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EDUCATIONAL POLICIES AND GLOBAL COGNITIVE POWER: TOWARD A COMPLEX THEORY OF GEOPOLITICAL INFLUENCE IN LATIN AMERICA

POLÍTICAS EDUCATIVAS Y PODER COGNITIVO GLOBAL: HACIA UNA TEORÍA COMPLEJA DE LA INFLUENCIA GEOPOLÍTICA EN AMÉRICA LATINA

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Educational policies and global cognitive power: toward a complex theory of geopolitical influence in latin america

Políticas educativas y poder cognitivo global: hacia una teoría compleja de la influencia geopolítica en américa latina

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ABSTRACT

This article analyzes the influence of the United States, China, and Russia on Latin America from the perspective of educational policies, knowledge production, and complexity theory. The objective was to understand how contemporary geopolitical dynamics shape new forms of cognitive influence through education, science, and technological innovation. Methodologically, a qualitative and interpretative study was conducted based on documentary analysis and data processing using ATLAS.ti software. Through the construction of semantic networks, categories related to educational geopolitics, cognitive influence, multipolar educational governance, the reconfiguration of the international order, and Latin American regional dynamics were identified. The findings reveal that knowledge has become a strategic resource for the consolidation of new forms of global power, in which universities, scientific networks, and international cooperation mechanisms play a central role. As a theoretical contribution, the article proposes the concept of Global Cognitive Power, defined as the capacity to produce, legitimize, and

disseminate knowledge capable of influencing other social systems. The study concludes that education has become a key arena for geopolitical competition and the construction of international influence.

Keywords: Complexity; Educational geopolitics; Educational governance; Educational policy; Global cognitive power.

RESUMEN

Este artículo analiza la influencia de Estados Unidos, China y Rusia en América Latina desde la perspectiva de las políticas educativas, la producción de conocimiento y la teoría de la complejidad. El objetivo fue comprender cómo las dinámicas geopolíticas contemporáneas configuran nuevas formas de influencia cognitiva a través de la educación, la ciencia y la innovación tecnológica. Metodológicamente, se realizó un estudio cualitativo e interpretativo basado en el análisis documental y el procesamiento de datos mediante el software ATLAS.ti. A través de la construcción de redes semánticas, se identificaron categorías relacionadas con la geopolítica educativa, la influencia cognitiva, la gobernanza educativa multipolar, la reconfiguración del orden internacional y las dinámicas regionales latinoamericanas. Los hallazgos revelan que el conocimiento se ha convertido en un recurso estratégico para la consolidación de nuevas formas de poder global, en las que las universidades, las redes científicas y los mecanismos de cooperación internacional desempeñan un papel central. Como contribución teórica, el artículo propone el concepto de Poder Cognitivo Global, definido como la capacidad de producir, legitimarla y difundir conocimiento capaz de influir en otros sistemas sociales. El estudio concluye que la educación se ha convertido en un escenario clave para la competición geopolítica y la construcción de influencia internacional.

Palabras clave: Complejidad; Geopolítica educativa; Gobernanza educativa; Política educativa; Poder cognitivo global.

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INTRODUCTION

Recent transformations in the international system have reinforced the growing interdependence among knowledge, education, innovation, and geopolitical power. Over the past decades, competition among states has expanded beyond military and economic capabilities to include scientific production, technological development, and the formation of highly skilled human capital. In this context, education has become a strategic domain through which states build national capacities, promote development models, and project international influence beyond traditional geopolitical boundaries (Morin, 1990; Rosales, 2022; Gómez, 2020).

The increasing strategic value of knowledge has generated new forms of geopolitical competition. The United States, China, and Russia have strengthened their scientific and technological capabilities through policies that promote innovation, research, and the internationalization of higher education, recognizing that global leadership increasingly depends on the ability to produce, legitimize, and disseminate knowledge (Ruiz, 2013; Rosales, 2022; De la Gándara, 2025). Consequently, universities, research centers, scientific networks, and multilateral organizations have become influential actors in shaping new forms of global governance and international influence.

