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International Legal Foundations of AI Governance and Soft-Law Mechanisms

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Abstract: Against the intertwined evolution of globalization and digitalization, the breakthrough development of artificial intelligence (AI) is reshaping international society with unprecedented breadth and depth. The governance challenges it generates transcend the boundaries of any single state, making it urgently necessary to construct a robust and effective international regulatory framework capable of providing systematic responses. At present, the international legal foundations for AI governance remain weak and exhibit a fragmented character. Hard-law mechanisms centered on treaty-making among sovereign states face significant difficulties in forging global consensus due to their inherent procedural rigidity, high negotiation costs, and inability to keep pace with rapid technological iteration. Under these real-world constraints, soft-law mechanisms—comprising guidelines, principles, standards, and codes of conduct advocated and formulated by international organizations, multi-stakeholder forums, professional standard-setting bodies, and industry alliances—are playing an increasingly pivotal, pioneering, and supplementary role in global AI governance by virtue of their flexibility, adaptability, and inclusiveness. This study aims to systematically examine the scope and limits of the effect of existing international-law bases for AI governance and to analyze their structural defects and bottlenecks in application; it then focuses on soft-law mechanisms, offering a detailed account of their core functions, diverse forms, operational logic, and practical influence within today's governance ecosystem. Finally, the study provides a forward-looking discussion of how soft law and any future international hard-law frameworks might develop dynamic linkages and functional complementarity, with a view to providing a solid theoretical reference and roadmap for building an international cooperative system of AI governance that balances technological development, ethical considerations, security needs, and global public interests. The central thesis advanced here is that, over the medium to long term, in which AI paradigms continue to evolve rapidly, soft-law mechanisms will remain the most active and pragmatic leading normative force in the global governance system, and their successful practice will lay indispensable social-cognitive and normative foundations for any legally binding international regime that may emerge.

Keywords: AI governance; International regulation; Soft-law mechanisms; Global governance system; Technology ethics; Standardization; Multi-stakeholder governance; Normative evolution

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1. Introduction: Normative demand and pathway dilemmas in global AI governance

As a general-purpose technology with broad penetrative capacity and disruptive potential, AI has become deeply embedded in the global economy, security, social structures, and everyday life. The resulting transnational challenges—algorithmic bias, erosion of privacy, labor-market disruptions, risks from autonomous weapon systems, the proliferation of deepfaked information, and technological monopoly power—pose a severe test to the existing international legal order grounded in territorial sovereignty. In essence, AI governance is about balancing risk governance and innovation governance, and AI's cross-border attributes require coordination and cooperation at the international level. Yet profound differences among states in technological capabilities, industrial policies, value preferences, and risk tolerance make efforts to establish a unified and legally binding international treaty (hard law) exceedingly difficult [1]. The speed at which traditional international law is generated and evolves cannot match the exponential pace of technological change, exposing a clear regulatory lag. This structural contradiction has prompted the international community to turn toward more elastic mechanisms of norm formation. Accordingly, systematically examining the international legal foundations for AI governance and their limitations, and exploring in depth the theoretical bases, practical patterns, and future trajectory of soft-law mechanisms as important alternatives or transitional arrangements, is not only of significant scholarly value but also an urgent real-world task that bears directly on how to guide AI development toward the public good and ensure that its dividends are shared inclusively. This study proceeds in a logical sequence from situational analysis to mechanism deconstruction and then to future prospects, seeking to present a comprehensive normative map of international AI governance.

2. The current state, limitations, and formation dilemmas of international hard-law regulation

2.1. Indirect application of existing international law and interpretive tensions

At present, the international community has not adopted a comprehensive convention specifically targeting AI, and governance efforts largely rely on the expanded interpretation and application of existing international legal rules. In the field of international human rights law, provisions on privacy, equality, and the right to work in instruments such as the International Covenant on Civil and Political Rights and the International Covenant on Economic, Social, and Cultural Rights are invoked to scrutinize potential discrimination and rights infringements arising from AI systems. In the field of international humanitarian law (the law of armed conflict), the principles of distinction, proportionality, and precaution embedded in the Geneva Conventions framework constitute the core legal basis for debates on the legality of lethal autonomous weapon systems. In addition, international telecommunications rules and World Trade Organization agreements touch, within their respective scopes, on cross-border data flows and digital trade issues related to AI. However, this "old law for new problems" approach entails fundamental interpretive tensions. Established legal concepts (such as "attack", "responsibility", and "jurisdiction") become difficult to define clearly in contexts of algorithmic and automated decision-making, making it hard to regulate new behaviors and risks directly and precisely. This generates uncertainty and controversy in legal outcomes: overly broad interpretations may stifle innovation, while overly narrow interpretations may leave governance vacuums [2].

