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Other Developments
European Union

A Legal-Technical Basis for a Computational Transatlantic Trade and Investment Partnership (TTIP) Agreement

By Craig Atkinson

With the emergence of new modes of governance, this article[69] specifies a legal-technical basis – background, analytical structure, sources, methods, and research

questions – to advance the notion of a 'computable' transatlantic trade agreement.

Background

Negotiations for a Transatlantic Trade and Investment Partnership (TTIP)[70] agreement between the European Union (EU) and the United States (US) began in 2013 and ended without conclusion in 2016. By April 2019, the EU had rendered its negotiating directives "obsolete and no longer relevant."[71] While no agreement was finalized, terms under the TTIP 'version 1.0' were expected to add €120 billion to the output of the EU, €90 billion to the US economy, and €100 billion to the world economy.[72] Now, the stakes associated with EU-US cooperation are even higher: cross-border data flows[73] have become a greater driver / enabler of international commercial activity, the digitalization[74] of trade has accelerated, and

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[69] Based on the introduction to the forthcoming TTLF Working Paper, *A Transatlantic Trade and Investment Partnership 'version 2.0'? International Commercial Rules in the Age of Computational Law*.

[70] *See EU negotiating texts in TTIP*, EUROPEAN COMMISSION, https://policy.trade.ec.europa.eu/eu-trade-relationships-country-and-region/countries-and-regions/united-states/eu-negotiating-texts-ttip_en.

[71] To pursue more limited and specific tariff negotiations on industrial goods, *see* Council Decision 6052/19, Authorising the opening of negotiations with the United States of America for an agreement on the elimination of tariffs for industrial goods, 2019.

[72] Gross Domestic Product (GDP). These and other estimates are subject to conjecture. *See* Werner Raza et al., *ASSESS_TTIP: Assessing the Claimed Benefits of the Transatlantic Trade*

and Investment Partnership 1-5 (Österreichische Forschungsstiftung für Internationale Entwicklung – ÖFSE Oct. 2014).

[73] *See* Mira Burri, *Data Flows versus Data Protection: Mapping Existing Reconciliation Models in Global Trade Law*, *in* LAW AND ECONOMICS OF REGULATION 129 (Klaus Mathis & Avishalom Tor eds., Springer International Publishing 2021). *See also* OECD, *Cross-Border Data Flows: Taking Stock of Key Policies and Initiatives* (Dec. 2022). *See further* Javier López González et al., *A Preliminary Mapping of Data Localisation Measures*, OECD Trade Policy Papers (OECD Publishing 2022).

[74] The phase of 'digital transformation' that refers to process improvement(s). *See* Peter C. Verhoef et al., *Digital Transformation: A Multidisciplinary Reflection and Research Agenda*, 122 JOURNAL OF BUSINESS RESEARCH 889 (Jan. 2021).

the global 'digital economy' continues to expand.[75]

Re-connecting for 'Digital Cooperation': The Trade and Technology Council (TTC)

To re-engage and coordinate responses, the EU-US Trade and Technology Council (TTC)[76] was established in 2021 and seeks to enhance bilateral relations by, *inter alia*, mitigating technical barriers between the jurisdiction(s), [77] strengthening transatlantic supply chains, fostering cooperation on certain data issues,[78] setting standards, promoting digital tools for small business inclusion, and mutually reforming the rules-based multilateral trading system. With limited progress at the World Trade Organization (WTO), negotiations in other fora have achieved some success in devising wholly new frameworks, dedicated chapters in trade agreements, and specific provisions to bridge 'analog-to-digital' gaps.[79]

Yet, in identifying and attempting to reconcile policy differences via a thematic Working Group (WG) model,[80] TTC statements to "update the rules for the 21st century economy"[81] are not binding commitments. In lieu of a formal, comprehensive, and modern

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[75] Amid expansion, EU-US digital trade flows are the "world's most extensive", yet differing policy stances (*e.g.*, on data protection) caused the TTIP 'version 1.0' negotiations to fail. *See* Emily Jones et al., *The UK and Digital Trade: Which Way Forward?* (Oxford University Blavatnik School of Government Feb. 2021).

