Learning from the past for designing AI global governance systems

Summary by Jovana Jankovic based on a paper by Jacob Greenspon

Abstract

Given the globalized nature of AI and its rapid development, some form of international regulation is necessary. This paper analyzes recent regulatory challenges in history to understand how regulatory institutions were shaped by the challenges they sought to meet, and how such challenges can be navigated when contemplating global regulatory cooperation on AI.

Background: Recent developments in AI governance and regulation

The rapid development of AI has also shed light on the problems it may bring, from job displacement to algorithmic bias to all sorts of unintended consequences.

Several initiatives have been created to govern and regulate AI: government advisory bodies like the Austrian Council on Robotics and AI; technology-specific regulations like the Canadian Directive on Automated Decision-Making; principles adopted by intergovernmental organizations like the OECD, G20, and the EU; and voluntary responsible AI principles taken up by commercial entities like Google. Standard-setting NGOs have also entered the field, such as the ISO and IEEE.

Governing and regulating AI can take many forms: government-enforced rules, industry self-regulation, or "regulatory markets" (inciting third-party regulatory technologies via market incentives). What's certain is that some form of regulation is necessary, since rivalry and competition in the private sector mean technological developments may not always be safe.

The globalized context of AI: R&D, MNCs, and national security

Three aspects of the globalized context of AI are relevant to its regulation and governance.

First, AI research and development are indeed truly global. While researchers in the US and UK drove early developments, relatively low barriers to entry meant other parties joined quickly. For example, between 2012 and 2017, authors affiliated with East Asian countries in particular increased significantly at the Association for the Advancement of Artificial Intelligence conference. Other factors, such as the low cost of cloud computing, the increasingly international nature of postsecondary education, and international collaborations by researchers in both the private and public sector all result in a globalized landscape for AI development.

Second, multinational corporations play a major role in AI. Firms draw upon investment capital from around the world; their staff, investors, and customers are distributed globally; and most companies offering AI-based products rely on international sales. The global customer base of large companies like Facebook, Amazon, and Alibaba shows that the cross-border flows of AI-

based products are not negligible. And AI itself works to improve trade by making global value chains more efficient through algorithmic prediction and risk management.

Third, national security considerations are increasingly tied to AI. From an AI 'arms race' between the US and China to state investment in AI-powered military technologies (intelligence, cyber operations, autonomous vehicles, drones), AI's military applications are broad. But the links between AI and national security extend beyond militarization. The collection and sharing of data via international trade agreements, for example, creates new challenges for domestic privacy laws.

While AI is the latest and perhaps most global of technological advances, it's certainly not the first. Looking to past global regulatory cooperation can shed light on how to navigate this landscape.

Exemplars of global governance and regulation

A brief definition of past global governance and regulatory institutions is below, followed by a table of their respective characteristics: key issues, tradeoffs, benefits, and shortcomings.

The **Asilomar Conference in 1975** for regulating biotechnology gathered experts to ensure that recombinant DNA science was developed in a safe and socially beneficial way. It's credited with generally restoring public trust in science by bringing the discussion into the open.

The International Monetary Fund (IMF), World Trade Organization (WTO), and World Bank all came out of the **1944 Bretton Woods Conference** in which nations agreed to tie their currencies to agreed-upon rates which could only be adjusted for particular reasons and with the agreement of the IMF (governed by the member states).

The **European Union Single Market Initiative (EU SMI)** aimed to ensure that people, goods, services, and money could move freely in the EU for economic benefit. The initiative harmonized standards, prohibited border levies, replaced customs controls by audits and risk analysis, ensured fair taxation, lifted restrictions on capital flows, and facilitated the free movement of workers.

The Forest Stewardship Council, established in 1993, promoted responsible forest management through market-based certification. Forest owners, timber firms, and NGOs collaborated to develop global and national standards; the FSC then accredits certification bodies that evaluate and monitor compliance.

Established in 1946, the **ISO (International Organization for Standardization**) is a network of institutes from 165 member nations that develops technical standards for a wide range of products and services. Common but voluntary standards are crafted via consensus by experts nominated by national member organizations, which also vote on those standards.

The Maritime Labour Convention, established in 2012, is a set of international treaties that protects minimum working conditions for seafarers. It's overseen by governments, ship owners, and seafarers unions. Even ships from non-signatory countries must meet some requirements.

In 2017, **the Medical Device Single Audit Program** was established to audit everything from tongue depressors to pacemakers by a single organization. Participant nations agree to accept the audit report of the single auditor in a type of regulatory market, creating a global market for regulation in which individual countries are not obliged to adopt the same regulatory standards.