2.2. Political–economic obstacles to concluding specialized international treaties

Although calls for specialized legislation are growing, concluding a universal international treaty on AI faces deep

political–economic obstacles. The first stems from strategic rivalry among major powers. Leading technological states view AI as a core strategic asset and frontier of competition, holding sharply divergent positions on export controls, cross-border data flows, and supply-chain security, and thus finding it difficult to make meaningful compromises on rules implicating national security. Second, states differ greatly in levels of development and governance priorities. Developed countries often emphasize ethical alignment, privacy protection, and leadership in global standard-setting, while developing countries may prioritize technology transfer, capacity building, and digital sovereignty. This misalignment of priorities makes it difficult for a single treaty template to secure broad support. Third, the uncertainty and rapid iteration of technological development create a risk of "locking in outdated rules", prompting states to remain cautious about assuming long-term, rigid legal obligations.

2.3. The slow formation of customary international law and its mismatch with technological dynamics

Customary international law depends on widespread, consistent state practice accompanied by opinion juris. In the AI domain, relevant state practice remains in rapid flux and far from convergent. Global regulatory pathways differ significantly across major jurisdictions—from the EU's comprehensive risk-based regulation, to the United States' sectoral approach emphasizing self-regulation, to China's tiered and categorized governance model—making it difficult to form a stable "general practice" in the short term. Meanwhile, many frontier developments in AI are led by the private sector, and state practice often lags behind or is shaped by industry practices. More importantly, the exponential pace of technological evolution conflicts with the customary-law requirement that practice display a degree of continuity and stability [3]. As a result, customary international law is ill-suited to serve as an effective instrument for addressing urgent governance challenges today; its role is more likely to emerge in specific subfields once technological applications become mature and stable.

3. The rise of soft-law mechanisms: Functions, forms, and implementation logic

3.1. Core functions and comparative advantages of soft law

Soft law performs multiple functions in global AI governance that hard law cannot readily replace. Its primary function is norm construction and framework provision: by distilling and disseminating principles such as transparency, explainability, fairness, and human oversight, soft law supplies foundational conceptual frameworks and discursive vocabularies for global deliberation and domestic legislation. A second function is consensus cultivation and trust-building: multi-stakeholder processes of soft-law formulation operate as platforms for international dialogue and cooperation, helping narrow differences and accumulate mutual trust. A third function is capacity building and knowledge diffusion: soft-law instruments frequently appear as practical guidelines and toolkits, lowering the cognitive and implementation barriers for states, especially developing countries. Soft law's underlying advantages lie in high flexibility, strong adaptability, and short drafting cycles, enabling a "learning by doing" response to emerging problems in technological evolution, while inclusive procedures bring a broader range of stakeholders into the governance process.

3.2. A Diverse, multi-level soft-law normative genealogy produced by multiple actors

The production of soft law for AI governance is highly decentralized and networked, forming a normative ecosystem shaped by multiple actors. At the level of international organizations, UNESCO's Recommendation on the Ethics of Artificial Intelligence and the OECD's AI Principles exert broad political influence. At the level of

professional standard-setting bodies, technical and management standards jointly developed by the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC) constitute a foundation for industrial interoperability. At the level of multi-stakeholder initiatives, ethical frameworks issued by the Partnership on AI and the Institute of Electrical and Electronics Engineers (IEEE) integrate cross-disciplinary expertise. In addition, internal ethics policies of leading technology companies and industry self-regulatory charters provide frontline feedback from practice. Domestic legislation and policy initiatives of major economies (such as the EU and the United States) also generate substantial "normative spillover" effects through market power, becoming de facto global reference points akin to soft law.

3.3. Mechanisms through which soft law generates effectiveness and paths of implementation

Although soft law lacks coercive enforcement, it becomes effective through a set of sophisticated "soft" mechanisms. Market and reputational dynamics are central: firms aligning with mainstream ethical standards can gain investor confidence, consumer trust, and supply-chain access advantages. Certification and labeling schemes provide recognizable signals of compliance, enabling market selection to encourage adherence. Transparency and reporting expectations (such as publishing algorithmic impact assessments) leverage social oversight to create pressure. Soft-law norms are also frequently incorporated into commercial contracts or public procurement clauses, thereby acquiring de facto binding force. Most importantly, soft law can "harden" indirectly through absorption into domestic legislation or policy, becoming a source of enforceable domestic obligations [4]. These mechanisms interact to shape industry best practices, guide corporate conduct, and influence public policy trajectories.

4. Looking ahead: Building a hybrid governance system of hard–soft law synergy

4.1. From soft law to hard law: Pathways of gradual norm hardening

Certain soft law norms that have undergone practical testing and garnered a high degree of consensus hold the potential to evolve into legally binding rules. This transformation generally follows three pathways: first, domestic legislative adoption, wherein countries incorporate the core principles of international soft law into mandatory national regulations when formulating domestic AI legislation—currently the most prevalent and effective method of "hardening." Second, integration into regional or thematic treaties, where mature soft law texts serve as the foundation for negotiating binding international legal instruments in areas of relatively concentrated consensus, such as biosecurity or autonomous weapons. Third, the evolution into mandatory standards or market access requirements, where certain technical or management standards may, due to widespread market adoption or endorsement by international organizations, become compulsory prerequisites for global entry into specific industries. This hardening process is gradual, selective, and path-dependent. From an evolutionary perspective, norm hardening is not a unidirectional or linear progression but involves iterations and adjustments. The specific interpretations and implementations of soft law principles by national regulatory authorities can, in turn, influence subsequent revisions and refinements of international norms, creating a two-way feedback mechanism. This interactive process ensures that the resulting hard law rules are more grounded in practice and adaptable, thereby mitigating the risk of technology governance that is detached from reality.

