https://www.econstor.eu/bitstream/10419/24955/1/514659831.PDF.

was first launched in 2016 allowing businesses to discuss trade concerns and ideas directly at and with the WTO,[104] consumer organisations and businesses had participated in discussions on e-commerce at the WTO in 2019.[105] At that event, the Chair of the WTO General Council highlighted the Member-driven nature of the WTO while concurrently signalling the need for non-governmental organisations (NGOs) to be involved in these discussions:

> [w]e, the WTO members, are of course those that discuss trade issues in the WTO, but these discussions must be in sync with the issues which are important to the businesses, to the public, and to the consumers. Your engagement needs to play a role in shaping up trade discussions on all the issues that are of importance to members.[106]

To this, one should add that e-commerce has also been the subject of a high-level panel at the 2018 WTO Public Forum, gathering representatives of the civil society and stakeholders, amongst others.[107] All these initiatives add up to the actions taken directly by WTO Members to engage with civil society on e-commerce negotiations at the WTO.[108]

Along these lines, identifying AI as one of the technologies having "most impact on the future of trade", the Global Shapers Community/Geneva Hub, an initiative of the World Economic Forum, signalled, in 2018, at the WTO Public Forum that:

> [w]hile AI is in constant development, we see the majority of the efforts having been undertaken by the private sector. Business operators have specific needs, hence most of the AI applications

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[104]   *Trade   Dialogues*,   WORLD   TRADE   ORG., https://www.wto.org/english/res_e/reser_e/tradedialogues_e.htm.

[105] Trade Dialogue, *Consumer Groups Express Support for Multilateral Trade, Stress Priorities for e-Commerce*,   WORLD   TRADE   ORG.   (May   6,   2019), https://www.wto.org/english/news_e/news19_e/trdia_06may19_e.htm.

[106] *Id.*

[107] WTO Public Forum, *High-Level Panel Highlights Potential of e-Commerce as Driver for Growth and   Inclusion*,   WORLD   TRADE   ORG.   (Oct.   4,   2018), https://www.wto.org/english/news_e/news18_e/pf18_04oct18_e.htm; the WTO Public Forum is an annual event gathering representatives from the WTO, academia, businesses, civil society, intergovernmental organizations, media, and Members, WORLD TRADE ORGANIZATION,   PUBLIC   FORUM, https://www.wto.org/english/forums_e/public_forum_e/public_forum_e.htm.

[108] *See*, *e.g.*, European Commission, Civil Society Dialogue on WTO negotiations on e-commerce   (Dec.   5,   2019),   https://wayback.archive-it.org/org-1495/20210315181232/http://trade.ec.europa.eu/civilsoc/meetdetails.cfm?meet=11554.

we see are 'narrow' as they try to solve business problems. In order for AI to be a primary driver of future trade, we believe governments, policy makers, and other public actors need to come together and invest in what is commonly known as Artificial General Intelligence (AGI). Such AGI would be focused on tackling large scale problems in healthcare, security, space exploration and many other parts of the economy. It could facilitate implementation of policies, reduce the amount of counterfeit products, and increase cross-national collaborations.[109].

Therefore, though efforts made at the WTO to involve stakeholders in AI-related discussions are already significant in light of the Member-driven nature of the Organization (as further discussed below), an AI-specific regulatory framework may be needed.

C. AI at the WTO: An Evolving Approach

The Marrakesh Agreement Establishing the World Trade Organization does not address in detail, WTO relations with other organisations and NGOs.[110] Indeed, its Article V sets forth that, "1. The General Council shall make appropriate arrangements for effective cooperation with other intergovernmental organizations that have responsibilities related to those of the WTO. 2. The General Council may make appropriate arrangements for consultation and cooperation with non-governmental organizations concerned with matters related to those of the WTO."[111]

More details on relations with NGOs were provided in the 1996 Guidelines for Arrangements on Relations with Non-Governmental Organizations (1996 Guidelines) which, amongst others, urged greater transparency of WTO activities and direct contact between the WTO Secretariat and NGOs.[112] Notwithstanding these 1996 Guidelines, a leading scholar observed that, even after their adoption,

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[109] Global Shapers Community Geneva, *Trade 2030 & the Fourth Industrial Revolution (4IR): Bringing the Vision and Thoughts of the Youth to the World*, WORLD TRADE ORG. 7-8 (Oct. 2018), https://www.wto.org/english/forums_e/public_forum18_e/fly_64.pdf.

