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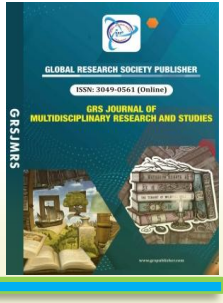

A Review of the Position and Importance of International Relations Theories in the Age of Artificial Intelligence

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Abstract: This study seeks to examine the potential transformative impact of artificial intelligence (AI) on the field of international relations, with a particular focus on the theories of international politics. Assuming that the future of international relations studies will increasingly engage with artificial intelligence and its diverse applications, and employing an analytical-descriptive methodology, this article aims to answer the question of how "international relations theory" has confronted and adapted to areas and fields undergoing inherent transformations through computer automation. The findings of the study indicate that computational and algorithmic systems, by generating innovative indicators for international relations theories and leveraging AI's military, security, political, economic, and legal functions, have a significant and multifaceted impact on the evolution, adaptation, and development of international relations scholarship. These developments suggest that AI not only facilitates new analytical tools but also reshapes the conceptual and practical foundations of global political analysis.

Keywords: *Posthuman intelligence, computer, artificial intelligence, international relations, computational approach, theory*

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Introduction

In today's world, the rapid advancement of new technologies has generated extraordinary phenomena that significantly affect the lives and livelihoods of individuals, societies, and the dynamics of international relations. Governments that seek to maintain strategic competitiveness in this rapidly evolving environment must engage with these phenomena proactively, embracing future-oriented knowledge and investing in research, development, and innovation. Among these transformative technologies, artificial intelligence (AI) stands out for its capacity to accelerate and reshape daily life, governance, and global interactions.

Over the past two decades, AI has been applied across a wide spectrum of disciplines. Social sciences and political sciences, including international relations and foreign policy studies, are no exception. A central question arises: **How does artificial intelligence—through machine self-learning, complex problem-solving, reasoning, and autonomous knowledge acquisition—affect political science and international relations?** This is one of the most pressing, contemporary, and evolving challenges in the field, demanding rigorous investigation and theoretical refinement.

In the era of AI dominance, the trajectory of international systems, algorithms, and governance structures is under scrutiny. How will foreign policymaking evolve? Will the global order become more anarchic, or will it achieve a structured, machine-like equilibrium? Can traditional institutions, treaties, and international regimes remain effective and efficient in a landscape shaped by autonomous technological decision-making? In a world characterized by the proliferation and multiplicity of AI-driven processes, can any singular narrative sustain the discourse of global liberal democratic expansion, or does AI herald the need for a fundamentally heterodox perspective?

Furthermore, AI has already begun to reshape political economy through platform-based capitalism. This raises critical questions: Can classical or pre-AI theoretical frameworks adequately interpret international political economy today? How will AI transform the conceptual understanding of traditional international relations theories, including the notions of hard and soft power? Can

international security and the geopolitical concept of borders be analyzed as before, or does AI render these categories insufficient? How will AI redefine the balance of global power, and in what ways might it amplify or transform threats such as terrorism?

These and other emerging questions underscore the profound impact of AI on international relations. Classical knowledge, while foundational, is increasingly inadequate for explaining contemporary phenomena. Consequently, all axes of international relations require reconsideration, incorporating AI as a central analytical component. This article seeks to provide foundational insight, offering a preliminary yet comprehensive exploration of the interface between AI and international relations theories.

By "de-familiarizing" the current science of international relations, this research problematizes the field, questioning established assumptions and opening new avenues for inquiry. The central focus of this study is the intersection between the hyper-technological nature of AI and the broader theoretical frameworks of international relations. It adopts a critical lens, arguing that the discipline must continuously challenge its established narratives and interrogate its theoretical "status quo."

This paper critically examines how international relations theories are problematized in the post-AI era, highlighting the marginalization of emerging AI-driven issues and demonstrating the necessity of bringing these issues from the periphery to the core of scholarly inquiry. The concept of **"heterodox international relations"** is introduced here as a framework for interpreting these challenges, offering an innovative approach to theorizing international relations in the age of AI. The originality of this research lies in its formulation and synthesis of these problematizations, positioning AI not merely as a tool or phenomenon but as a transformative agent reshaping the conceptual and practical foundations of international relations theory.

