The Geopolitics of Postdigital Educational Development: From Territories to Networks to Rival World Systems

Michael A. Peters[1] · **Tina Besley**[1]

Postdigital AI?

This editorial is an exploration of the term geopolitics as it enters educational development discourse to emphasize the way in which education has been reformulated in the postdigital era (Fawns 2023; Jandrić 2023) as the handmaiden of strategic key technologies including AI, genomics, nanotechnology, and increasingly quantum technologies. Education is seen as a strategic asset in this environment that performs both an ideological and productivity function especially in the AI knowledge economy that from a philosophical perspective reignites old issues about truth and consciousness with mass democratization *and* misinformation and yet promises to change the 30-year-old search-engine approach and webpage convention access to knowledge.

Is this postdigital? Empirically, and also philosophically, 'postdigital' points to the technological demand for innovation and fashion. The future of education is transformed in this context especially when education becomes in essence part of the Open Knowledge Economy, a vision for an economy in which knowledge and intellectual property (IP) are the primary drivers of economic growth and value creation (Peters and Jandrić 2018). In this economy, the most valuable assets are not physical goods or resources, but rather ideas, algorithms, and data-driven insights. Education is fundamental to reskilling and reequipping research with a machine revolution (Peters et al 2023d). By building cutting-edge AI tools and platforms, OpenAI helps to democratize access to knowledge and learning, to empower individuals and organizations to innovate and create new value. This approach to knowledge sharing

✉ Michael A. Peters
  mpeters@bnu.edu.cn

  Tina Besley
  tbesley48@gmail.com

1 Beijing Normal University, Beijing, People's Republic of China

and collaboration has the potential to transform many industries from education, healthcare, and finance, to transportation and manufacturing (Peters et al. 2019).

AI technologies, particularly machine learning and natural language processing, can analyse vast amounts of data to discover patterns, trends, and insights that may not be apparent through traditional methods. AI can be used to augment human expertise by providing intelligent tools and systems that assist researchers, professionals, and decision-makers in their work. AI is increasingly used in education to provide personalized learning experiences for students. In the AI knowledge economy, AI technologies are used to drive innovation and research across industries. AI-powered simulations, predictive modelling, and optimization algorithms can significantly accelerate the development of new products, services, and technologies (Bozkurt et al. 2023).

Postdigital AI knowledge economy has the potential to drive economic growth by fostering innovation, improving productivity, and creating new job opportunities in AI-related fields, although we can guess that it can lead to unemployment in manufacturing (Peters et al. 2019). The fact is the AI knowledge economy is a highly competitive arena, with countries and companies striving to lead in AI research and development. Geopolitical considerations and international cooperation in AI research and governance are becoming increasingly important and education increasingly requires geopolitical analysis.

The Shifting Meaning of Geopolitics

Geopolitics is a future-oriented study of the exercise of influence and power over space and territory in world affairs often employing geographical frameworks to analyse power relationships in international relations. The term was first used by Rudolf Kjellén (1864–1922), a Swedish political scientist and geographer, who laid the foundations for *Geopolitik* with Ratzel, Humboldt, and Ritter, as an essential part of German statecraft, foreign policy, and geostrategy in the nineteenth century (Kjellén 1916; Venier 2010). As such, the term has become a synonym for international politics and geostrategy being a consolidation and formalization of older ideas of sea/land power, autarky, key geographical territories, and forms of imperial colonialism linked to ideas of security.

The shifting meaning of geopolitics has evolved over time, originally focusing on territorial considerations and power dynamics between states. In the modern era, it encompasses factors like technology, economics, and global interdependence, reflecting a broader and more complex landscape that has moved from a traditional focus on the importance of territories, the distribution of resources, and their combined impact on the power dynamics between states.

In the Cold War period, geopolitics centred on ideological rivalries, military alliances, and the pursuit of strategic advantages in key regions, often conceived in the West as the containment of the spread of Communism. The post-Cold War era has witnessed a notable shift to expand beyond traditional state-centric perspectives to incorporate economic considerations, global interdependence, and the rise of non-state actors. Fundamentally, it is now concerned with advancements in technology,

the rise of network power, and the interconnectedness of the world that focuses on the digital revolution and the rise of information technology that have transformed the geopolitical landscape, influencing how states interact, communicate, and project power.