[110] TRIPS Agreement, *supra* note 58.

[111] Marrakesh Agreement Establishing the World Trade Organization, Apr. 15, 1994, 1867 U.N.T.S. 154.

[112] World Trade Organization, Guidelines for Arrangements on Relations with Non-Governmental Organizations, Decision Adopted by the General Council on 18 July 1996, WTO Doc. WT/L/162, (Jul. 23, 1996), https://www.wto.org/english/forums_e/ngo_e/guide_e.htm.

there was a belief that "WTO decisions-making is characterised by its non-transparent, selective and secretive nature. Moreover, it has been said that WTO decision-making is dominated by bargaining (and sometimes irrational trade-offs) instead of arguing (and exchanging rational arguments)."[113] Some years later, the same scholar observed that, many Members would not permit NGOs having a say in the WTO but, since the 1999 Seattle Ministerial Conference, concrete initiatives by the WTO Secretariat (instead of institutional reforms) have resulted in an improved relationship between the WTO and the civil society.[114]

In a somewhat similar vein, some studies on the WTO, transparency and the engagement with civil society have pointed out that:

> [w]hile they recognize the role that NGOs can play in increasing the awareness of the public with respect to the activities of the WTO, and agree to improve the WTO's practices of transparency and communication with them, the 1996 Guidelines also clearly spell out the limits of the WTO's engagement with NGOs . . . while the Secretariat retains flexibility on how it goes about informing, consulting and co-operating with NGOs concerned with matters related to those of the WTO, the authority to take decisions that would make them eligible for enhanced participation, including access to participate in WTO meetings can only be approved by a consensus of Member governments.[115]

Nonetheless, things have changed with time. In fact, the interest of civil society and stakeholders in the WTO e-commerce negotiations has been so extensive that a study of the US Congressional Research Service has revised the positions of various stakeholders and industries as well as of civil society organisations together with those of "major participants" (such as China and the EU) in the e-commerce negotiations.[116] Interestingly, while some civil society groups have partly opposed the inclusion of AI in the e-commerce negotiations, others have entertained constructive contacts with the WTO:

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[113] PETER VAN DEN BOSSCHE & WERNER ZDOUC, THE LAW AND POLICY OF THE WORLD TRADE ORGANIZATION: TEXT, CASES AND MATERIALS 152 (3rd ed. 2012).

[114] PETER VAN DEN BOSSCHE & WERNER ZDOUC, THE LAW AND POLICY OF THE WORLD TRADE ORGANIZATION: TEXT, CASES AND MATERIALS 108-109 (4th ed. 2017).

[115] Maria Perez-Esteve, *WTO Rules and Practices for Transparency and Engagement with Civil Society Organizations* 10 (WTO Staff Working Paper ERSD-2012-14, 2012), https://wto.hse.ru/data/2012/09/20/1244679635/ersd201214_e.pdf.

[116] Rachel F. Fefer, *Internet Regimes and WTO E-Commerce Negotiations*, US CONGRESSIONAL RESEARCH SERVICE R46198 19-21 (2020), https://fas.org/sgp/crs/misc/R46198.pdf.

> [a]nother civil society group . . . warned, however, that data protection, privacy, net neutrality, artificial intelligence, and cybersecurity should not be part of a trade agreement. Some consumer groups have engaged constructively with WTO representatives to advocate for transparency in the negotiations and multi-stakeholder dialogues.[117]

Thus, though repeatedly pointed out, AI has not been at the centre of digital trade activities and initiatives at the WTO, yet, as an e-commerce-related issue, it has commanded attention and has been discussed by institutional actors together with stakeholders.