[76] *See EU-US Trade and Technology Council Inaugural Joint Statement,* EUROPEAN COMMISSION (Sept. 29, 2021), https://ec.europa.eu/commission/presscorner/detail/e%20n/statement_21_4951.

[77] Considering the potential for barriers within and across the supranational EU; the national and sub-national systems of EU Member States; and the US federal / 'state' system.

[78] In the 1980s, the US was the first jurisdiction to 'govern' data flows. *See* Susan A. Aaronson, *The Digital Trade Imbalance and Its Implications for Internet Governance*, GLOBAL COMMISSION ON INTERNET GOVERNANCE (Feb. 2016). More recently, the EU and US have included varying language on data governance issues in bilateral / regional trade agreements, *see* Mira Burri, *Digital Trade: In Search of Appropriate Regulation*, *in* JUSTICE, TRADE, SECURITY, AND INDIVIDUAL FREEDOMS IN THE DIGITAL SOCIETY 213 (Fernando Esteban de la Rosa et al. eds., Thomson Reuters Sep. 2021). *See also* Neha Mishra, *Building Bridges: International Trade*

Law, Internet Governance, and the Regulation of Data Flows, 52 VAND. J. TRANSNAT'L L. 463 (2019).

[79] *See* Mira Burri & Thomas Cottier, *Introduction: Digital technologies and international trade regulation*, *in* TRADE GOVERNANCE IN THE DIGITAL AGE: WORLD TRADE FORUM 1–14 (2012).

[80] As a theme, transatlantic transfers of personal data fall outside of the scope of the TTC and have been negotiated separately under the 'EU-US Data Privacy Framework' (DPF). *See Opinion 5/2023 on the European Commission Draft Implementing Decision on the Adequate Protection of Personal Data under the EU-US Data Privacy Framework* (European Data Protection Board Feb. 2023). *See also* Hendrik Mildebrath, *Reaching the EU-US Data Privacy Framework: First Reactions to Executive Order 14086*, No. PE 739.261 (European Parliamentary Research Service - EPRS Dec. 2022).

[81] *See U.S.-EU Establish Common Principles to Update the Rules for the 21st Century Economy at Inaugural Trade and Technology Council Meeting,* THE WHITE HOUSE (Sept. 29, 2021), https://www.whitehouse.gov/briefing-room/statements-releases/2021/09/29/fact-sheet-u-s-eu-establish-common-principles-to-update-the-rules-for-the-21st-century-economy-at-inaugural-trade-and-technology-council-meeting.

EU-US trade agreement,[82] maintenance of the *status quo* is both a risk and an opportunity cost.[83]

Enter: Applied Computational Law

Concurrently, applications of Computational Law (CompLaw)[84] are emerging that allow for the expression and online publication of digital versions of rules[85] *as* algorithms[86] to improve accessibility[87] for humans and support operationalization[88] by machines. Computational Law is that branch of legal informatics concerned with "the mechanization of legal analysis" and "the codification of regulations in precise, computable form."[89] The field is loosely defined by, often interrelated, modelling techniques and associated sub-branches, including 'Big Data Law'[90]

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[82] The scope of 'modern' trade agreements has expanded to cover new rules and their harmonization (*e.g.*, data, intellectual property, health and safety, *etc.*). *See* Dani Rodrik, *What Do Trade Agreements Really Do?*, 32 JOURNAL OF ECONOMIC PERSPECTIVES 73 (Jan. 2018).

[83] On the perils of several meanings of fragmentation (*e.g.*, legal/regulatory and technical), *see* Simon J. Evenett & Johannes Fritz, *Emergent Digital Fragmentation: The Perils of Unilateralism - A Joint Report of the Digital Policy Alert and Global Trade Alert* (CEPR Press 2022). *See also ICC 2023 Trade Report: A Fragmenting World* (ICC Apr. 2023). *See further* Panthea Pourmalek et al., *As Digital Trade Expands, Data Governance Fragments*, CENTRE FOR INTERNATIONAL GOVERNANCE INNOVATION - CIGI (Feb. 9, 2023), https://www.cigionline.org/articles/as-digital-trade-expands-data-governance-fragments. In the context of supply chains, *see* Rebecca Harding, *"Fragmentation", Trade, and Supply Chain Resilience*, REBECCANOMICS (Apr. 17, 2023), https://rebeccanomics.com/rebeccas-blog/f/%E2%80%9Cfragmentation%E2%80%9D-trade-and-supply-chain-resilience.