The Emergence of Postdigital Geopolitics

Cybersecurity and information warfare have become critical elements of contemporary geopolitics that look at the ways globalization is shaping the dynamics of power where a new economic interdependence has created a complex web of North–South relationships that have altered traditional geopolitical analysis and strategy. It is these new economic relationships based on bilateral trade and economic alliances that have led to the emergence of new economic powers such as China, India, Vietnam, and Indonesia challenging the established order, leading to an emerging multipolar world (Peters et al. 2023a, b).

System rivalry between a US-bloc of the developed world and the China-bloc of the developing world has become more deep-seated with geopolitical tensions arising over international borders, ocean resources, and transnational spaces. This entrenched geopolitics that hinges on the relinquishment of old colonial territories and the historical achievement of national independence since WWII has accelerated where the most populous countries of the world exploit their own domestic markets while retaining an export trade orientation. In a clear sense, these globalization processes represent a shift in the centre of economic gravity from the rich Atlantic states to Asia and to the concept of the 'Asian Century' (Peters et al. 2023a, b).

The new interconnectivity is aided by new digital technologies that now determine the global digital economy (Peters 2023). At the same time, the birth of a planetary consciousness with the emergence of the environmental philosophy and green movements, environmental issues such as climate change, resource scarcity, and environmental degradation have become key determinants of contemporary geopolitics (Jandrić and Ford 2022). Nations today must contend with the geopolitical implications of shifts in climate patterns, resource competition, and the need for sustainable development.

In the current security environment, military and terrorist threats are only a part of the challenges faced by nation states. Geopolitics consists of a range of overlapping crises that collide and affect one another accelerating 'tipping points' and posing greater global system risks such as pandemics, climate-change, the prospect of limited or tactical nuclear war, regional conflicts, and wars, where environmental and digital become deeply intertwined with economic considerations, technological competition, and AI challenges all of which transcend traditional military considerations. Geopolitics in this era also faces the rise of non-state actors, so-called 'rogue states,' NGOs, multinational corporations, and transnational organizations that wield significant influence, sometimes rivalling or surpassing that of certain states. Geopolitics must now account for the power dynamics involving both state and non-state actors and various combinations of actors, as well as pacts, regional security agencies, and the emergence of world institutions such as the UN system. Geopolitics is

also now having to contend with space as an extraterritorial dimension that introduces new issues of space collaboration, resource extraction, geospatial competition, outer space exploration and the regulation of space activities.

The shifting meaning of geopolitics reflects an increasingly multifaceted and interconnected world that has shifted from traditional territorial considerations, to include the development of network interconnectivity based on the new digital technologies and economic, technological, environmental and even extraterrestrial dimensions. Contemporary geopolitics goes way beyond traditional state-centric perspectives to acknowledge the complex interplay of forces — economic, environmental, and digital — shaping the modern global landscape.

We would argue that these geopolitical changes are captured attempts to conceptualize the 'postdigital' and 'biodigitalism' and in the related key concepts of geophilosophy and geopedagogy, each of which might be combined in various ways (Peters et al. 2023c, d).

Geophilosophy and Geopedagogy

Geophilosophy is a term associated with French philosophers Gilles Deleuze and Félix Guattari (1988, 1994) that represents a unique approach to philosophy intertwining geography, ecology, and the dynamics of space. It challenges traditional philosophical boundaries by examining the relationship between thought and the earth, transcending human-centric perspectives. It is a whole biosphere philosophy that breaks away from anthropocentrism—the tendency to interpret the world exclusively from a human viewpoint to propose an understanding of philosophy that acknowledges the interconnectedness of all entities within the Earth's complex system. The concept has the conceptual benefit of emphasizing the fusion of geographical and philosophical inquiries, emphasizing the inseparable link between thought and the material world.