VI.   CONCLUDING REMARKS: ARE CONVERGENCE, COORDINATION AND COOPERATION ENOUGH?

A. Convergence, Cooperation and Coordination . . .

WIPO and the WTO are both member-driven organisations. In general terms, WIPO's activities and initiatives have to be approved by its Members in the General Assembly and the Coordination Committee.[118] Nonetheless, the Organization has paid constant attention to, and has factored in, the input provided by stakeholders through different channels.[119] As for the WTO, its Member-driven nature has been fundamental since the negotiations leading to its creation.[120] This feature has had important consequences for the possibility of civil society and stakeholders to participate in the activities of the WTO, including the possibility to express their views in trade disputes between Members.[121] Recent events, such as the blockade of the WTO Appellate Body by the US government, have been regarded as an expression of this ever-present "member-driven governance" model, intended as the dominance of Members in the legislative, administrative, and judicial institutions of the Organization.[122]

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[117] *Id.* at 21.

[118] *See, e.g.*, Convention Establishing the World Intellectual Property Organization arts. 6, 8, Jul. 14, 1967, 828 U.N.T.S. 3.

[119] WORLD INTELLECTUAL PROPERTY ORGANIZATION, WIPO OVERVIEW 10 (2011), https://www.wipo.int/edocs/pubdocs/en/general/1007/wipo_pub_1007_2011.pdf.

[120] CRAIG VANGRASSTEK, THE HISTORY AND FUTURE OF THE WORLD TRADE ORGANIZATION 66 (2013).

[121] MICHAEL J. TREBILCOCK ET AL., THE REGULATION OF INTERNATIONAL TRADE 209 (2013).

[122] Ernst-Ulrich Petersmann, *Between "Member-Driven" WTO Governance and "Constitutional Justice": Judicial Dilemmas in GATT/WTO Dispute Settlement*, 21(1) J. INT'L ECON. L. 106-107 (2018).

This notwithstanding, there has been some convergence of the governance models of the two Organizations, at least in respect of AI. Certainly, some differences remain. By way of example, AI has been at the centre of discussions at WIPO, whereas it has been addressed at the WTO only within the general negotiations on e-commerce. Also, as discussed, the types of initiatives involving stakeholders have varied between the two Organizations. Nonetheless, this convergence should be welcome independent of the achieved results. Engaging with civil society and stakeholders may help provide "valuable and systematic feedback" on economic issues, thus enhancing "the WTO's relevance, authority, and effectiveness."[123] These considerations may apply, self-evidently, also to WIPO. Along these lines, as Ornito has stressed in respect of the participation of stakeholders in economic disputes at the WTO through *amici curiae* briefs: opening to civil society means opening the door to economic and non-economic considerations that will certainly strengthen the legitimacy of any regulatory framework adopted.[124]

In this context, it is worth noting that differences between WIPO and the WTO's AI-related activities and initiatives may also be construed as a signal of complementarity between the two Organizations, besides cooperation and coordination. The Agreement between the World Intellectual Property Organization and the World Trade Organization (WIPO-WTO Cooperation Agreement) facilitates mainly, indeed, just technical cooperation and exchanges concerning IP law(s) between the two Organizations.[125] Also, WIPO is primarily involved in technical assistance to developing countries and LDCs relating to the TRIPS Agreement.[126] Moreover, WIPO and the WTO have formally launched a trilateral cooperation on public health, IP and trade with the WHO. Notably, as indicated by WIPO,

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[123] Panagiotis Delimatsis, *Transparency in the WTO's Decision-Making*, 27(3) LEIDEN J. INT'L L. 719 (2014).

[124] Federico Ortino, *The Impact of Amicus Curiae Briefs in the Settlement of Trade and Investment Disputes*, *in* ECONOMIC LAW AS AN ECONOMIC GOOD: ITS RULE FUNCTION AND ITS TOOL FUNCTION IN THE COMPETITION OF SYSTEMS 316 (Karl M. Meessen et al. eds., 2009).

[125] The WIPO-WTO Cooperation Agreement establishes rules concerning the access for the WTO Secretariat and the Council for TRIPS to laws and regulations in the WIPO Collection (art. 2(3)), the transmission of laws and regulations to the WIPO International Bureau by the WTO Secretariat (art. 2(4)), and (legal and technical) assistance (art. 4). Moreover, the Agreement foresees also the direct interaction of WTO Members with the International Bureau of WIPO (arts. 2 and 3), Agreement between the World Intellectual Property Organization and the World Trade Organization, Dec. 22, 1995, 35 I.L.M. 754 (1996).