Problematizing the Theory of International Relations in the Universe of Data

The field and temporal scope of international relations—particularly the theories that constitute its intellectual foundation—are uniquely positioned to explore whether it is possible to distinguish international relations theories not only from the history of ideas, understood here as the systems through which problems are historically reproduced, but also from the history of non-concepts, which involves the analysis of tendencies, practices, and patterns of praxis. Within this dual framework, there emerges a component capable of tracing this process: a conceptual indicator that Michel Foucault might describe as **problematization**. In this study, it is argued that it is both necessary and urgent to problematize the critical and foundational axes of international relations theory within what the author terms the "universe of data."

The shift in international relations theories highlighted in this study originates from the profound transformation brought about by computational social sciences over the past decade. The application of artificial intelligence (AI) to international relations—commonly referred to as **computational international relations**—has gained substantial attention, particularly in domains such as global security, autonomous weapons systems, and the monitoring and verification of international agreements. Beyond the realm of security, AI has increasingly demonstrated its utility in **economic diplomacy**, where it enhances international cooperation, facilitates dispute resolution, and strengthens trust among key actors through impartial, verifiable, and transparent procedures.

In this context, the intergovernmental development and deployment of AI systems may mitigate concerns about the objectivity, bias, or transparency of national approaches to international relations, thereby confronting classical theories with what may be described as **transversality**—the capacity of AI to cut across traditional theoretical boundaries and operational domains.

Despite the substantial benefits of integrating AI into international relations, significant risks must be acknowledged, particularly in the early stages of its application. At the global level, one prominent concern is the potential widening of the **technological gap** between advanced and less-developed economies. In the medium to long term, AI should not be concentrated within a limited number of countries or social groups, as some critical and leftist perspectives in international relations theory caution. The equitable distribution of AI capabilities is essential to prevent the entrenchment of global inequalities.

The advent of **big data** and computational approaches has already transformed the social sciences and will inevitably reshape the methodology, epistemology, and ontology of international relations theory, including metatheory and post-theory. Two key factors define the potential of computational research in this field: first, the **sheer volume of data**, often unmanageable through conventional quantitative or qualitative methods; and second, the emergence of increasingly sophisticated analytical tools capable of examining international behavior at multiple scales. Big data allows for micro-level analysis, capturing individual behavior, cognitive biases, and worldviews; mesoscale analysis, examining networks, collective action, and ethno-nationalist movements; and macroscale analysis, exploring ideology and systemic structures.

When effectively applied, computational tools and big data analytics enable theorists to conceptualize and understand human behavior with a granularity and precision previously unattainable. As international relations increasingly adopt algorithmic approaches designed to analyze data, predict outcomes, and provide strategic guidance to policymakers, AI becomes a transformative force in both the practice and theory of international relations. Applications are manifold, including **political risk management, public opinion monitoring, scenario-based policymaking, and discourse analysis of governmental communications**. Collectively, these AI-driven interventions not only serve as operational tools but also act as mediating forces that **reshape the conceptual foundations and theoretical frameworks** of international relations for the post-digital era.

Governance as Theory: A Look at Global Governance in the Age of Artificial Intelligence

Big data and algorithmic governance are reshaping traditional transnational governance institutions and mechanisms, with profound implications for power distribution, accountability, efficiency, and decision-making processes. To critically assess the impact of big data and algorithms on contemporary governance, it is useful to distinguish two broad and contrasting perspectives.

In the first perspective, big data are considered **passive tools** that assist traditional policymaking and decision-making processes undertaken by human actors. In the second perspective, big data function as largely homogeneous platforms of incentives, capable

of **replacing human decision-making** with algorithmically-driven governance. This latter approach carries the potential to introduce novel forms of technocratic or algorithmic authoritarianism, where decisions are guided primarily by numbers and computational outputs rather than human judgment. Both perspectives, however, converge in viewing big data as a mechanism for policymakers or private actors to enhance decision-making efficiency or consolidate power (Verduyn et al., 2017: 3–4).