[84] As first described in 2005 by Stanford University's Nathaniel Love and Michael Genesereth in their seminal conference paper, *see* Nathaniel Love & Michael Genesereth, *Computational Law*, Proceedings of the 10th international conference on Artificial intelligence and law - ICAIL '05 205 (ACM Press 2005).

[85] *See* RONALD G. ROSS, RULES: SHAPING BEHAVIOR AND KNOWLEDGE (Business Rule Solutions, LLC 1st ed. Jan. 2023).

[86] *See* Robert Kowalski, *Algorithm = Logic + Control*, 22 COMMUNICATIONS OF THE ACM 424 (July 1979). *See further* Joseph Potvin, *Data With Direction: Design Research Leading to a System Specification For 'An Internet of Rules'* (Université du Québec en Outaouais 2023). In this form, 'Rules as Data' supplement normative expressions in natural languages and, while possibly '*de jure*', are not to be considered as 'law' per se.

[87] Accessibility implies both access and capability (*e.g.*, to understand and/or utilize data/information).

[88] The meanings of operationalization and application vary by discipline (*e.g.*, law, computer science, *etc.*). *See* Meng Weng Wong, *Rules as Code - Seven Levels of Digitisation* (Singapore Management University Yong Pung How School of Law Apr. 2020).

[89] *See* Michael Genesereth, *Computational Law: The Cop in the Backseat*, CODEX — THE STAN. CTR. FOR LEGAL INFORMATICS (2015), http://logic.stanford.edu/publications/genesereth/complaw.pdf. *See also* Michael Genesereth, *What is Computational Law?* CODEX — THE STAN. CTR. FOR LEGAL INFORMATICS (Mar. 10, 2021), https://law.stanford.edu/2021/03/10/what-is-computational-law.

[90] Concerned with, "data-driven approaches to legal analysis… legal scholarship that leverages big data analytics—specifically, advances in statistical artificial intelligence, including machine learning, natural language processing, and deep learning—to identify patterns in legal information, to draw conclusions, to make policy recommendations, and to predict legal outcomes." *See* Roland Vogl, *Introduction to the Research Handbook on Big Data Law*, *in*

analytics and 'Algorithmic Law'[91] efforts to express the logic of rules *as* computable proxies.[92] With the potential to assist human decision-making[93] (*e.g.*, through legal expert systems)[94] and process automation (*e.g.,* via compliance automation systems), Computational Law may also address private rights and obligations: computable contracts,[95] financial rules, and 'business rules' (*e.g.*, inventory, pricing, *etc.*).

Analytical Structure and Sources[96]

As instruments begin to refer to governance[97] *for*, *of*, and *by* information and

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RESEARCH HANDBOOK ON BIG DATA LAW 1–8 (Edward Elgar Publishing 2021).

[91] These approaches involve "transforming legislation and other legal sources into algorithms," *see* Dag Wiese Schartum, *From Algorithmic Law to Automation-Friendly Legislation*, COMPUTERS & LAW (Society for Computers and Law Aug. 2016), https://www.scl.org/articles/3716-from-algorithmic-law-to-automation-friendly-legislation. *See also* Megan Ma, *Story of a Legal Codex(t) Writing Law in Code* (École de Droit de Sciences Po 2021). This scholarship does not assume a 'code' or 'programming language for the law' based approach.

[92] Similarly bifurcated by Mireille Hildebrandt as 'data-driven' and 'code-driven'. *See Data-driven 'law'*, COHUBICOL, https://www.cohubicol.com/about/data-driven-law. *See also Code-driven 'law'*, COHUBICOL, https://www.cohubicol.com/about/code-driven-law. Such categorizations are solely for the purposes of comparison and many approaches involve a 'hybrid' of techniques. *See* L. Thorne McCarty, *A Language for Legal Discourse is All You Need*, MIT COMPUTATIONAL LAW REPORT (2022), https://bit.ly/3ewZzh1. *See also Bridging the Gap between Machine Learning and Logical Rules in Computational Legal Studies* (Mar. 2022), https://youtu.be/rBPadM9tyNo. The use of the word 'proxy' is in place of any dominant way to describe the models, expressions, representations, *etc.* of natural language rules in computable form.

