

УДК 327:004

**FROM DIGITAL SOVEREIGNTY TO POST-HUMAN STATECRAFT:
BRICS TECHNOLOGICAL COOPERATION AND THE METAMORPHOSIS
OF INTERSTATE RELATIONS IN THE AGE OF TRANSHUMANIZATION**

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This article examines how technological cooperation among the BRICS states is reshaping the foundations of interstate relations at a moment when artificial intelligence, biotechnology and human enhancement research are converging into what the author terms the transhumanization of statecraft. Moving beyond accounts that treat digital sovereignty and human enhancement as separate policy domains, the study proposes a unified analytical lens built around the concept of informational hedging, understood as the simultaneous pursuit of technological autonomy and selective interdependence by states seeking to manage dependence on external powers. Drawing on the 2024 Kazan Declaration, the BRICS Artificial Intelligence Cooperation Framework and recent scholarship on digital sovereignty in Africa, the paper traces how BRICS institutions have translated declaratory commitments into instruments such as the BRICS Institute of Future Networks, the BRICS Rapid Information Security Channel and the BRICS Artificial Intelligence Research and Innovation Centre. The analysis further considers how the convergence of artificial intelligence with biotechnology and human enhancement research introduces a post-human dimension into the balance of power, one in which the object of competition is no longer only territory, capital or information but the biological and cognitive capacities of populations. The article concludes that BRICS technological cooperation should be read not as a coherent bloc strategy but as a loosely coupled architecture of hedging practices through which member and partner states, including African states, attempt to convert technological dependency into a bargaining asset within a metamorphosing, multipolar international order.

Keywords: BRICS, digital sovereignty, informational hedging, transhumanism, artificial intelligence, biotechnology, multipolarity, interstate relations, Global South, human enhancement.

**ОТ ЦИФРОВОГО СУВЕРЕНИТЕТА К ПОСТЧЕЛОВЕЧЕСКОМУ
ГОСУДАРСТВЕННОМУ УПРАВЛЕНИЮ: ТЕХНОЛОГИЧЕСКОЕ
СОТРУДНИЧЕСТВО БРИКС И МЕТАМОРФОЗА
МЕЖГОСУДАРСТВЕННЫХ ОТНОШЕНИЙ
В ЭПОХУ ТРАНСГУМАНИЗАЦИИ**

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В статье рассматривается, каким образом технологическое сотрудничество государств БРИКС меняет основы межгосударственных отношений в тот момент, когда искусственный интеллект, биотехнологии и исследования в области улучшения человека сходятся в явление, которое автор называет трансгуманизацией государственного управления. Выходя за рамки подходов, рассматривающих цифровой суверенитет и улучшение человека как отдельные области политики, автор предлагает единую аналитическую призму, построенную вокруг понятия информационного хеджирования, то есть одновременного стремления государств к технологической автономии и к избирательной взаимозависимости с целью управления зависимостью от внешних держав. Опираясь на Казанскую декларацию 2024 года, Рамочную программу сотрудничества БРИКС в области искусственного интеллекта и новейшие исследования цифрового суверенитета в Африке, автор прослеживает, как институты БРИКС переводят декларативные обязательства в такие инструменты, как Институт будущих сетей БРИКС, Канал оперативного обмена информацией по вопросам безопасности БРИКС и Центр исследований и инноваций БРИКС в области искусственного интеллекта. Далее в статье анализируется, каким образом сближение искусственного интеллекта с биотехнологиями и исследованиями в области улучшения человека вносит постчеловеческое измерение в баланс сил, при котором объектом соперничества становятся уже не только территория, капитал или информация, но и биологические и когнитивные возможности населения. Автор приходит к выводу, что технологическое сотрудничество БРИКС следует рассматривать не как единую блоковую стратегию, а как слабо связанную архитектуру практик

хеджирования, посредством которой государства-члены и государства-партнеры, включая африканские страны, пытаются превратить технологическую зависимость в переговорный ресурс в условиях меняющегося многополярного международного порядка.

Ключевые слова: БРИКС, цифровой суверенитет, информационное хеджирование, трансгуманизм, искусственный интеллект, биотехнологии, многополярность, межгосударственные отношения, Глобальный Юг, улучшение человека.