Despite these frameworks, the **long-term implications of AI on international relations theories** are likely to be unprecedented. Intense competition among great powers for digital and technological supremacy—particularly in the field of hyper-advanced AI—has already begun to reshape the strategic landscape. The imperative to master this technology has the potential to transform the very nature of 21st-century warfare, while strong short-term economic incentives are driving rapid technological advancements in both civilian and military domains. Military applications, in particular, are being designed to secure decisive strategic advantages over competitors. Consequently, the integration of AI governance into international relations theories must be treated with urgency and seriousness, lest existing regulatory and theoretical frameworks become obsolete (Garcia, 2019: 1).

Currently, four major gaps exist within the global data governance architecture, which must be addressed to ensure effective oversight and responsible AI development.

First, the multiplicity of international, regional, national, and local laws and regulations governing data requires **coordination and harmonization**. The data ecosystem is inherently global and interoperable, and inconsistencies between jurisdictions generate uncertainty, reduce operational efficiency, and limit the legal tools available to mitigate harmful or malicious uses of data.

Second, existing governance frameworks overwhelmingly focus on **personal data and privacy**, with minimal attention to broader economic, social, and geopolitical implications such as competition, trade, and cross-border data flows.

Third, many frameworks and debates surrounding data governance emphasize controlling access to data, rather than addressing **how data is utilized** in decision-making, policymaking, and commercial or military applications.

Fourth, these legal frameworks and debates—often centered on data rights and freedoms—frequently overlook the interests of other stakeholders and society at large, creating a governance imbalance and potential social inequities (Hezbollah, 2021).

The theory of global governance faces particular challenges in the age of AI, as this technology inherently resists conventional constraints and hierarchical structures. Breaking these challenges into manageable subcomponents enables scholars and policymakers to better **map the complex and intricate landscape** of global governance in a hyper-technical environment. Considering global governance alongside national initiatives also highlights the interdependence of AI development, international cooperation, and national decision-making. Effective governance, therefore, requires a careful balancing of global collaboration and domestic regulatory strategies to harness AI's potential while mitigating risks (Medhora, 2018).

Ultimately, the transformation of global governance by AI necessitates a rethinking of classical international relations theory, where computational intelligence, algorithmic accountability, and cross-border policy harmonization become core analytical and operational concerns.

After the "End of Theory": Reshaping International Relations Theories

In the pages of *The New York Times*, David Brooks proclaimed the emergence of a data revolution. His observations echo the prophetic insights of Chris Anderson's famous article, *The End of Theory*. The current era has been termed **"Dataism"**, representing a phase of human existence within the state of auto-modernity: "If you ask me to describe the philosophy that is developing today, I would say it is dataism. We now have the ability to collect vast amounts of data. This capacity seems to carry with it certain cultural assumptions: that everything that can be measured should be measured, that data provides a reliable and transparent lens to filter out sentimentality and ideology, and that data enables us to achieve extraordinary outcomes, such as predicting the future. The data revolution provides unprecedented tools to understand the present and the past" (Brooks, 2013).

If we accept Brooks' argument, influenced by Anderson, the era of **Dataism** represents a fundamental paradigm shift. This raises a critical question: **what transformations will international relations theories face in the so-called "end of theory" era?** In this section, we undertake a thorough exploration of how international relations theories must be reassessed and reinterpreted in the context of a data-driven, AI-dominated world. While a comprehensive analysis of all approaches is beyond the scope of this paper, the focus here is on the main theoretical frameworks that have historically shaped the field.

1. (Neo)Realism: "Data" is Power

Realism, and its modern variant neorealism, makes fundamental assumptions about the international system, prioritizing states as the primary actors. Realists traditionally define international relations as a **"war of all against all"**, wherein states pursue their national interests above all else. Survival and security in an anarchic system require the maximization of power and the maintenance of a balance to prevent adversaries from becoming dominant.