[93] Where possible (*i.e.*, when not referring to a particular legal text or jurisdiction-specific jargon), this scholarship consciously avoids the term 'automated decision-making' (ADM) and considers that only humans can make informed 'decisions' and consent to action/inaction (*i.e.*,

subject to audit of any algorithm's logic and control components).

[94] *See, e.g.,* Richard E. Susskind, *Expert Systems in Law: A Jurisprudential Approach to Artificial Intelligence and Legal Reasoning*, 49 MOD. L. REV. 168 (Mar. 1986).

[95] *See* Harry Surden, *Computable Contracts*, 46 U.C. DAVIS L. REV. 72 (2012). *See also* SMART LEGAL CONTRACTS: COMPUTABLE LAW IN THEORY AND PRACTICE (Jason Allen & Peter Hunn eds., Oxford University Press 1st ed. Apr. 2022).

[96] Sources of law are recognized by jurisdiction and under international law by the International Court of Justice (ICJ). *See* Statute of the International Court of Justice, art. 38, ¶ 1, concluded at San Francisco June 26, 1945, entered into force Oct. 24, 1945, T.S. 993. Although there is no consensus on the definition of a 'rule', it is generally understood that legal texts (*e.g.*, treaties, legislation, regulations, case law, and contracts) are the source of norms, rules, and guidelines. *See LegalRuleML Core Specification Version 1.0* (Organization for the Advancement of Structured Information Standards – OASIS Aug. 2021), https://docs.oasis-open.org/legalruleml/legalruleml-core-spec/v1.0/legalruleml-core-spec-v1.0.html.

[97] Broadly, governance refers to, "making decisions and exercising authority to guide the behaviour of individuals and organizations. Governance is commonly achieved by the creation and enforcement of explicit rules… less explicit social norms, guidelines, policies, or the creation of defined command structures." *See Agile Governance: Reimagining Policy-making in the Fourth Industrial Revolution* 16 (World Economic Forum Jan. 2018).

communications technology (ICT),[98] public and private branches of law can be used to construct a five-point legal-technical basis for a TTIP 'version 2.0'[99] with computational rules (and data sources) in parallel to its natural language, other texts, and associated systems:[100]

- First, by providing a '*chapeau*' of concepts and methods, it is possible to describe the nature of EU-US relations in the age of Computational Law and the Internet.

- Second, the identification of sources of public international law[101] – the WTO agreements, ongoing negotiations, plurilateral Joint Initiative (JI)[102] on E-commerce proposals, and legal instruments of the World Customs Organization (WCO) – assists in portraying the 'multilateral interface' for digital trade.[103]

- Third, to complement the scope of the TTC, it is necessary to compare existing and envisaged sources of EU and US trade, business, technology, and privacy

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[98] Here, *for* refers to status (*e.g.*, legal recognition of electronic documents), *of* relates to limitation (*e.g.*, data protection regulations), and *by* implies operationalization (*e.g.,* via the systems of governments and/or private individuals/entities). *See Governance Innovation: Redesigning Law and Architecture for Society 5.0*, MINISTRY OF ECON., TRADE & INDUSTRY (METI), https://www.meti.go.jp/press/2020/07/2020071 3001/20200713001-2.pdf (Japan).

[99] The TTLF Working Paper also exists as a 'living' GitHub project. *See TTIPv2, https://github.com/lexmerca/TTIPv2_ToC.*

[100] This includes a variety of 'systems' used in trade and commerce. For Customs, the EU and the US are pursuing modernization through 'single window' systems. *See* RECOMMENDATION AND GUIDELINES ON ESTABLISHING A SINGLE WINDOW TO ENHANCE THE EFFICIENT EXCHANGE OF INFORMATION BETWEEN TRADE AND GOVERNMENT: RECOMMENDATION NO. 33 (United Nations Centre for Trade Facilitation and Electronic Business 2005). In the EU, *see* Parliament and Council Regulation 2022/2399, Establishing the European Union Single Window Environment for Customs, 2022 O.J. (L 317), 1. In the US, the single window for trade is the 'Automated Commercial Environment', *see ACE Portal Modernization*, US CUSTOMS AND BORDER PROTECTION, https://www.cbp.gov/trade/automated/ace-portal-modernization.