At the same time, the international system is undergoing a gradual transition toward multipolarity, challenging traditional hegemonic structures. China's emergence as a scientific and technological power (Santiago, 2022; Fabelo, 2022; Simonit, 2022), Russia's strategic repositioning, and the relative transformation of U.S. global influence have reshaped contemporary power dynamics, directly affecting educational policies and international cooperation (Scarpino, 2025; Gojayev, 2024; Sánchez & Buzo de la Peña, 2021). As a result,

education has become a central instrument of international projection, diplomatic legitimacy, and geopolitical influence.

Mendieta (1996) these dynamics are particularly significant in Latin America, where international cooperation, technology transfer, and the internationalization of higher education have strengthened scientific and institutional capacities while simultaneously reinforcing forms of cognitive dependency through the adoption of external educational and scientific models (Arteaga, 2024; Zapata & Martínez, 2020; Viola & Mora, 2025). Consequently, the region faces the challenge of enhancing its educational and scientific autonomy within an increasingly competitive geopolitical environment.

Despite the extensive literature on international relations, geopolitics, and comparative education, an important analytical gap remains regarding the role of education as a mechanism of power construction in multipolar contexts. Existing studies continue to privilege economic, military, or institutional explanations while paying comparatively less attention to the production, legitimization, and circulation of knowledge as drivers of international influence (Tello, 2012; Gómez, 2020). Likewise, only a limited number of studies have applied complexity theory as a framework for understanding the interactions among geopolitics, education, and global governance.

From the perspective of complexity theory, educational phenomena cannot be understood as isolated or linear processes but rather as open systems characterized by interdependence, feedback, and emergent dynamics operating across multiple levels of analysis (Morin, 1990; Rodríguez & Aguirre, 2011). This perspective makes it possible to interpret educational policies not merely as domestic policy instruments but also as mechanisms involved in knowledge production, international cooperation, legitimacy building, and geopolitical competition. Accordingly, education may be understood as a central component of contemporary systems of global influence.

Against this background, this article examines the influence of the United States, China, and Russia in Latin America through the lens of educational policies, knowledge production, and complexity theory. It addresses the following research question: How is the geopolitical influence of the United States, China, and Russia in Latin America configured through mechanisms associated with education, science, ¿and knowledge production in the context of the transition toward a multipolar international order?

The study aims to explain how major powers employ education, technological innovation, and scientific cooperation as mechanisms of international influence in Latin America. As its principal theoretical contribution, the article introduces the concept of GIobal Cognitive Power, defined as the capacity of state, institutional, and transnational actors to produce, legitimize, transfer, and position knowledge, technologies, and educational models capable of shaping other social systems. By proposing this concept, the study seeks to advance a complexity-based interpretation of geopolitical influence grounded in knowledge production, thereby extending conventional approaches to international relations and educational policy.

Theoretical framework

Complexity Theory and the Analysis of Global Educational Policies

Complexity theory provides one of the most influential contemporary frameworks for understanding social phenomena characterized by interaction, uncertainty, and interdependence. Rather than explaining social systems through linear cause-and-effect relationships, it conceives them as dynamic configurations in which multiple actors interact simultaneously, generating emergent processes that continuously reshape the system (Morin, 1990). Accordingly, complexity theory overcomes reductionist perspectives by integrating political, economic, cultural, scientific, and educational dimensions within a common analytical framework.

From this perspective, Morin (1990) identifies recursivity, feedback, emergence, and self-organization as defining principles of complex systems. These principles explain how the

outcomes of a system become new causes that transform its subsequent development, emphasizing knowledge as a dynamic process of continuous construction rather than a static representation of reality.

Applied to public policy, complexity theory challenges hierarchical and rational models of policy design and implementation. Rodríguez and Aguirre (2011) argue that policies should be understood as open systems involving multiple actors, institutions, and interests that interact simultaneously. Consequently, educational policies are not merely state-designed regulatory instruments but complex configurations emerging from processes of negotiation, cooperation, conflict, and knowledge production.

This perspective is particularly relevant in the context of globalization, where international organizations, universities, research centers, scientific networks, and governments jointly shape educational agendas across multiple scales (Tello, 2012). From the epistemology of educational policy, Tello (2012) further argues that policy processes are also processes of meaning-making influenced by competing rationalities, discourses, and forms of knowledge production. Therefore, the analysis of educational policies requires the simultaneous consideration of institutional, cognitive, and cultural dimensions.