From the realist perspective, artificial intelligence and algorithmic systems are often treated as a **"black box"**: tools that can be leveraged to enhance state power. Indeed, in many state behaviors, AI functions primarily as an instrument to achieve strategic objectives. Here, **"data is power"** becomes a crucial maxim. AI extends the traditional concept of power, as it does not merely amplify existing state capabilities but also reshapes the ways in which power is distributed and exercised.

A purely material or hardware-centric understanding of power, common in classical realism, neglects the **transformative effects of data networks**. These networks are dynamic and fluid, capable of generating and reshaping the identity, interests, and influence of political actors beyond conventional hierarchies. By reconceptualizing power as a **data-driven phenomenon**, we can better understand the mechanisms of creation, recombination, and reconstruction of authority and agency in global politics.

This perspective also challenges the assumption that power is concentrated solely in states or other traditional political actors. Data-driven networks enable new forms of **"power-making" and "power-dissipating"**, where influence emerges from interactions within complex digital ecosystems. In this sense, realism and neorealism, when updated for the AI era, must consider AI as both

a tool and an autonomous agent capable of shaping international outcomes.

Within this framework, AI serves to:

- Secure a state's position of power in the international system.
- Provide relative or absolute advantages over competitors in security, economic, or political arenas.

However, contemporary (neo)realists often overlook the **structuring and re-structuring power of AI**. These technologies exert influence beyond the control of individual states, creating **supranational effects** and narrowing traditional spaces of political and sovereign action. AI thus exhibits a form of **relative independence** from states, challenging core realist assumptions.

The rise of AI has prompted governments worldwide to invest heavily in research and development, motivated by the perception of **"first-mover advantages."** This dynamic has fueled an international **AI arms race**, particularly among global powers such as the United States and China, drawing analogies to the superpower rivalry of the Cold War (Li, 2019).

This raises critical questions for realist analysis:

1. Why should states pay attention to the AI activities of other nations? Can they not develop AI independently?
2. If independent development is impossible due to the interconnected and competitive nature of AI, what are the implications of this international rivalry? Can it be managed, or will it inevitably escalate into strategic tension?

By integrating AI into realist frameworks, it becomes clear that international relations theories must evolve: traditional conceptions of power, security, and state behavior are no longer sufficient to explain the complexities introduced by data-driven, algorithmic, and autonomous systems in global politics.

2. Liberalism: In the Age of Platform Capitalism

If we are to follow the (neo)realists, the hallmark of international politics is war and competition. Yet, a closer look at the contemporary international landscape reveals that states are not always locked in conflict. On the contrary, states increasingly cooperate through international institutions, such as the Organization for Economic Cooperation and Development (OECD) or the United Nations (UN), to address collective challenges, including those posed by artificial intelligence.

Several countries have gone further, establishing new institutions specifically aimed at regulating AI. The most prominent example is the **Global Partnership on Artificial Intelligence (GPAI)**, officially launched in June 2020 by fifteen governments. Its primary goals include "facilitating international cooperation" and "ultimately promoting trust and adoption of trustworthy AI" (GPAI.ai, 2020). This raises critical questions: How is such cooperation possible in an ostensibly anarchic international system? And what kinds of institutions are required to manage the challenges AI introduces?

3. Design: Data, Idea, and Power

Since 2014, governments have convened at the United Nations to deliberate on the use of AI technologies in weapons systems. A key point of debate has been **lethal autonomous weapons systems**, which could one day select and eliminate targets without human intervention. While some powerful states appear eager to develop AI-enabled weaponry, global pressure is simultaneously building for the creation of **humane laws, values, and norms** surrounding AI technologies.

The coalition advocating for an international ban on "killer robots" argues that removing human oversight from weapon systems violates **international humanitarian law** and **human rights**. Each transaction in the global big-data arena generates its own norms, values, and identities, demonstrating that traditional understandings of governance and institutional authority may no longer suffice. This underscores that international organizations must adapt to the structural transformations brought by AI.

Liberalism, with its emphasis on **cooperation, institutions, and rules**, provides a useful lens to analyze this shift, showing how states, despite an anarchic system, can coordinate and establish norms around emerging technologies. However, as AI continues to permeate political and economic interactions, liberal theory must evolve to incorporate **platform capitalism**, where private digital infrastructures play a central role in shaping global governance.