4.2. Limited and targeted hard-law construction: Setting non-negotiable baselines

Building upon extensive exploration and practical application of soft law, the international community can

anticipate the conclusion of specialized hard law agreements in limited areas characterized by extremely high risks and the strongest consensus. Such areas may include: prohibitions or strict limitations on specific types of lethal autonomous weapon systems; international non-proliferation rules to prevent the use of AI technology in weapons of mass destruction; and frameworks for international cooperation and judicial assistance to combat cross-border crimes involving AI, such as attacks on critical infrastructure. These hard laws do not need to be all-encompassing; their core function is to establish inviolable safety and ethical baselines for global AI development, providing stable legal expectations and the strongest deterrent in the highest-risk areas. This complements the "upward and positive" governance guided by soft law, creating a layered governance structure. The formulation of such limited hard laws places particular emphasis on the design of enforceable provisions and verification mechanisms. For instance, in the field of autonomous weapon systems, hard law may require the establishment of a technical characteristics registry and an international notification system; in the area of non-proliferation, it would necessitate clear lists of controlled technologies and coordinated export control procedures. This precise legislative approach effectively manages the most pressing global risks while preserving ample space for technological innovation in other domains, reflecting the pragmatic wisdom of the international community in adopting a selective approach—"doing something while refraining from others"—in AI governance.

4.3. Building a governance ecosystem with dynamic feedback and institutional linkage

To achieve effective synergy between hard law and soft law, it is essential to establish institutionalized channels for interaction and feedback. For example, a permanent international multi-stakeholder forum could be established to regularly assess the implementation effects of soft law and technological trends, provide evidence-based policy recommendations for intergovernmental negotiations, and identify areas where hard law intervention may be necessary. Meanwhile, future hard law frameworks themselves could be designed with open clauses and periodic review mechanisms, enabling them to incorporate new insights from soft law practices and maintain a degree of evolutionary adaptability. Furthermore, efforts should be strengthened to coordinate global governance capacity building, ensuring that all countries can effectively participate in and benefit from the entire governance process—from soft law to hard law—thereby safeguarding the fairness and inclusivity of governance. To deepen the construction of this ecosystem, it is recommended to establish an "International AI Governance Observatory" as a core knowledge hub, systematically tracking global practices in both hard and soft law, technological risk assessment reports, and models of compliance innovation. This mechanism could further include "Governance Innovation Laboratories", allowing countries to test the effectiveness of emerging governance tools in controlled environments and translate validated outcomes into scalable normative elements. At the institutional linkage level, the establishment of an "Expert Committee on Normative Transformation" could be considered to specialize in studying the technical pathways for converting soft law principles into treaty provisions, providing standardized draft texts for intergovernmental negotiations. Simultaneously, a "North-South Dialogue Fund on Technological Governance" should be established to support developing countries in participating in international standard-setting and capacity-building projects, thereby bridging the digital divide in governance participation. Ultimately, this ecosystem should form a complete cycle of "assessment-experimentation-transformation-empowerment", ensuring that normative evolution resonates with technological development and maximizing governance effectiveness.

5. Conclusion

Global AI governance is a profound process of international norm construction unfolding alongside a technological revolution. At present, traditional international hard-law mechanisms reveal procedural and structural limitations in responding to disruptive technological challenges—limitations that, in turn, create broad space for the practice of flexible, inclusive, and agile soft-law mechanisms. Through powerful capacities for norm-shaping and consensus-building, soft law has already helped establish the basic framework of global governance and continues to guide the behavior and expectations of diverse actors. Yet the voluntary nature of soft law also entails the risk of insufficient constraint when confronting the most severe global risks. Accordingly, the future governance landscape will necessarily be a hybrid system in which hard law and soft law coexist in synergy: soft law serves as an active force for frontier exploration, consensus formation, and innovation guidance, while hard law functions as the cornerstone that settles disputes and sets baselines in critical areas where risks have accumulated, and consensus has matured. The international community should adopt a pragmatic and constructive approach, advancing both the deepening implementation of soft law and the enabling conditions for hard-law negotiation, and promoting organic linkage and positive interaction between the two. The ultimate goal is to build a stable, agile, and inclusive new order of global AI governance—one that can effectively manage risks while fully enabling innovation, embodies plural co-governance, and safeguards the shared well-being of humankind. Achieving this aim will be an ongoing test of global cooperative wisdom and collective responsibility.

Disclosure statement

The author declares no conflict of interest.

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