[126] TRIPS Technical Cooperation , *WTO Technical Assistance on the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS)*, World Trade Organization, https://www.wto.org/english/tratop_e/trips_e/intel9_e.htm.

> [t]he three organizations meet regularly, exchange information on their respective work programs and discuss and plan, within the possibilities of their respective mandates and budgets, common activities. The trilateral cooperation is intended to contribute to enhancing the empirical and factual information basis for policy makers and supporting them in addressing public health in relation to IP and trade.[127]

In a similar vein, some commentators have pointed out that "[t]he trilateral cooperation brings home the vital need for policy coherence across diverse policy areas, founded on clear vision and a willingness to cooperate at the national and multilateral levels."[128] At the "operative" level, based on the principles set forth by the 2001 Doha Declaration:

> [t]he 2007 WIPO Development Agenda – specifically, Recommendation 40 – requested the WIPO Secretariat to intensify its cooperation on IP-related issues with relevant international organizations, in particular with the WHO and the WTO, in order to strengthen the coordination for maximum efficiency in undertaking development programmes. In the WHO, the GSPA-PHI adopted in 2008 requested the WHO "to coordinate with other relevant international intergovernmental organizations, including WIPO, WTO and UNCTAD, to effectively implement the global strategy and plan of action".[129]

In addition, this collaboration has also relied on cooperation with other organisations (international and local), the private sector, and civil society.[130] In this context, it is worth noting that, amongst others, the interaction of AI, health and IP has been a subject of study under the trilateral cooperation umbrella.[131]

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[127] WHO ET AL., PROMOTING ACCESS TO MEDICAL TECHNOLOGIES AND INNOVATION: INTERSECTIONS BETWEEN PUBLIC HEALTH, INTELLECTUAL PROPERTY AND TRADE 32 (2d ed. 2020), https://www.wipo.int/policy/en/global_health/trilateral_cooperation.html [hereinafter WHO ET AL.].

[128] Zafar Mirza et al., *Policy Coherence for Improved Medical Innovation and Access*, 91(5) BULLETIN WHO 315 (2013), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3646346/.

[129] WHO ET AL., *supra* note 127, at 32.

[130] *Id.*

[131] *Id.* at 90; *see also* TRIPS and Public Health, *WTO-WHO-WIPO Symposium Looks at Challenges and Opportunities of Cutting-Edge Health Technologies*, WORLD TRADE ORG. (Oct. 31, 2019), https://www.wto.org/english/news_e/news19_e/heal_31oct19_e.htm.

This idea of a coordinated regulatory approach to AI is in line with the 'strengthened coordination' that WIPO shall entertain 'especially' with the WTO pursuant to one of the recommendations of the WIPO Development Agenda.[132] Nevertheless, in light of the complex interplay of AI and data, on the one hand, and IP and trade law and policy, on the other hand, convergence, cooperation and coordination may not be sufficient to regulate AI effectively at the international level.

B. . . . Or A Unitary Regulatory Framework?

The race for AI dominance, as well as the gaps existing between and within countries in respect of AI, show that maintaining cooperation and coordination in different international fora will not be easy. Members, businesses, non-governmental entities, and the civil society have a plethora of interests, which are at times conflicting. Differences of rules, dynamics, and subject matter (AI as the main subject matter to be regulated rather than AI as a part of wider e-commerce discussions) at WIPO and the WTO may, thus, not only lead to diverging results but also be used to leverage and maximise negotiating positions for these actors. Despite the complementarity and connections between WIPO and the WTO, a similar situation occurred, after all, when the TRIPS Agreement was negotiated and adopted at the WTO.