4. The Algorithmic Order and the Feminist School: Is AI a Tool for Global Patriarchy?

In debates about AI, one critical question is often overlooked: **Who makes the decisions?** This includes decisions about AI system design, deployment, and regulation. Upon closer examination, both AI research and international policymaking reveal a **lack of diversity**: those who design and govern AI systems are predominantly male and white.

This raises significant concerns. How does a lack of diversity influence the nature of AI systems? Do patriarchal structures shape the governance of AI at the international level? Would global politics differ if more gender and racial diversity were present?

The exclusion of women from algorithmic development—encompassing creation, programming, and oversight—is a central factor in the current imbalance. While the exact number of women involved in the design of the latest AI technologies is unclear, it is evident that **male perspectives dominate**, marginalizing female interests. This imbalance affects not only technology itself but also the broader structures of global policymaking.

Moreover, algorithms can be designed, intentionally or unintentionally, in ways that **reinforce gender hierarchies**. Although AI has the potential to advance emancipation and gender equality, in practice, technological systems remain **a site of gender inequality** (Coeckelbergh, 2022). This illustrates that feminist perspectives are crucial for understanding and reshaping AI governance in global politics.

5. Critical Theory and Postcolonial International Relations: How "Global" is Global Politics?

In response to the many challenges posed by AI, there has been a growing movement to establish **global AI ethics**. Researchers, civil society actors, and tech companies are collaborating to formulate principles such as **transparency, privacy, accountability, and beneficence**, which should guide the development and deployment of AI.

These efforts aim to ensure that AI benefits all of humanity, rather than serving the interests of a few powerful states—particularly AI superpowers like the United States and China, which dominate the emerging algorithmic world order. International organizations such as **UNESCO** and the **OECD** are attempting to formalize these principles to promote equitable AI governance.

However, key questions remain: How universal are these ethical frameworks in practice? Is AI truly being developed as a global endeavor, or is it concentrated along a **China-US axis**, leaving other nations and communities marginalized? Critical theory and postcolonial perspectives challenge liberal assumptions of universal cooperation and highlight the **structural inequalities** embedded in AI governance.

By incorporating these lenses, scholars can better understand how AI reshapes the global order—not merely through technology, but also through the distribution of power, knowledge, and normative authority.

6. Class, Hegemony, and Power: Marxist International Relations and Neo-Gramscian ism

When examining the global politics of artificial intelligence, one cannot ignore the immense role played by technology companies such as **Google, Facebook, Amazon, and Baidu**. In the past, frontier technologies were largely developed in government research laboratories. Today, the **data-intensive nature of AI** means that much of the research and application occurs within the vast resources of private data warehouses.

As a result, these companies have acquired **significant economic, social, and political power**. We have entered a new phase of capitalism—**surveillance capitalism**—in which personal experiences, behaviors, and preferences are commodified for profit. Simultaneously, these companies often downplay their influence, pointing to ethical codes and corporate social responsibility initiatives as evidence of responsible governance.

This concentration of power presents a challenge for traditional **state-centric international relations theories**. Classical theories often focus on states as the primary actors in global politics. However, in the era of AI and platform capitalism, the role of **capital and technology firms—particularly in "silicon geopolitics"**—cannot be ignored. Marxist and Neo-Gramscian perspectives help explain how these corporate actors shape global power structures, mediate hegemony, and influence international norms and economic practices.

7. Artificial Intelligence and International Political Economy Theory

The dominant model for the global **political economy of the future** is increasingly unpredictable and decentralized. In a hyper-connected world, human society resembles a vast, **neural network**, in which interactions and decisions are distributed across a web of actors and systems. Understanding these complex networks and their emergent properties offers a promising path for a **new generation of political scientists**.

As Atlan and Louzon suggest:

"We propose a mechanism through which goals and their achievement in goal-directed actions can be emergent features of self-organizing networks, not initially goal-directed." (Atlan, 2017: 2)

China, as a rising economic and technological power, exemplifies this transformation. Chinese stakeholders are actively shaping the **global AI governance landscape**, reflecting both state and corporate influence. For example, the Chinese government created and chaired the **G20 Digital Economy Working Group** and spearheaded the **G20 Digital Economy Development and Cooperation Initiative** in 2016. Chinese companies like **Baidu** have begun participating in AI ethics bodies, bridging private-sector expertise with global governance discussions (Yujia, 2018).