The OECD Guidelines for Cryptography Policy (1997) marked a shift towards an international relaxation of regulations on encryption. However, the absence of global regulation has contributed to a fragmentation of the global market into several non-interoperable cryptographic technologies.
The Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space was signed by the US, UK, and USSR in 1967 to ensure the peaceful exploration of space. It included limits on the use of nuclear power in space and a prohibition on the colonization of space by nation-states. It has now been signed by 104 nations.

The United Nations was founded in 1945 to maintain postwar international peace and security. It comprises the UN General Assembly, the UN Security Council, and the UN Economic and Social Council, all of whom have some involvement in current AI governance. Members of each are elected to finite terms and non-binding resolutions are decided by majority votes.

The World Trade Organization, created in 1995, oversees international trade, including trade liberalization initiatives, transparency in decision-making, dispute resolution, and more. It relies on concepts like reciprocity in trade protections, multilateral negotiations, and nondiscrimination in trade.

Summary table of exemplars and framework of global regulatory arrangements

The table below explores how each of the exemplars fits into a framework of how the attributes of a regulatory challenge influence the design of governance systems given several tradeoffs (discussed below). It also summarizes how exemplar regulatory challenges compare to the AI regulatory challenge. The entries are suggestive, primarily intended to provide a structure for discussion of the global regulatory challenges around AI.

Exemplar	Non-state involvement	Barriers to entry	National security concerns	Ability to avoid or opt-out of regulation	Global integration trilemma	Compliance vs. comprehensiveness of membership	Accountability vs. ability to agree	Comparability to AI
Asilomar Conference	Mostly public, some private and civil society	High	Moderate	High	Limits national sovereignty	Compliance to regulations	Ability to agree	Similar cases of rapidly developing technologies causing public concern, but different actors involved
EU Single Market	Public sector (govts)	Low	Low	Low	Limits national sovereignty	Compliance to regulations	Ability to agree	Similar focus on standards harmonization, but differ on actors involved and national security considerations
Bretton Woods and IMF	Public sector (govts)	High	Moderate	Moderate	Limits international integration	Compliance to regulations	Accountability	Similar impetus to come together to create global regulatory system, but different actors involved
Forest Stewardship Council	Private and civil (govts as land-owners but not members)	Moderate	Low	High	Limits public purpose	Comprehensiveness of membership	Ability to agree	Similar in role for non-state actors and global implications with interest in harmonization, differ on speed of technology and complexity, national security considerations
International org. for Standardization	Private, public, and other groups very involved	Varies based on product	Varies based on product; typically low	High (voluntary standards)	Limits public purpose	Comprehensiveness of membership	Ability to agree	Similar variety of actors involved and ability to opt-out, differs on national security considerations

Exemplar	Non-state involvement	Barriers to entry	National security concerns	Ability to avoid or opt-out of regulation	Global integration trilemma	Compliance vs. comprehensiveness of membership	Accountability vs. ability to agree	Comparability to AI
Maritime Labor Convention	Public, private, and civil society (tripartite process)	Moderate	Low	Moderate	Limits national sovereignty	Comprehensiveness of membership	Ability to agree	Similar in role for non-state actors and global implications with interest in harmonization, differ on speed of technology and complexity, national security considerations
MDSAP	Public and private sectors	High	Low	Moderate	Limits public purpose	Compliance to regulations	Ability to agree	Similar in speed of technology and global reach, role of non-state, differ on scope of innovation
OECD Cryptography guidelines	Public, private, and civil society	Moderate	High	High	Limits international integration	Comprehensiveness of membership	Ability to agree	Similar variety of relevant actors, national security considerations, and ability to opt-out; differ on barriers to entry
Outer Space Treaty	Public sector (govs.)	Very high	High	Moderate	Limits national sovereignty	Comprehensive	Accountability	Similar on national security and global implications, differ on role of non-state actors and speed/scope of innovation
United Nations	Mostly public, some private and civil society	N/A	High	Low	Limits national sovereignty	Comprehensive (UNGA), Compliance (UNSC)	Accountability	Similar on global reach but differ on role of non-state and speed and complexity of technology
WTO/ GATT	Mostly public, some private and civil society	Moderate	Moderate	Low	Limits national sovereignty	Comprehensive (GATT), Compliance (WTO)	Accountability	Similar on broad global scope and value of harmonization but differ on speed of technological change

5 *Learning from the past for designing AI global governance systems – Summary*

Key attributes of a regulatory challenge inform the design of its global governance system

Four dimensions inform the design of governance arrangements: non-state actors, barriers to entry, national security considerations, and outside options.

a. What is the degree of involvement by non-state actors?