Within this framework, complexity theory provides the conceptual foundation for understanding the interconnections among education, knowledge, and geopolitics. The international influence exerted by the United States, China, and Russia cannot be interpreted as isolated actions but as systemic processes involving educational systems, scientific networks, technological strategies, and global governance structures (Flórez, 2020). Consequently, education emerges as a strategic component of contemporary power relations, supporting the theoretical proposition developed in this study to explain the emergence of Global Cognitive Power within an international system characterized by multipolarity, interdependence, and continuous transformation.

Geopolitics of Knowledge and Global Cognitive Power

Contemporary transformations in the international system have positioned knowledge as a strategic source of global power. Unlike traditional geopolitical approaches centered on territorial, military, or economic control, current dynamics demonstrate that scientific production, technological innovation, and educational capacity have become essential resources for international influence. In this context, the geopolitics of knowledge has emerged as an analytical perspective that examines how states, academic institutions, and international organizations produce, circulate, and legitimize knowledge that shapes the global order (Gómez, 2020; Rosales, 2022).

From this perspective, scientific knowledge is not a neutral product but is closely linked to power relations, institutional structures, and struggles for epistemic legitimacy. Consequently, educational and scientific systems become strategic arenas through which states strengthen their international position. As noted by Rosales (2022) and De la Gándara (2025), major powers have incorporated research, innovation, and higher education into their geopolitical agendas, recognizing that global leadership increasingly depends on the capacity to generate and strategically apply knowledge.

The rise of the knowledge-based economy has also transformed traditional mechanisms of international influence. According to Gómez (2020), scientific production, technological innovation, and human capital development have become central instruments for building legitimacy and global leadership. Universities, research centers, and international scientific networks therefore play strategic roles in fostering national scientific capabilities while expanding forms of cognitive influence. These processes are reinforced through academic internationalization, scientific cooperation, student mobility, and technology transfer, where education increasingly intersects with scientific, economic, and geopolitical interests (Zapata & Martínez, 2020; Arteaga, 2024).

Complexity theory provides an appropriate framework for interpreting these transformations. Morin (1990) argues that knowledge production and circulation operate within complex systems characterized by interdependence, feedback, and emergence. Consequently, international influence based on knowledge should be understood as the outcome of dynamic interactions among governments, universities, international organizations, technology companies, and global scientific networks rather than as the product of isolated actors.

Building on these foundations, this study introduces the concept of Global Cognitive Power, defined as the capacity of state, institutional, and transnational actors to produce, legitimize, transfer, and position knowledge, technologies, and educational models capable of influencing other social systems. This concept broadens conventional understandings of power by incorporating epistemological and educational dimensions, thereby providing a complexity-based explanation of contemporary international influence grounded in the strategic production and circulation of knowledge. Within this framework, Global Cognitive Power constitutes the central theoretical category of this study and offers a new perspective for analyzing the relationships among knowledge, education, and geopolitical influence in an increasingly multipolar and interdependent international system.

Reconfiguration of the International Order and the Transition toward Multipolarity

During the first decades of the twenty-first century, the international system has undergone profound transformations that challenge the power structures established after the Cold War. The redistribution of economic, technological, scientific, and political capabilities has fostered the emergence of a multipolar order, in which global influence is increasingly shared among several major powers rather than concentrated in a single hegemonic actor (Scarpino, 2025; Gojayev, 2024).

Multipolarity represents not only a redistribution of state power but also a structural transformation of international relations. Sánchez and Buzo de la Peña (2021) argue that contemporary changes in the global order are closely associated with shifts in productive,

technological, and financial systems, which have altered the traditional foundations of global hegemony. As a result, international competition increasingly revolves around scientific innovation, knowledge production, and technological development, creating new forms of global leadership.