A multilateral governance framework led by the United Nations could facilitate the **inclusion of emerging economies** in shaping AI's economic and technological impact. Such a framework could:

- Address digital divides in infrastructure, education, and innovation capacity.
- Promote open AI platforms, talent training, and knowledge sharing.
- Develop policies, legal frameworks, and public campaigns to mitigate risks and foster equitable AI development.

Success depends on broad participation from policymakers, educators, researchers, technologists, labor unions, and civil society groups. Only through **inclusive engagement** can the benefits of AI be equitably distributed globally.

8. Mechanism and the New Dimension of Global Security Theory

Over the past decades, terrorist attacks and asymmetric threats have posed unprecedented challenges to global and national security. Events such as the **September 11, 2001 attacks** in the United States highlighted the immense destruction possible from small-scale operations. Over time, other nations have also become targets of terrorism, revealing weaknesses in investigative capabilities and legislative frameworks.

Artificial intelligence offers tools to **analyze patterns of terrorism**, process historical data, detect suspicious activities, and anticipate potential threats. By integrating AI with big data, security agencies can:

- Monitor crowded public spaces for unusual behaviors.
- Detect vulnerabilities in infrastructure, systems, and processes.
- Improve both defensive and preventive strategies in industrial, governmental, and public sectors.

However, AI also introduces new **security challenges**. Its dual-use nature means that, while it can enhance defense and surveillance, it can also be exploited for malicious purposes by individuals or state actors. This necessitates:

- A **reformed education system** aligned with Industry 4.0 principles, ensuring citizens and professionals understand AI technology.
- Development of **policy frameworks** specifying data usage, assumptions, and methodological transparency.
- Creation of **accountability and governance mechanisms** to mitigate risks associated with democratized access to data.

The evolution of AI fundamentally transforms the concept of security. Security is no longer confined to physical or territorial threats; it now encompasses **cybersecurity, economic stability, human security, and digital infrastructure integrity**. Emerging AI technologies create uncertainty, fear, and competitive dynamics reminiscent of historical arms races, driving nations toward new, transnational battlefields.

Addressing these challenges requires **collaborative, international efforts** that continuously adapt to AI's evolving capabilities. While current strategies are not exhaustive, they highlight the need for **dynamic and forward-looking frameworks** to ensure global peace, security, and stability.

9. Data Globalization: "Data-Written" Ideas about Globalization

This section examines how **major transformations brought by globalization** have generated new opportunities and challenges for societies worldwide. Globalization today is increasingly influenced and reshaped by **artificial intelligence**, which acts as both a driver and a catalyst. The main dimensions of these changes include:

(a) Economic changes: New technologies and AI-driven processes have created jobs in various regions and fostered the **sharing economy**, yet they have also intensified economic inequalities within and between nations.

(b) Political changes: The rise of nationalism, populism, and political polarization challenges traditional governance structures while simultaneously transforming concepts of **citizenship, identity, and political participation.**

(c) Technological changes: AI and social networks have increased political participation but also magnified polarization. These technological developments are reshaping employment and governance, creating both opportunities and threats (Francescato, 2020: 20).

Globalization involves the movement of **goods, people, services, capital, and ideas** across borders. Traditionally, international flows have been driven by **arbitrage**: goods and resources move from regions of abundance to regions of scarcity, guided by comparative advantage. Today, artificial intelligence is transforming this dynamic. AI is simultaneously the **driver, catalyst, and objective** of a new phase of globalization, influencing economic, social, and geopolitical outcomes.