The involvement of non-state actors (like the private sector and civil society) in addressing global issues is often determined by the era and domain of regulation in question. In the Outer Space Treaty, for example, states had at that time a monopoly on the technology in question. Private firms and civil society organizations, therefore, played little role. The UN also had very little involvement by private business at its outset—with an increased presence in later years through mechanisms like policy dialogue, advocacy, fundraising, and UN operations.

International governance arrangements should be inclusive. AI has never been the domain of governments alone, and there is a diverse set of actors involved such as civil society organizations like Amnesty International, standards-setting membership organizations like the IEEE and the ISO, and of course private companies who are estimated to account for two-thirds of global spending on AI development.

b. How large are the barriers to entry into the regulated activity?

Technical and economic barriers dictate which actors can participate in a given domain. High barriers often equal a smaller number of actors and more narrowly-focused enforcement; the opposite is true of low barriers. For example, barriers to entry into biotechnology are high since it requires specialized training and the complexity, rigour, and professional standards of an elite global system of scholarly exchange. The same is true of domains addressed by the United Nations.

AI, on the other hand, has relatively low barriers to entry. With the right talent, strategy, and access to technology, there is ample opportunity to adopt AI. Algorithmic data-analysis software is cheap, or sometimes free. The cost of physical infrastructure—once high—is steadily falling. Training and education are likewise becoming more affordable and accessible. Governments cannot afford to focus exclusively on regulating big technology companies, as new players can quickly crop up. AI isn't limited to a small group of highly professionalized specialists who adhere to self-enforcement or codes of conduct.

c. How important are national security considerations?

Some domains are less closely related to national security than others. While medical devices and forestry are less relevant to national security, international trade is certainly closely connected, as shown in the postwar Bretton Woods system, for example. National security concerns can, therefore, hinder or encourage a nation-state's willingness to participate in

collaborative regulatory initiatives. The role of AI in weapons systems, military vehicles, and intelligence analysis has led to the increasing identification of AI with national security issues.

d. What is the availability of 'outside options' to avoid regulation?

What if a country or corporation is better off when avoiding compliance or not participating in a governance system? For example, there are several outside options to participating in the Forest Stewardship Council. In contrast, the outside options for the European Union Single Market are limited. Lack of participation in the EUSMI could mean serious economic drawbacks.
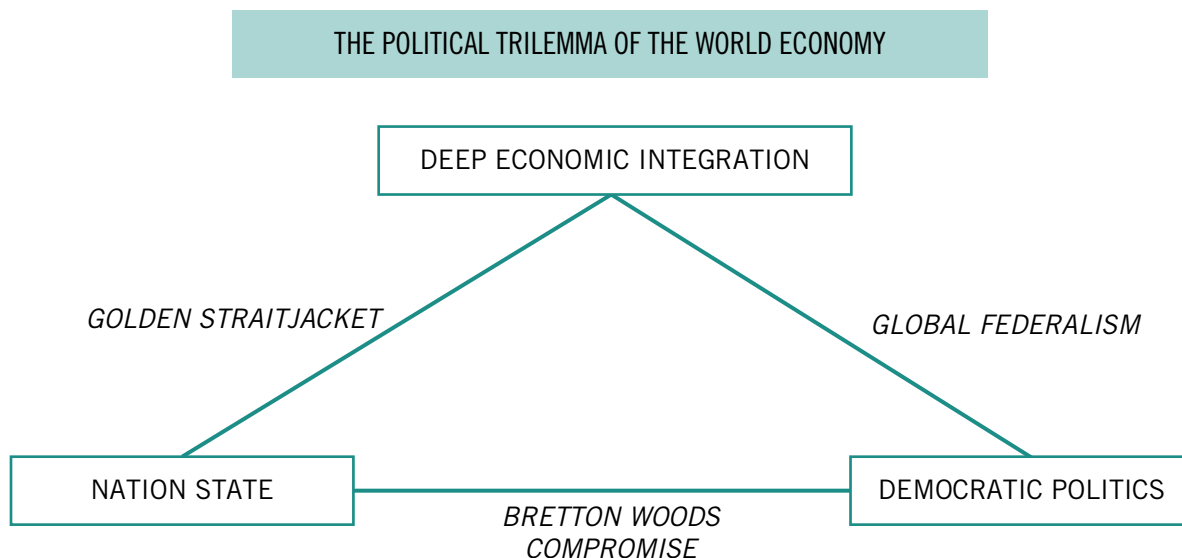
This creates a dynamic in which belonging and exclusion incentivize participation. For example, the wide scope of WTO membership, especially among the largest economies, means there are few good outside options. The 'club of WTO pariahs' is not very attractive. Limiting outside options and increasing membership by as many parties as possible is key. Unfortunately, a challenge for AI regulation is that there are strong outside options to global regulatory cooperation. Those who refuse to participate are generally no worse off than signatories.