China has become one of the principal actors in this transformation by significantly strengthening its research capacity, technological innovation, and higher education system while expanding its international cooperation and institutional influence (Murillo, 2023; Gojayev, 2024). At the same time, Russia has pursued strategies to restore its geopolitical influence through investments in science, technology, and strategic autonomy, reflecting broader patterns of competition that extend beyond traditional military power (Scarpino, 2025). Meanwhile, although the United States continues to play a dominant economic, scientific, and technological role, its global leadership has evolved within an increasingly competitive environment in which emerging powers actively challenge established structures of influence (Sánchez & Buzo de la Peña, 2021; Murillo, 2023).

From the perspective of complexity theory, these transformations can be understood as processes of systemic reorganization characterized by the simultaneous coexistence of stability, adaptation, and change. Morin (1990) argues that complex systems evolve through continuous interactions among complementary and contradictory forces, generating new emergent configurations. Applied to international relations, this perspective suggests that multipolarity is not a fixed global order but an evolving process in which cooperation and competition coexist within changing structures of global governance.

Within this context, knowledge has become a strategic source of international influence. The capacity to generate innovation, develop advanced technologies, educate highly skilled human capital, and strengthen scientific systems increasingly shapes states' international positions. Consequently, the transition toward multipolarity involves not only the redistribution of political and economic power but also the reconfiguration of cognitive capabilities that underpin

contemporary global leadership. This structural transformation provides the context in which the concept of Global Cognitive Power proposed in this study emerges, highlighting the central role of education, scientific research, and knowledge production in understanding contemporary geopolitical influence.

The United States, China, and Russia as Architects of Contemporary Cognitive Power

The transition toward a multipolar international system has profoundly transformed the mechanisms through which states build and project power. While international influence during much of the twentieth century relied primarily on military, economic, and territorial capabilities, contemporary dynamics increasingly position knowledge, innovation, and education as strategic resources for global leadership. Within this context, the United States, China, and Russia have emerged as key architects of contemporary cognitive power, strengthening their scientific, technological, and educational capacities to expand international influence (Rosales, 2022; De la Gándara, 2025).

The United States has maintained a leading position through the integration of world-class universities, research institutions, technological innovation, and academic internationalization. According to Rosales (2022), its leadership in artificial intelligence, biotechnology, advanced computing, and the digital economy has reinforced its capacity to shape global scientific and educational agendas. Furthermore, Chiriboga (2024) argues that higher education, scientific cooperation, and international talent attraction have strengthened transnational knowledge networks that consolidate U.S. global influence.

China, by contrast, has pursued a strategy centered on expanding research, innovation, and higher education while promoting internationally competitive universities and scientific cooperation. As noted by De la Gándara (2025), China has transformed knowledge into a strategic resource for international projection through investments in research, academic exchange, joint research initiatives, and educational diplomacy, thereby increasing its influence over global scientific agendas (Rosales, 2022).

Russia has adopted a different approach by emphasizing technological sovereignty, scientific cooperation, and strategic autonomy. Although its higher education system has a more limited global reach than those of the United States or China, Russia continues to strengthen its international position through scientific research, technological development, and specialized training (Ruiz, 2013). At the same time, it increasingly integrates knowledge and technological innovation with broader geopolitical and security strategies, demonstrating that cognitive capabilities have become an essential component of contemporary international competition (Ruiz, 2013; De la Gándara, 2025).

From a theoretical perspective, these three cases illustrate how knowledge has become a central dimension of global power. Gómez (2020) argues that knowledge societies have transformed international influence by placing scientific production, innovation, and epistemic legitimacy at the center of geopolitical competition. Consequently, universities, research institutions, and scientific networks have acquired strategic importance comparable to that of traditional foreign policy instruments.

Complexity theory provides an appropriate framework for interpreting these dynamics as systemic processes involving interactions among governments, universities, international organizations, and technological sectors. Rather than being concentrated solely in political or economic structures, power emerges from complex networks in which education, science, and innovation function simultaneously as mechanisms of cooperation and competition. Within this context, the United States, China, and Russia can be understood as architects of Global Cognitive Power, as their capacity to generate innovation, attract talent, lead scientific networks, and shape international educational agendas has become a defining indicator of global influence in the twenty-first century.