If data flows were restricted, this would have an impact on AI (amongst other digital sectors, such as the provision of digital products and services and cloud computing applications).[133] In fact, Nwaodike has pointed out that, "[a]s AI relies

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[132] Notably, Recommendations 39 and 40 lay down that,

> 39. To request WIPO, within its core competence and mission, to assist developing countries, especially African countries, in cooperation with relevant international organizations, by conducting studies on brain drain and make recommendations accordingly. 40. To request WIPO to intensify its cooperation on IP related issues with United Nations agencies, according to Member States' orientation, in particular UNCTAD, UNEP, WHO, UNIDO, UNESCO and other relevant international organizations, especially the WTO in order to strengthen the coordination for maximum efficiency in undertaking development programs

World Intellectual Property Organization, *The 45 Adopted Recommendations under the WIPO Development Agenda*, Decision of the 2007 General Assembly, Doc. WO/GA/34/16 (Sept. 24 – Oct. 3, 2007), https://www.wipo.int/ip-development/en/agenda/recommendations.html.
[133] Mira Burri, *How Should the WTO Respond to the Data-Driven Economy?*, CTR. FOR INT'L GOVERNANCE INNOVATION (May 4, 2020), https://www.cigionline.org/articles/how-should-wto-respond-data-driven-economy.

on large amounts of data, the first set of policy questions and concerns relates to access and cost of processing data."[134] Indeed, developments in the field of AI are already pushing governments to reconsider their data-related policies and regulation.[135] In this regard, "[d]eveloping countries with large populations are likely to have the most leverage to adopt regulations that require firms to pay rents for their citizens' data. In so doing, they may be able to influence comparative advantage in the data-driven economy."[136]

This means that the regulation of AI cannot be separated from the regulation of data. The regulation of one will have a bearing on the other. Regulatory choices in the field of data may determine whether AI will bridge or, conversely, widen, the digital divide.[137] Concurrently, the lack of digital technologies (such as AI systems) and skills "to transform data into digital intelligence and economic opportunities" partly deprives data of their relevance.[138] In this regard, one should not forget the growing role of developing countries in multilateral IP and trade discussions.[139] Multilateral rules aiming at establishing a level playing field may help address some of the problems already looming on the horizon. As a case in hand, except for some countries that have both a large population (i.e., a large data base) and an advantage in AI development and use, many developing countries have population and data but not the means to collect and use these data nor AI capacity. Thus, only a multilateral regulatory framework taking into account these different situations can weather the conflicts that are likely to arise from opposed interests.

In light of this vital connection existing between AI and data, and of the inextricable questions arising in IP and trade, regulatory efforts at WIPO and the WTO may result in effective international governance, capable of addressing digital divide questions, only if strong convergence, cooperation and coordination are maintained. This conclusion should be, however, accompanied by a caveat. Much

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[134] Chioma Nwaodike, *The AI Digital Divide – An African Perspective*, INTERNEWS GLOBAL TECH. BLOG (Mar. 23, 2020), https://globaltech.internews.org/blog/ai-digital-divide.

[135] Susan Ariel Aaronson, *Data Minefield: How AI is Prodding Governments to Rethink Trade in Data*, INST. FOR INT'L ECON. POL'Y WORKING PAPER IIEP-WP-2018-11 115 (2018).

[136] *Id.* at 118.

[137] For some reflections on the use of data for AI and the possibility to bridge the digital gap, see Uyi Stewart, *AI Can Help to Bridge the Digital Divide and Create an Inclusive Society*, ITU NEWS MAGAZINE: AI FOR GLOBAL GOOD 19, 20 (Apr. 23, 2018), https://news.itu.int/ai-can-help-to-bridge-the-digital-divide-and-create-an-inclusive-society/.

[138] United Nations Conference on Trade and Development, *Digital Economy Report 2019 - Value Creation and Capture: Implications for Developing Countries* 91, U.N. Doc. UNCTAD/DER/2019 (2019).

[139] Edward Kwakwa, *Reflections on Development, Developing Countries and the Progressive Development of International Trade and Intellectual Property Law*, 40 DENV. J. INT'L L. & P. 221, 235 (2011).

of what will happen will depend on the actors taking part in regulatory efforts (Members, civil society and stakeholders). Taking stock of the preceding considerations, namely, the advantage some actors may have on other actors in terms of data availability and technological advancement, it seems evident that some actors may capitalise on divisions and the separation of negotiations at WIPO and the WTO. In that case, only a unitary approach going beyond coordination and cooperation may result in the adoption of an effective regulatory instrument.