Tradeoffs in the design of global governance and regulatory systems

Looking again at lessons from the past, what are the opportunities and constraints facing the design of a global regulatory system for AI?

a. The trilemma of global integration

Developed separately by both Dani Rodrik and Lawrence Summers, the trilemma of globalization posits that international policy arrangements can only fully achieve two of three goals: **1. international integration** (successful interaction between nation-states and uniformity of regulation), **2. national sovereignty** (self-determination and rules that meet domestic priorities/goals), and **3. democratic purpose** (policies responsive to citizens and beneficial to the public at large.)

THE POLITICAL TRILEMMA OF THE WORLD ECONOMY

DEEP ECONOMIC INTEGRATION

GOLDEN STRAITJACKET

GLOBAL FEDERALISM

NATION STATE

DEMOCRATIC POLITICS

BRETTON WOODS COMPROMISE

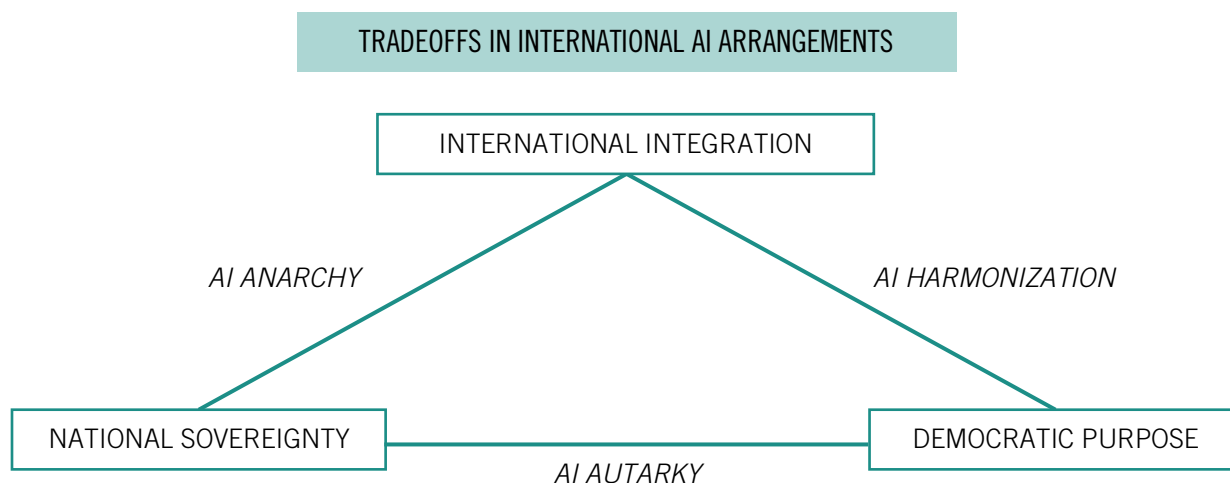The sides of the triangle above describe:

- **Global federalism,** in which a supranational governing body sets policies that apply to all member states and their residents (e.g. the EU Single Market Initiative).

- **The golden straitjacket,** in which the nation-state is responsive largely to the international economy at the expense of domestic objectives (e.g. the 19th century gold standard, which benefited global integration over the wellbeing of domestic populations).

- **The Bretton Woods compromise**, in which nation-states may sacrifice some interaction and cooperation with others in order to prioritize democratic policies domestically (e.g. the IMF allows signatories to impose some trade protectionism at home).

Of the above three, most international treaties (such as the Maritime Labour Convention) tend toward a form of global federalism. (It's, of course, somewhat easier for countries to give up some sovereignty when they are similar or have close preferences to others on the issue at hand.)

But the other two arrangements above sacrifice some integration to maintain national sovereignty and democratically-determined policies with a public purpose. Postsecondary education, for example, differs markedly in standards, accreditation, and coursework across countries, making it difficult to transfer a credential from one country to another.