Latin America as a Strategic Space for Geopolitical and Educational Influence

Contemporary transformations in the international system have increased the geopolitical significance of Latin America as a strategic arena for the projection of influence by major global powers. Beyond its economic and geographic importance, the region has become a key setting for international cooperation, knowledge transfer, educational internationalization, and scientific development, reflecting the growing integration of education, science, and innovation into the geopolitical strategies of the United States, China, and Russia (Arteaga, 2024; Luján, 2024).

Historically, Latin America has maintained relationships of economic, technological, and scientific dependence on the world's principal knowledge-producing centers. According to Zapata and Martínez (2020), this cognitive dependency is reflected in the adoption of external educational models, research agendas, and scientific validation systems that often shape regional knowledge production. However, from the perspective of complexity theory, these relationships should not be interpreted as purely deterministic. Instead, they involve dynamic processes of appropriation, adaptation, and transformation, through which international cooperation can simultaneously strengthen institutional capacities while reproducing forms of dependency (Morin, 1990; Zapata & Martínez, 2020).

International cooperation has played a fundamental role in expanding scientific and educational capacities across the region. Academic mobility programs, international research networks, university partnerships, and collaborative innovation projects have promoted knowledge circulation and institutional development (Viola & Mora, 2025). At the same time, they have intensified competition among international actors seeking to expand their influence through education and scientific cooperation.

In recent decades, China has significantly expanded its presence in Latin America through academic exchange programs, technological cooperation, scholarships, and joint research initiatives, diversifying the region's opportunities for scientific collaboration (Arteaga,

2024). Meanwhile, the United States continues to exert substantial influence through research funding, university internationalization, academic cooperation, and talent attraction, demonstrating that contemporary geopolitical competition increasingly extends into the fields of education, science, and technological innovation.

From a theoretical perspective, complexity theory views Latin America not as a passive recipient of external influence but as an open system in which governments, universities, research centers, and international organizations continuously interact through processes of negotiation, adaptation, and knowledge production (Morin, 1990; Tello, 2019). Likewise, university internationalization has become a key mechanism for integrating the region into global scientific networks, although important challenges related to research funding, scientific infrastructure, and academic autonomy remain (Luján, 2024).

Within this context, Latin America represents both a strategic arena of geopolitical influence and an active participant in the global circulation of knowledge. Understanding the interactions among international cooperation, cognitive dependency, educational internationalization, and scientific development is therefore essential for explaining the emergence of Global Cognitive Power, which provides the conceptual foundation for the theoretical framework developed in the following section.

Toward a Complexity Theory of Global Cognitive Power

The transformations discussed in the preceding sections demonstrate that contemporary international influence cannot be fully explained through approaches focused solely on economic, military, or institutional variables. The growing importance of education, scientific research, technological innovation, and knowledge production has generated new forms of interaction among international actors, extending geopolitical influence beyond traditional conceptions of power. Within this context, complexity theory provides a conceptual framework for understanding these processes as dynamic systems characterized by interdependence, feedback, emergence, and continuous reorganization (Morin, 1990).

From this perspective, knowledge is no longer merely a driver of economic development but a structural component of international relations. The literature reviewed shows that the United States, China, and Russia have integrated education, science, and innovation into their global strategies, while Latin America participates through international cooperation, educational internationalization, and knowledge transfer (Rosales, 2022; De la Gándara, 2025; Arteaga, 2024). These interactions reveal complex systems in which multiple actors produce, legitimize, and disseminate knowledge that shapes the international order.

Building on this interpretation, this study proposes the concept of Global Cognitive Power, defined as the capacity of state, institutional, and transnational actors to produce, legitimize, transfer, and position knowledge, technologies, and educational models capable of influencing other social, political, and cultural systems. Unlike traditional forms of power, Global Cognitive Power is rooted not only in material resources but also in the ability to shape the processes through which knowledge is generated, validated, and circulated.

This concept is closely linked to Educational Geopolitics, defined as the set of strategies through which states and international actors employ education, scientific research, and academic cooperation to strengthen their international influence. Complementing this perspective, the study introduces Cognitive Influence, understood as the capacity to shape the production, validation, and dissemination of knowledge through epistemic legitimacy, technological innovation, human capital development, and educational models. As an operational dimension of Global Cognitive Power, cognitive influence explains how specific actors succeed in establishing internationally recognized knowledge and scientific paradigms.