Introduction

The study of interstate relations has long assumed a relatively stable object of competition: territory, capital, weapons and, more recently, information. Over the past decade this assumption has come under growing strain. States belonging to the BRICS grouping, Brazil, Russia, India, China, South Africa and, since 2024, an expanding circle of partner countries, have built an increasingly dense architecture of technological cooperation covering artificial intelligence, data governance, cybersecurity and industrial digitalization [4; 9; 14]. At the same time, a parallel and less studied convergence is taking place between artificial intelligence, biotechnology and human enhancement research, a convergence that several governments now treat as a matter of national security rather than of medical policy alone [12; 18].

The topicality of the subject follows from the coincidence of these two processes. On one hand, BRICS technological cooperation is presented in summit declarations and in the specialized literature, as an instrument for building a more equitable, multipolar digital order that reduces dependence on Western-controlled infrastructure and standards [3; 4]. On the other hand, the technologies at stake, generative artificial intelligence, gene editing, neurotechnology and biomanufacturing, are no longer confined to economic competitiveness; they touch directly on the biological and cognitive constitution of populations, a phenomenon this article calls the transhumanization of statecraft [11; 12; 18]. The scientific problem addressed here is that these two literatures, one concerned with digital

sovereignty and BRICS cooperation, the other with the geopolitics of human enhancement, have developed largely in isolation from one another, even though both describe the same underlying transformation: the metamorphosis of the resources over which states compete and cooperate.

The scientific novelty of the article lies in the introduction of the concept of informational hedging as an analytical bridge between these two literatures. Informational hedging is defined here as a strategy through which a state simultaneously pursues technological autonomy vis-a-vis a dominant power and selective interdependence with several partners, so as to avoid both isolation and one-sided dependence. This concept extends, to the domain of technology and human enhancement, a logic long used in international relations to describe middle-power strategies of avoiding exclusive alignment with a single dominant power, while remaining attentive to the specific vocabulary that BRICS institutions themselves use, namely digital sovereignty, technological independence and equitable governance [3; 4; 9].

The purpose of the study is to determine how BRICS technological cooperation, understood through the lens of informational hedging, is contributing to a metamorphosis of interstate relations at a moment when the convergence of artificial intelligence and biotechnology adds a post-human dimension to that transformation. The argument proceeds in four steps. The first section builds the theoretical framework, combining balance-of-power and technopolitics scholarship with posthumanist and transhumanist debates in international relations theory. The second section examines the empirical architecture of BRICS technological cooperation from the 2021 New Delhi Declaration to the 2024 Kazan AI Cooperation Framework. The third section analyses the transhumanization of power through the convergence of artificial intelligence with biotechnology and human enhancement research. The fourth section applies the concept of informational hedging to the case of African states navigating BRICS partnership and digital dependency simultaneously, before the conclusion draws out the implications for the theory of interstate relations.

Theoretical framework: technology, sovereignty and the post-human turn in international relations theory

Realist and neorealist accounts of international relations have traditionally treated technology as an instrumental variable, a multiplier of military or economic capability that shifts the balance of power without altering the nature of the units competing for it [8]. Jeffrey Ding's comparative study of general-purpose technologies argues that what matters for a state's rise or decline is not the invention of a given technology but the breadth and speed of its diffusion across economic sectors, a finding he applies directly to present-day debates over artificial intelligence and the balance of power between the United States and China [8]. More recent scholarship on network balancing goes further, suggesting that the very concept of balance of power needs to be reconstructed around control over technological standards, supply chains and infrastructure networks rather than around military capability alone [10].

A second and complementary strand of literature reconceptualises sovereignty itself as a technological achievement rather than a purely legal or territorial one. Scholars associated with the CyberBRICS project describe digital sovereignty as the expression of a state's aspiration to retain independent control over its data, its infrastructure and its regulatory choices, an aspiration that becomes politically salient precisely when a state perceives its dependence on foreign digital ecosystems as a source of vulnerability [3; 4]. This literature documents how the BRICS states, despite significant differences in their domestic data protection regimes, from Brazil's General Data Protection Law to China's Personal Information Protection Law, share a family resemblance in their insistence on territorialized, sovereignty-minded approaches to data governance, in contrast with the more market-driven American model [3]. Digital sovereignty, in this sense, is not a fixed condition but a constantly renegotiated bargaining position.