[101] Typically concerned with, "the relations of states, and states and state-created

international organizations, and increasingly states and individuals. The source of law here is mostly comprised of treaties and custom…" *See Volume I: The Foundations of Transnational Law* (Hofstra University School of Law 2012). *See also* Alan. O. Sykes, *The Inaugural Robert A. Kindler Professorship of Law Lecture: When is International Law Useful?*, 45 N.Y.U. J. INT'L L. & POL. (Mar. 2013), https://law.stanford.edu/publications/the-inaugural-robert-a-kindler-professorship-of-law-lecture-when-is-international-law-useful.

[102] Formerly known as the 'Joint Statement Initiative' (JSI) on E-commerce.

[103] Defined by the Organisation for Economic Cooperation (OECD)-WTO-International Monetary Fund (IMF) as trade that is 'digitally ordered' and/or 'digitally delivered', where digitally ordered is, "the international sale or purchase of a good or service, conducted over computer networks by methods specifically designed for the purpose of received or placing orders" and digitally delivered reflects "international transactions that are delivered remotely in an electronic format, using computer networks specifically designed for the purpose." *See* HANDBOOK ON MEASURING DIGITAL TRADE (OECD-WTO-IMF 2020). Under the WTO system, *see* Robert Staiger, *Does Digital Trade Change the Purpose of a Trade Agreement?*, No. w29578 (National Bureau of Economic Research Dec. 2021).

law. This includes the many EU 'digital policy' initiatives.[104]

- Fourth, as discoverable in whole or in part in international agreements, legislation, regulations, and private contracts, it is essential to frame the institutional sources of 'transnational commercial law':[105] the principles, conventions, and model laws of the United Nations Commission on International Trade Law (UNCITRAL) and the International Institute for the Unification of Private Law (UNIDROIT). Relevant instruments of the Hague Conference on Private International Law (HCCH) and the International Chamber of Commerce (ICC) must also be considered.

- Fifth, because '*de facto*' and '*de jure*' standards[106] facilitate the development of digital infrastructure, their recognition and classification present technical means to 'seize the CompLaw opportunity' for transatlantic trade.

Methods and Research Questions

Drawing from regime theory,[107] accounting for Commercial Law Intersections (CLIs),[108]

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[104] For example, the EU electronic IDentification, Authentication and trust Services (eIDAS) regulation, the Digital Markets Act (DMA), the Digital Services Act (DSA), the Data Governance Act (DGA), and the Data Act.

[105] Here, transnational commercial law is, "that set of rules, from whatever source, which governs international commercial transactions and is… derived from international instruments of various kinds, such as conventions and model laws, and from codification of international trade usage adopted by contract." *See* ROYSTON MILES GOODE ET AL., TRANSNATIONAL COMMERCIAL LAW: TEXT, CASES, AND MATERIALS (Oxford University Press 2015). In relation to 'transnational data governance' issues, *see* Douglas W. Arner et al., *The Transnational Data Governance Problem*, 37 BERKELEY TECH. L.J. 623 (Berkeley Technology Law Journal 2022).

[106] EMMANUELLE GANNE & HANNAH NGUYEN, STANDARDS TOOLKIT FOR CROSS-BORDER PAPERLESS TRADE: ACCELERATING TRADE DIGITALISATION THROUGH THE USE OF STANDARDS (ICC & World Trade Org. 2022).