The study also proposes the concept of Multipolar Educational Governance, referring to the mechanisms, institutions, and networks through which multiple actors coordinate and influence international educational systems. Unlike hierarchical governance models, this framework recognizes the interaction of governments, universities, multilateral organizations, and global scientific networks through processes of cooperation, negotiation, and competition.

Together, these categories constitute an integrated analytical framework in which Educational Geopolitics strengthens Cognitive Influence, Cognitive Influence reinforces Global Cognitive Power, and Multipolar Educational Governance provides the institutional conditions for the international circulation of knowledge. This recursive relationship reflects Morin's (1990) principle of organizational recursivity, according to which the products of a system become the causes of its own transformation.

The principal theoretical contribution of this study is the integration of complexity theory, the geopolitics of knowledge, and the epistemology of educational policy into a unified framework for interpreting contemporary international relations. From this perspective, geopolitical competition increasingly depends on the capacity to generate knowledge, develop human talent, foster innovation, and shape global scientific agendas. Consequently, education should no longer be understood merely as a sectoral policy but as a strategic component of contemporary systems of global power, providing the conceptual foundation for the methodological analysis and discussion presented in the following sections.

METHODOLOGY

This study adopted a qualitative interpretive approach to examine the relationships among geopolitics, education, knowledge production, and power within the context of contemporary transformations in the international system. This approach is appropriate for analyzing complex social phenomena by recognizing the interactions among political, educational, scientific, and institutional dimensions that shape global dynamics of influence (Rodríguez & Aguirre, 2011; Tello, 2012).

Grounded in complexity theory, the study assumes that social phenomena cannot be explained through linear causal relationships but should be understood as open systems characterized by cooperation, competition, adaptation, and emergence (Morin, 1990).

Accordingly, the analysis of educational policies and geopolitical dynamics associated with knowledge production requires methodologies capable of identifying systemic relationships and interdependencies that extend beyond traditional descriptive approaches.

Research Design

The research employed a qualitative documentary design, enabling a critical examination of the literature on the geopolitics of knowledge, international educational policies, educational governance, multipolarity, scientific cooperation, and the relationship between education and global power. Documentary analysis is widely recognized as an appropriate strategy for investigating complex social processes because it facilitates the identification of conceptual categories, analytical trends, and emerging relationships within the scientific literature (Tello, 2012).

The study followed an analytical-interpretive orientation, seeking not only to describe contemporary transformations in the international system but also to explain how these transformations contribute to the emergence of new forms of influence based on knowledge. Through a systematic review of specialized literature, the research developed a conceptual framework to explain the strategic role of education in contemporary global power dynamics.

Documentary Corpus

The documentary corpus comprised 30 academic sources published between 2011 and 2025, including peer-reviewed journal articles, book chapters, institutional reports, documents from international organizations, and specialized theoretical works.

The documents were selected according to the following criteria:

- Thematic relevance to geopolitics, education, knowledge, and international relations.
- Academic relevance and recognition within the field.
- Currency of theoretical and empirical contributions.
- Direct alignment with the study's core analytical categories.

- Duplicate records, non-scholarly publications, and documents unrelated to the research objectives were excluded from the analysis.

Data Processing and Analysis

The documentary corpus was organized, coded, and analyzed using ATLAS.ti, which facilitated the systematic management of the data and the construction of semantic networks to identify relationships among categories, subcategories, and emerging concepts.

The analytical process was conducted in three stages:

- Phase 1. Open Coding. Recurrent concepts were identified throughout the literature, generating initial codes related to multipolarity, educational geopolitics, international cooperation, knowledge transfer, technological innovation, educational governance, cognitive influence, cognitive dependency, and scientific development.
- Phase 2. Axial Coding. The initial codes were integrated into broader analytical categories, revealing relationships of causality, interdependence, and complementarity. This process resulted in six core categories: Global Actors, Latin America, Educational Geopolitics, Multipolar Educational Governance, Cognitive Influence, and Reconfiguration of the International Order.
- Phase 3. Theoretical Integration. Finally, the categories were connected through semantic networks that represented the systemic relationships among the components of the phenomenon under study. This process led to the emergence of the central category Global Cognitive Power, which constitutes the study's principal conceptual contribution.