Deleuze and Guattari (1988, 1994) provide an account of geophilosophy that employs the concept of a rhizomatic structure that symbolizes a non-hierarchical, interconnected network of the new interconnectivity, viewing reality as a multiplicity of interconnected, dynamic processes. 'Deterritorialization' involves the breaking away from established territories—whether physical, conceptual, or social—to allow for the emergence of new connections and possibilities acknowledging that territories are contingent and subject to constant change. This account strongly influenced by Henri Bergson (1911/1998) emphasizes time as a continuous and creative flow to develop the concept of the 'virtual' as a realm of potentiality that exists beyond the actual containing its own creative vectors.

Geophilosophy also moves beyond mere environmental concerns to explore questions of ecology as the intricate relationships between living and non-living entities to consider the vitality of the earth as a whole. Geophilosophy therefore is enabled to investigate how environments, landscapes, and ecosystems shape and are shaped by the entities within them based on an ecological awareness that goes beyond human interests. Geophilosophy is an amplification of geopower, emphasizing its operation within complex geographical space and its entanglement of human and

non-human forces and the interconnectedness of all entities within the Earth's complex system and biosphere (Peters 2004; see also Peters et al. 2022).

Geopedagogy is another similar portmanteau term that reflects an interdisciplinary approach to teaching and learning emphasizing the integration of geographical concepts and perspectives into education with the aim of connecting students with their surroundings, fostering spatial awareness, and promoting a holistic understanding of the world based on the intrinsic relationship between people and their environment and aims to cultivate a sense of place-based awareness. Geopedagogy encourages the utilization of the local environment as a dynamic learning resource, creating opportunities for experiential, place-based learning and field studies allowing students to directly connect theoretical knowledge with real-world contexts.

The integration of digital technologies offers new tools to enhance spatial thinking and provide interactive learning experiences. Geographic Information System (GIS) technology enables students to analyse and visualize spatial data, fostering a deeper understanding of geographical patterns and relationships, and digital mapping tools and virtual field trips further expand the possibilities for geographically informed education.

Geopedagogy, like geophilosophy and geopolitics, encourages global perspectives where students can explore global interconnectedness to help promote a sense of global citizenship and an empathetic view of global issues. This approach is sensitive to the new shift of geopolitics and North–South relations, especially in relation to questions of postdigital forms of educational development, encouraging a critical approach to digital technologies in general, their cartel ownership structure and geographical concentration as well as embracing a critical theory of digital technology as one of the sets of key technologies that determine economic and cultural development in the twenty-first century. This emphasis requires a better understanding of technological convergence and especially the development of the new scientific synthesis that promotes an integration of new biology (genomics), information science and nanotechnology with cognitive science (Peters 2020; Peters et al. 2022).

Geopolitics

The geopolitics of postdigital educational development signals the intersection of education and technology beyond the initial, transformative phase. Geopolitics plays a crucial role in shaping the trajectory of postdigital educational development, influencing policies, global collaborations, and the distribution of educational resources including:

1. Digital divides and global inequality.
2. National educational policies focused on technological infrastructures.
3. Global educational networks for collaboration, research, and knowledge sharing.
4. Cultural and linguistic considerations, including the dominance of certain languages and cultural perspectives.
5. Technological innovation and competitiveness, with a strong emphasis on strategic investments in emerging technologies.

6. Cybersecurity and data governance.
7. Soft power and educational diplomacy, where digital education becomes a means to enhance their global influence, build international partnerships, and project a positive image.
8. Human capital and economic development, including the role of education in shaping a skilled workforce for the digital economy.
9. Global assessments and rankings of educational institutions, nations, and individuals.

Geopolitical considerations influence investments in education to enhance economic competitiveness and contribute to geopolitical influence. The geopolitics of postdigital educational development involves a complex interplay of factors, including global inequalities, national policies, cultural considerations, technological innovation, cybersecurity, and the use of education as a tool for geopolitical influence and surveillance. Understanding these dynamics is essential for navigating the evolving landscape of education in the digital age on a global scale.