[107] *See* Stephen D. Krasner, *Structural Causes and Regime Consequences: Regimes as Intervening Variables*, 36 INTERNATIONAL ORGANIZATION 185 (1982). *See also* Anu Bradford, *Regime Theory*, MAX PLANCK ENCYCLOPEDIA OF

PUBLIC INTERNATIONAL LAW (Oxford University Press 2007). *See further* Jeswald W. Salacuse, *Making transnational law work through regime-building*, *in* MAKING TRANSNATIONAL LAW WORK IN THE GLOBAL ECONOMY 406–430 (Pieter H. F. Bekker, Rudolf Dolzer, & Michael Waibel eds., 2010).

[108] Where business and commercial law have, "grown into a dense thicket of subject-specific branches that govern a broad range of transactions and corporate actions. When one of such dealings or activities falls concurrently within the purview of two or more of these commercial law branches… an overlap materializes… The unharmonious convergence of commercial law branches generates failures in coordination that both increase transaction costs and distort incentives for market participants." *See* Giuliano G. Castellano & Andrea Tosato, *Commercial Law Intersections*, 72 HASTINGS L.J. (Apr. 2021), https://repository.uchastings.edu/hastings_law_journal/vol72/iss4/2. In advancing the conceptualization of CLIs, *see further* Douglas W. Arner et al., *Financial Data Governance: The Datafication of Finance, the Rise of Open Banking and the End of the Data Centralization Paradigm*, 117 UNIVERSITY OF HONG KONG FACULTY OF LAW RESEARCH PAPER (Feb. 2022).

and recognizing interplay with 'constitutional'[109] and administrative law, the analytical structure may be employed to answer two questions:

1. Which sources contain rules that may be appropriate[110] for algorithmic representation?

2. How do these and other sources inform the legal environment for transatlantic digital trade?

Ultimately, by taking a comparative 'Law + Technology'[111] approach to involve different legal subjects[112] and branches, it is feasible to hypothesize the composability[113] of hard and soft-law[114] to realize commercial activity under a 'born digital' transatlantic trade agreement.[115] Building on works in other jurisdictional contexts – transpacific[116] and pan-Africa[117] – outputs of the specified analytical structure are set to contribute to the advancement of legal informatics at the nexus of EU-US trade and technology policy regimes.

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[109] The EU has not formally ratified a 'constitution' and is 'constituted' by treaties and its '*acquis communautaire'*.

[110] The extent of 'appropriateness' can be analyzed through dimensions related to discretion, risk, and how 'practicable' a rule is.

[111] The 'Law + Technology' approach builds on complexity science and other disciplines / frameworks (*e.g.*, 'Code / Data as Law' and 'Law as Code / Data') to consider both the issues and positive contributions that technology can bring to society. *See* Thibault Schrepel, *Law + Technology (v2.0)*, CODEX — THE STAN. CTR. FOR LEGAL INFORMATICS WORKING PAPER SERIES (Jan. 2023).

[112] *See* Laurence Diver, *3.4.2 Legal Subject*, *in* TEXT-DRIVEN NORMATIVITY (CoHuBiCoL Jul. 2021). In international law, 'persons' may be primary (e.g., states, international organizations) or secondary (*e.g.*, corporations, individuals).

[113] The modular assembly of components within any functional system design.

[114] Respectively understood as 'binding' and 'non-binding' instruments, yet perspectives vary among scholars (*e.g.*, on the nature of enforceability) and across disciplines. *See* Kenneth W. Abbott & Duncan Snidal, *Hard and Soft Law in International Governance*, 54 INTERNATIONAL ORGANIZATION 421–456 (2000).

[115] Craig Atkinson, *Africa's Potential 'Born Digital' Trade Agreement*, 1 INTERNATIONAL TRADE FORUM 28–29 (International Trade Centre 2019).

[116] Craig Atkinson & Nicolás Schubert, *Augmenting MSME Participation in Trade with Policy Digitalisation Efforts: Chile's Contribution to 'An Internet of Rules,'* 13 TRADE L. & DEV. 80 (2021).

[117] Craig Atkinson & Joseph Potvin, *Implementing the African Continental Free Trade Area: A Simple, Scalable, and Fast Computational Approach for Algorithmic Governance*, *in* SUSTAINABLE DEVELOPMENT IN POST-PANDEMIC AFRICA: EFFECTIVE STRATEGIES FOR RESOURCE MOBILIZATION (Routledge Oct. 2022).