A third strand, more marginal within mainstream international relations but increasingly relevant to the subject of this article, concerns the posthumanist and transhumanist critique of the human-centred foundations of the discipline.

Posthumanist scholarship challenges the assumption that the state and the human subject are stable, bounded units of analysis, arguing instead that international politics must account for the entanglement of humans with technological, biological and ecological systems [7]. Transhumanism, by contrast, embraces rather than criticizes the Enlightenment project of technological mastery, proposing that human capacities themselves, cognitive, physical and even moral, can and should be enhanced through science [6; 11; 15]. The distinction matters for the present study because BRICS technological cooperation operates simultaneously on both registers: declaratory documents speak the language of sovereignty and equitable governance, drawn from a state-centric, broadly realist vocabulary, while the underlying technologies, particularly artificial intelligence applied to genomics and neurotechnology, point toward a transhumanist horizon in which the object of statecraft becomes the biological constitution of the population itself [12; 18].

Bringing these three strands together yields the concept of informational hedging proposed in this article. Extending a middle-power logic of avoiding exclusive alignment with either a dominant or a rising power, informational hedging applies this reasoning to the technological and biological domain. A state or a bloc of states practises informational hedging when it pursues, simultaneously and often through the same institutional channels, technological autonomy from a single dominant supplier, selective interdependence with several partners, and participation in the emerging governance debates over human enhancement technologies, so as to secure a bargaining position rather than a fixed outcome. The following sections apply this concept first to BRICS cooperation as such, then to the transhumanization of power, and finally to the case of African states.

BRICS technological cooperation as an instrument of multipolar ordering

The institutional history of BRICS technological cooperation is shorter and more recent than is sometimes assumed. It was only at the thirteenth BRICS summit, in the 2021 New Delhi Declaration, that member states called for the first time in fifteen years of BRICS diplomacy for the establishment of legal frameworks of cooperation on information and communication technology development and

security, alongside data protection, cybercrime and e-commerce [4]. This 2021 turning point coincided with a series of geopolitical shocks, from Edward Snowden's revelations to Russia's special military operation in Ukraine and the Western sanctions that followed, all of which reinforced, among BRICS members, the perception that a US-centric digital order carried structural risks that a more territorialized, sovereignty-minded model could mitigate [4].

By the time of the sixteenth summit, held in Kazan in October 2024, this cooperation had acquired a distinct institutional architecture. The Kazan Declaration endorsed a framework programme for artificial intelligence cooperation, encouraged the work of a dedicated AI Study Group under the BRICS Institute of Future Networks, and welcomed the successful holding of joint fora in adjacent domains such as nuclear medicine [1]. Analysts close to the process describe five priority areas identified for collaboration among BRICS members: the joint development of generative artificial intelligence models, shared computing resources and databases, human resource development, educational cooperation, and the elaboration of a common regulatory framework [14]. In parallel, the BRICS Rapid Information Security Channel and the newly created BRICS Artificial Intelligence Research and Innovation Centre have begun implementing concrete projects, including multilingual natural language processing, smart agriculture applications and climate forecasting tools [13; 14].

It would nonetheless be a mistake to read this architecture as evidence of a unified BRICS technology strategy. Estimates cited in specialized analyses suggest that the economic benefits of generative artificial intelligence across BRICS economies are highly concentrated, with China capturing more than 86% of the projected impact, Brazil, India and Russia together accounting for roughly 12%, and the remaining members and partners sharing less than 2% [14]. Comparative legal scholarship on BRICS+ digital sovereignty likewise stresses that the expansion of the grouping to include countries with very different levels of digitalization, from the United Arab Emirates to Ethiopia, complicates rather than simplifies the pursuit of a common digital sovereignty model, and proposes instruments such as a BRICS+

digital sovereignty memorandum and a shared regulatory sandbox precisely because no such common model yet exists [9].

The picture that emerges is therefore closer to what the theoretical framework above calls informational hedging than to a coherent bloc strategy: BRICS technological cooperation functions as a set of overlapping instruments through which member states with unequal technological capacity attempt to reduce individual dependence on any single external power, chiefly the United States, without thereby creating a comparably dominant dependence on the bloc's own leading members, chiefly China [3; 9].