This transformation underlies the emergence of **new proxy conflicts** and the long-term redistribution of power. The logic of **technological hegemony** now shapes economic growth, social development, and global influence. Examples of AI-driven global transformations include:

- AI-driven transformations in executive decision-making and policy formulation.
- Strategic competition for AI dominance, particularly between the **United States and China**.
- Fragmentation of the internet into multiple spheres of influence (e.g., China, U.S., Silicon Valley, EU).
- Regulatory interventions and corporate restrictions, such as U.S. bans on Huawei and TikTok, and China's antitrust actions against domestic tech giants.
- European Union reforms concerning taxation, privacy, and ethical standards for global platforms.
- The race to establish a **space economy** enabled by AI and advanced technology.
- Emerging **human-machine convergence**, exemplified by the cyborg Olympics (2016) and granting citizenship to the robot Sophia (2017), which set ethical and legal precedents.
- Advances in **brain-to-brain interfaces** and new technological ideologies with social, political, and cultural implications (Benedikter, 2020).

These developments demonstrate that AI is not only a technological tool but also a **driver of ethical, economic, and geopolitical transformation**, reshaping the way globalization is understood and enacted.

10. Post-Theory of Artificial Intelligence and Realism for the Balance of Power

Emerging technologies, particularly AI, are increasingly **shaping the balance of power** through both military and economic means. While AI can directly enhance a country's **warfighting capabilities**, it also indirectly affects power by influencing economic productivity, infrastructure, and national competitiveness (Gilpin, 1981). Historical examples, such as the decline of the Ottoman and Chinese Empires, illustrate how technological innovation intersects with economic foundations to determine global power dynamics.

Despite heavy investments, the integration of AI into military capabilities remains uneven. **Project Maven**, the first U.S. "algorithmic warfare" initiative, seeks to harness AI for practical military applications. Globally, AI investments are at an early stage, though strategic initiatives are rapidly expanding (Cummings, 2017).

Leading AI superpowers, primarily the **United States and China**, are engaged in a competitive race reminiscent of the **20th-century space race**, reflecting both national security and economic imperatives. China's **2017 national AI strategy** highlights AI as a "major strategic opportunity," aiming to secure a **first-mover advantage** and global technological leadership (Webster et al., 2017). Russia has also invested in autonomous systems, including vehicles for nuclear base protection and semi-autonomous battlefield tanks like the **Uran-9 and Vihr** (Bendett, 2018).

Other nations are following suit. In Southeast Asia, **Singapore** leads regional AI investments, while **South Korea** has developed semi-autonomous weapons for national defense (Prigg, 2014). Middle powers, such as **Australia, Canada, and European nations**, leverage AI to offset high labor costs and small populations, using AI-driven technologies to enhance military capabilities. For instance, the **2017 French Defense Strategy Review** emphasized AI integration as critical for operational superiority (French Ministry of Defense, 2017).

Technological innovations, whether chainsaws, railways, or AI, influence the **balance of power**, but their impact depends on how states and organizations adopt and integrate them. AI is best understood as an **enabling technology**, comparable to electricity or the internal combustion engine, with potential to affect not only military power but also **economic strength and societal organization**.

Over the coming decades, dual-purpose AI (civilian and military) will necessitate organizational adaptation in militaries worldwide. Forces must train personnel in algorithms, coding, and AI-enabled coordination to fully exploit technological advantages. While the U.S. and China lead, AI competition is global, and understanding it is essential for assessing **international threats, power dynamics, and potential conflict pathways.**

Re-theorizing and Re-understanding the "Structure of the International System"

While the influence of technology on international affairs has been examined in various studies, **few analyses have explored the transformative impact of artificial intelligence (AI) on the structure of the international system itself**. This section focuses on the integration of **heterogeneous data sets, network science, and AI innovations** with traditional power dimensions as a lens to

understand the evolving dynamics of global politics. By treating research, knowledge, innovation, and technology as **endogenous variables**, AI becomes a central factor shaping systemic outcomes.

Our findings suggest that **international correlations**—how states interact, compete, and cooperate—can be interpreted as mechanisms of system dynamics, especially when **AI interacts with multiple actors across the system**. AI innovations have demonstrated their capacity to detect and even anticipate changes in system structure, influencing both core and peripheral countries. It increasingly acts as a **mediating force**, reshaping interactions, alliances, and global hierarchies.