The trilemma can describe the tradeoffs in different international arrangements on AI like so:

- **AI autarky** (limiting integration): Adoption of AI technologies from other countries would be limited. E.g. a facial recognition algorithm developed in Korea likely wouldn't be compliant with independently-crafted regulations in Sweden.

- **AI harmonization** (limiting sovereignty): Regulations on AI would apply to all participant jurisdictions. E.g. the EU might set some uniform standards for a particular AI tool in order to ensure it replicates well across jurisdictions.

- **AI anarchy** (limiting democratic purpose): In spite of citizen preference, countries may create very little domestic regulation, deferring to the international context. E.g. a country who wants to be the hub of AI development would not place restrictions on AI in order to attract firms.

TRADEOFFS IN INTERNATIONAL AI ARRANGEMENTS

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                    INTERNATIONAL INTEGRATION

         AI ANARCHY                      AI HARMONIZATION


    NATIONAL SOVEREIGNTY                      DEMOCRATIC PURPOSE
                         AI AUTARKY
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For example, if AI were to displace jobs in a given country, that country may enact domestic policies to mitigate job displacement if citizens demand it, while jettisoning either integration or sovereignty efforts. These tradeoffs illustrate the challenges faced by past efforts at international cooperation on AI, such as the International Panel on Artificial Intelligence announced by Canada and France (2018). While this body aimed to build consensus among G7 countries on limits on AI technologies to mitigate harm, it faced opposition from the US, who found this arrangement—where countries sacrificed some sovereignty for integration—unattractive according to its preferences for encouraging AI innovation over safety.

b. Compliance and depth versus comprehensiveness of membership

Another tradeoff is the degree to which a system forces members to comply with regulations, versus the scope of its membership—it's difficult to get meaningful and effective rulemaking across participants with divergent, or competing, viewpoints. One example for addressing this is the Forest Stewardship Council, which utilizes a complex multi-tiered decision-making process designed to maintain flexibility in the balance of voting power between different interests. There are several mechanisms that international arrangements use to navigate the tradeoff between deep compliance and comprehensiveness of membership: one could, for example have a very shallow depth of regulations (less-than-stringent certification processes) or one could impose limits on the actual enforcement of regulations (perhaps a single country could refuse to recognize and punish a rule violation—even against themselves).

The above are, however, unattractive if the goal is to maintain standards and enforce regulations. Another option is to target the other side of the compliance vs. depth tradeoff by limiting membership only to countries whose preferences on the key issues are aligned. For example, Bretton Woods included only a limited number of members who were closely monitored for compliance. Any global governance of AI must therefore contend with the question of membership. In the current context, an institution that includes the US, China, and Russia would be very different from one that includes more aligned countries such as Canada, the EU, and New Zealand.

c. Accountability versus ability to agree

A final tradeoff is the one between accountability to domestic constituencies versus agreement among members internationally. If constituents diverge on their preferences from one country to another, then global institutions that are more responsive to their constituencies will have greater difficulty coming to agreements. For example, non-democracies can more easily enter into WTO agreements because they're more willing to accept policies that conflict with their populations' preferences. Similarly, ISO experts have an easier time operating by consensus due to their distance from mechanisms of democratic accountability.

In the current context, it's likely that international regulatory bodies addressing AI would reach more meaningful agreements if afforded some latitude in deliberation and decision-making.

Conclusions for the global governance and regulation of AI

Seeing how global regulatory systems are shaped by their regulatory challenge and tradeoffs in designing governance, we can draw out some implications for the design of AI global governance. First, we must contend with the possibility of little meaningful international cooperation on AI governance due to, among other things, national interest, fragmented markets, and the availability of outside options. Without real action, it is very possible that AI international governance will continue to be limited to expressions of principles and ethics.

However, the examples explored here demonstrate that it is possible to have multilevel international arrangements that include various membership roles, depths of commitment, and selectivity of regulation. The WTO, in particular, serves as a template for a flexible mechanism that could enable different degrees of integration, a diverse menu of regulatory actions, and the recognition of cultural differences and varying national legal systems. A large multi-level regulatory arrangement could still preserve some degree of minimum standards. Indeed, flexible integration that can gradually become closer may eventually enable better regulation.

A successful global AI regulatory system requires real benefits and enforcement. For example, AI professionals, universities, and public research institutions could incentivize regulation by refusing to cooperate or work with unregulated entities—this would offer the added benefit of public trust. As for enforcement mechanisms, they may be weaker in some cases in order to achieve minimum standards, but could, of course, be more robust in scenarios with limited membership.

Click here to read the full paper *Learning from the past for designing AI global governance systems.*

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