This reading is reinforced by the persistence of significant divergence in the domestic data governance frameworks of BRICS members themselves. Comparative analysis of Brazil's General Data Protection Law, Russia's data localization requirements, India's 2023 Digital Personal Data Protection Act, China's Personal Information Protection Law and South Africa's Protection of Personal Information Act shows that each country has pursued digital sovereignty through institutional arrangements calibrated to its own economic and political priorities, rather than through a harmonized BRICS standard [3]. The multipolar order that BRICS technological cooperation is said to be building is, in this sense, less a single alternative pole than a negotiated space in which national digital sovereignty projects coexist under a shared rhetorical umbrella, a configuration well captured by the notion of a loosely coupled hedging architecture rather than a bloc in the classical geopolitical sense.

The transhumanization of power: artificial intelligence, biotechnology and the new stakes of statecraft

If the previous section described the institutional surface of BRICS technological cooperation, the present section turns to a deeper transformation that cuts across bloc lines altogether: the convergence of artificial intelligence with biotechnology and human enhancement research. Transhumanism, understood broadly as the pursuit, through science and technology, of a radical enhancement of human capacities and a transcendence of biological limitations, is not a new

intellectual current; the term itself dates to Julian Huxley's 1957 essay and has since been elaborated by authors such as Nick Bostrom, Ray Kurzweil and Max More [15]. What is new, and what justifies calling the present moment an era of transhumanization rather than simply a continuation of earlier debates, is the speed with which artificial intelligence has become an enabling technology for genetic and neurological enhancement, transforming what was once a philosophical programme into an object of state security strategy [12; 18].

National biotechnology strategies illustrate this shift clearly. The United States has designated biotechnology a strategic priority through its 2023 Bold Goals initiative and the creation of a National Security Commission on Emerging Biotechnology, explicitly framing gene editing and human performance enhancement as fronts of strategic competition with China [18]. China's own bioeconomy plan, adopted in 2022, pursues scientific self-reliance in the same domain and has designated biosecurity a pillar of its comprehensive national security framework, while South Korea now promotes what its own policy documents describe as bio-sovereignty, and Japan has appointed a minister of economic security partly in response to the same dynamics [12]. These national strategies converge on a common premise: biotechnology, and increasingly its fusion with artificial intelligence in fields such as synthetic biology and neurotechnology, is treated by major powers not as a medical or scientific matter alone but as a domain of great-power competition comparable, in the eyes of several policymakers, to nuclear strategy [18].

The ethical literature on human enhancement provides the conceptual vocabulary needed to understand why this shift matters for the theory of interstate relations. Scholars working at the intersection of bioethics and philosophy of technology distinguish carefully between posthumanism, which challenges the human-centred assumptions of Western thought, and transhumanism, which instead radicalizes the Enlightenment ambition to master nature through science, up to and including human biology itself [7; 15]. Recent work on the ethics of human enhancement stresses that enhancement decisions, particularly cognitive or moral enhancement, may generate epistemic gaps that make fully informed consent difficult

even in principle, since the enhanced person can only evaluate the choice from a perspective already transformed by the enhancement [11]. When such technologies are pursued at the level of national policy rather than individual choice, these ethical questions acquire an unmistakably geopolitical dimension: a state that succeeds in enhancing the cognitive or biological capacities of significant segments of its population, or that captures a dominant position in the underlying technologies, could in principle translate this advantage into a new and largely unregulated component of national power [12; 18].

For the theory of interstate relations, the consequence is that the classical objects of competition, territory, capital, weapons, information, are being joined by a further object that does not fit comfortably into any of the earlier categories: the biological and cognitive capacity of populations. This is what the present article means by the transhumanization of statecraft. It does not imply that states are about to compete openly over programmes of human enhancement in the manner of a science-fiction scenario; rather, it implies that the infrastructure being built today, artificial intelligence models trained on genomic and biomedical data, biomanufacturing capacity, neurotechnology research, is simultaneously an economic asset, a security asset and, increasingly, a biopolitical one, and that BRICS technological cooperation, discussed in the previous section, is already laying part of the groundwork for this convergence through its investment in artificial intelligence infrastructure and its stated ambition to extend cooperation into fields such as nuclear medicine [1; 14].