Despite this, the **hyper-technological implications of AI** on international structure and the distribution of power remain largely **underexplored in traditional international relations literature**. Power in this context is multidimensional, encompassing **economic, military, diplomatic, financial, and technological factors**. This raises critical questions:

- What type of global structure will emerge from interactions with AI technology, which may be centralized in some areas but decentralized in others?
- How will AI reshape the factors that define international power, and which factors will retain relevance?
- How can peripheral countries position themselves in the algorithmic architecture of the post-AI international system?

To address these questions, we propose the **use of network science methods** to analyze the emergence of AI within the international system and the **complex interactions between AI and traditional power dimensions**. While AI is widely discussed in business, society, and government contexts, its implications for international power dynamics are often overlooked.

From this perspective, three key concepts emerge:

1. **AI as a complex system and dynamic source of international power:** AI itself is not merely a tool but an evolving force that influences power relations and strategic capabilities.
2. **Data as a global connectivity enhancer:** Raw data fuels AI, enhancing its scope, precision, and systemic impact.
3. **International relevance as a structural determinant:** The global significance of each country shapes how AI innovations affect systemic evolution and the broader international structure.

The relationship between AI and globalization illustrates these dynamics. On one hand, the **global knowledge network** is highly interconnected, allowing scientists to move internationally, making countries compete for top talent. On the other hand, **export restrictions, intellectual property laws, and barriers to international collaboration** create an anti-globalization response, limiting knowledge flows and widening disparities.

Core countries, with higher-quality data, advanced AI capabilities, and robust technological infrastructure, are positioned to **consolidate power**, while peripheral countries risk falling into **persistent technological backwardness**. This can exacerbate the center-periphery gap, creating **structural inequality and long-term dependence**.

This perspective enhances our understanding of the **dynamic structure of the international system**, allowing researchers to anticipate **systemic shifts** driven by technological innovation. Future research could explore several additional dimensions:

- **Identity formation:** AI technologies may intersect with cultural and national identity, influencing national interests and systemic alignment.
- **Role of multinational corporations:** large tech companies are now major AI developers, wielding economic, financial, and even military influence. How will these corporate actors shape global power structures, and could they perpetuate the marginalization of surrounding countries?
- **State-company relations:** Will governments eventually absorb the roles of corporations in AI governance, or will hybrid partnerships redefine global authority?

These questions provide fertile ground for future scholarship, emphasizing the need to **re-theorize the international system** in light of AI-driven transformations (De la Peña, 2021; Granados).

Conclusion

Across nearly all areas of human endeavor, the future promises **increasing integration between humans and machines** in operational, decision-making, and policy-making roles. This integration is driven by the pursuit of **efficiency, effectiveness, and safety**, all of which are being significantly enhanced by advances in artificial intelligence (AI).

The challenge for policymakers is therefore not solely the creation of technology itself, but the development of **theoretical and regulatory frameworks** capable of managing this integration within the field of international relations. This task is inherently complex, given the **multifaceted implications** of such fundamental changes and the rapid pace of technological evolution. **Robust global governance** and the equitable transfer of AI technologies will be critical to helping societies absorb the shocks associated with increasing automation and autonomy.

While AI has received considerable attention in the contexts of **warfare, human security, economics, and labor markets**, its implications for international relations theory are profound and unavoidable. AI may give rise to **new theoretical paradigms** or introduce novel challenges to existing frameworks. Furthermore, the classical approaches of international relations theories must adapt to the emergence of **new actors and roles** facilitated by AI.

Institutional responses, such as the **United Nations High-Level Panel on Digital Cooperation**, the **International Telecommunication Union**, and the European Union's AI initiatives, illustrate how AI is reshaping the internal logic of traditional theories. These developments have **profoundly transformed the conceptual foundations** of international relations, highlighting the necessity of continuous theoretical innovation in the face of technological change.

In conclusion, AI is not merely a tool or resource; it is a **catalyst for systemic transformation**, influencing power structures, governance frameworks, and the very ontology of international relations. To navigate this evolving landscape, scholars and policymakers must **re-theorize, adapt, and anticipate** the multidimensional impacts of AI on global affairs.

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