The growing interconnectivity of world and educational development in this context refers to the increasing integration and interdependence of nations, economies, societies, and technologies on a global scale. This integration is driven by various factors, including advancements in communication and transportation technologies, economic globalization, cultural exchanges, and the sharing of information focused on the expansion of international trade and education. Technological advancements and digital connectivity determine the development of the Internet and mobile technologies, and digital platforms facilitate real-time communication, collaboration, and the exchange of information across borders to form the digital economy. Cultural exchange and the dissemination of cultural products, such as movies, music, literature, and art, contribute to a shared global cultures and demand interdependence in international finance, governance, environment, global health, and access to education.

The Geopolitics of Postdigital Educational Development

Postdigital education, characterized by the integration of digital technologies beyond mere adoption into the core fabric of educational practices (Fawns 2022, 2023), has the potential to emerge as a leading industry in fostering world interconnectivity. It can transform global access to education and facilitate the development of online courses, virtual classrooms, and digital resources, transcending geographical barriers and providing access to quality education for learners across diverse regions. The development of robust digital learning platforms serves as a catalyst for world interconnectivity and can encouraging specific geographical groupings of countries such as the Belt and Road Educational Initiatives (see Peters et al. 2020a), cross-border educational partnerships, and global recognition of qualifications. These can address global challenges through postdigital education that provides a platform and framework as a global public good for addressing global challenges, such as climate change, public health crises, and social inequality.

The Belt and Road Initiative (BRI), a major geopolitical and economic project initiated by China, extends its influence beyond infrastructure development to impact education. The geopolitical dimensions of BRI education are multifaceted, influencing global relations, soft power dynamics, and educational collaborations. It also encourages a kind of economic diplomacy, technology transfer and innovation, talent development and ideological influence, as well as geoeconomics considerations that strengthen the demand for innovative forms of vocational education and lifelong learning (Peters et al. 2020a).

In this space, we might also mention postdigital politics of biodigitalism and knowledge socialism. 'Biodigitalism' refers to the convergence of biological and digital technologies, where advancements in areas like biotechnology, artificial intelligence, and data science intersect (Peters et al. 2022). 'Knowledge socialism' involves the collective ownership and distribution of knowledge and information, emphasizing shared access and benefit (Peters et al. 2020b). Biotechnological integration involves the integration of biological systems with digital technologies. This includes developments such as bioinformatics, gene editing, and wearable devices that monitor biological functions, creating a symbiotic relationship between biology and digital innovation based on the democratization of knowledge, promoting open access to information. This aligns with the idea that knowledge is a common good and should be accessible to all, fostering inclusivity and equal opportunities for learning.

Geopolitics has evolved over time, encompassing three broad meanings: from a focus on territories and state-centric approaches to an emphasis on networks and, more recently, an understanding within the context of world systems. In its traditional sense, geopolitics was primarily concerned with the study of territories and their impact on political interactions. This perspective emphasized the importance of geographic location, resources, and physical characteristics in shaping the power dynamics between states. The geopolitical strategies of nations were often centred around control of strategic territories and access to key resources.

The concept of geopolitics expanded beyond territorial considerations to include networks. With the rise of globalization and interconnectedness, geopolitical analyses started to focus on the influence of international networks, both physical (such as transportation and communication networks) and virtual (like economic and diplomatic alliances). Geopolitics began to incorporate the dynamics of global flows of information, trade, and influence, acknowledging the significance of connectivity beyond traditional borders, including international education.

A more contemporary understanding of geopolitics involves placing it within the context of world systems. This approach considers the global political and economic order as interconnected systems. Geopolitics is viewed not only as interactions between individual states but as part of a larger world system where economic, political, and cultural forces shape the behaviour of nations. World systems highlight the uneven distribution of power and resources on a global scale, emphasizing the role of core, semi-peripheral, and peripheral regions in the international system. It highlights the significance of education as a contributor to the redistribution of international power, the means for reshaping key development technologies and one of the factors that is central to US-China system rivalry.

The geopolitics of postdigital educational development follows this shift in meaning and reality from territories to networks and to rival world systems. It provides a critical understanding of the significance of postdigital education as it becomes embedded in national systems of innovation and productivity and an essential part of techno-national systems that propel politics in the twenty-first century.

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