Metamorphosis in practice: informational hedging and the Global South

The concept of informational hedging developed in this article is best illustrated, and tested, through the case of African states, which occupy a structurally distinct position within the technological order described above. African countries are neither the leading suppliers of the artificial intelligence and biotechnology infrastructure discussed in the previous section, nor are they passive recipients without bargaining leverage of their own. Recent policy analysis describes Africa's situation as a digital sovereignty trap, in which fragmented national regulatory approaches allow global technology firms controlling the great majority of the

continent's data centre and cloud market to engage in regulatory arbitrage, while a coordinated continental strategy could instead create genuine collective bargaining power [2].

The African Union's 2022 Data Policy Framework exemplifies the informational hedging logic at the continental level: rather than rejecting foreign technological partnerships outright, it calls on member states to invest in their own data capabilities and artificial intelligence competence so as to embed conditions, on data localization, security and oversight, into partnerships with external providers, most visibly China through Huawei's role in fifth-generation network deployment [5]. As one recent analysis observes, without Chinese vendors many African markets would lack a credible timeline for fifth-generation network rollout, yet this same technological head start risks locking African states into long-term infrastructural dependency, precisely the dilemma that informational hedging is designed to manage rather than resolve [5].

The institutional crisis surrounding the African Network Information Centre, the continent's sole regional internet registry, illustrates how fragile this hedging position can be in practice. Since 2022, the registry has faced prolonged litigation, brought predominantly by a Chinese-owned company registered in Seychelles, a crisis that the Smart Africa initiative, uniting forty African governments with the African Union Commission and the International Telecommunication Union, has publicly described as a serious threat to the continent's digital sovereignty and its standing in global internet governance [16]. Such episodes show that informational hedging does not guarantee a stable outcome; it is a continuous practice of balancing rather than a settled achievement, exposed to the same vulnerabilities, regulatory capture, infrastructural lock-in, institutional paralysis, that it is meant to mitigate.

The 2024 endorsement, at the Kazan summit, of a new BRICS partner country category, which several African states including Nigeria have engaged with, adds a further layer to this hedging strategy [1]. By cultivating simultaneous engagement with BRICS technological initiatives, the African Union's own data governance framework and continuing partnerships with Western and Chinese technology

providers, African states are, in effect, practising informational hedging at a continental scale. Seeking technological capacity and diversified partnerships without committing exclusively to any single provider or bloc, precisely because none of the available partners, the United States, the European Union, China or the BRICS grouping as such, currently offers a combination of capacity and reliability sufficient to justify exclusive alignment [2; 16]. This case confirms that the metamorphosis of interstate relations described in this article is not confined to relations among great powers; it structures, perhaps even more visibly, the bargaining strategies of states positioned at the periphery of the emerging technological order.

Conclusion

This article set out to determine how BRICS technological cooperation, read through the concept of informational hedging, is contributing to a metamorphosis of interstate relations at a time when the convergence of artificial intelligence and biotechnology introduces a post-human dimension into that transformation. Three findings follow from the analysis.

First, BRICS technological cooperation, from the 2021 New Delhi Declaration to the 2024 Kazan Artificial Intelligence Cooperation Framework, is better understood as a loosely coupled architecture of hedging instruments than as a unified bloc strategy, given the persistent divergence in domestic data governance regimes and the highly unequal distribution of expected benefits among member states themselves.

Second, the convergence of artificial intelligence with biotechnology and human enhancement research is adding a genuinely new object of competition to interstate relations, the biological and cognitive capacity of populations, a transformation this article calls the transhumanization of statecraft and situates within, rather than opposed to, existing balance-of-power and technopolitics scholarship.

Third, the case of African states shows that informational hedging is not a strategy reserved for great powers; it is practised, often under conditions of

considerable institutional fragility, by states seeking to convert technological dependency into a bargaining asset within a metamorphosing international order.

The theoretical implication is that the discipline of international relations needs conceptual tools capable of tracking a double metamorphosis, of the objects over which states compete and of the units, no longer purely territorial or even purely informational, whose capacities are at stake. Informational hedging, as proposed here, offers one such tool, but the concept invites further empirical testing, particularly through comparative case studies of BRICS partner states in Latin America and Southeast Asia, and through closer attention to how emerging BRICS instruments in nuclear medicine and biotechnology might, in time, extend the logic of digital sovereignty into the biological domain proper. The transhumanization of interstate relations, in this sense, has only begun, and its institutional and normative consequences remain to be fully understood.

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