Categorical Framework

The analytical framework was organized around one core category and six analytical categories.

Core Category

Global Cognitive Power

Defined as the capacity of state, institutional, and transnational actors to produce, legitimize, transfer, and position knowledge, technologies, and educational models capable of influencing other social systems.

- Analytical Categories
- Educational Geopolitics
- Cognitive Influence
- Multipolar Educational Governance
- Reconfiguration of the International Order
- Global Actors
- Latin America

Each category was operationalized through specific subcategories, enabling a deeper analysis of the dynamics of cooperation, competition, knowledge production, and international influence identified throughout the documentary analysis.

Construction of Semantic Networks

The semantic networks developed in ATLAS.ti (see Appendices) visually represented the relationships among the analytical categories and subcategories. From the perspective of complexity theory, these networks were interpreted as dynamic configurations characterized by feedback, interdependence, and emergence.

The Global Actors network illustrated the strategies employed by the United States, China, and Russia to expand their influence through education, science, and innovation. The

Latin America network highlighted the tensions among international cooperation, knowledge transfer, educational autonomy, and cognitive dependency. The Educational Geopolitics network revealed the links between scientific diplomacy, university internationalization, and global knowledge networks.

Likewise, the Multipolar Educational Governance network showed how international organizations, global universities, and scientific networks jointly shape international educational agendas. The Cognitive Influence network explained the mechanisms through which knowledge is produced, legitimized, and disseminated, while the Reconfiguration of the International Order network illustrated how multipolarity, China's rise, Russia's strategic repositioning, and the transformation of U.S. hegemony contribute to the contemporary restructuring of the international system.

The integration of these networks revealed recursive relationships among education, knowledge, and power, providing the analytical foundation for the proposed Complexity Theory of Global Cognitive Power.

Epistemological Considerations

This study is grounded in an interpretive epistemological perspective that recognizes knowledge as a socially constructed phenomenon. Consistent with the epistemology of educational policy and complexity theory, educational policies, scientific knowledge production, and geopolitical dynamics are understood as interdependent processes that require analytical approaches capable of integrating multiple levels of analysis.

Accordingly, the categories developed in this study should not be viewed as fixed structures but as open conceptual configurations that facilitate the interpretation of contemporary transformations linking education, science, and power within an international system characterized by multipolarity and the growing strategic importance of knowledge.

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RESULTS AND DISCUSSION

Multipolarity as the Emerging Context of Global Cognitive Power

The semantic network associated with the Reconfiguration of the International Order revealed that multipolarity constitutes the structural context in which new forms of knowledge-based international influence emerge. The relationships among China's rise, Russia's strategic repositioning, the transformation of U.S. hegemony, and geopolitical competition indicate that global power is increasingly shaped by the capacity to generate scientific knowledge, technological innovation, and national research capabilities, rather than solely by economic or military resources (Scarpino, 2025; Gojayev, 2024).

From the perspective of complexity theory, this transformation represents a process of systemic reorganization in which multiple actors interact to generate new configurations of global influence. Thus, multipolarity should be understood not merely as the coexistence of several major powers but as the emergence of more complex forms of governance grounded in the production and circulation of knowledge. This interpretation is consistent with Sánchez and Buzo de la Peña (2021), who argue that contemporary changes in the international system are driven by structural transformations in innovation, technology, and global power relations.

The United States, China, and Russia as Producers of Cognitive Influence

The Global Actors semantic network showed that the United States, China, and Russia pursue distinct strategies to strengthen their international influence through education, science, and technology. The United States maintains its leadership through elite universities, scientific excellence, and technological innovation; China combines scientific diplomacy, educational cooperation, and technological expansion to increase its global presence; while Russia reinforces its geopolitical position by strengthening scientific and technological capacities linked to strategic autonomy (Rosales, 2022; Ruiz, 2013).

These findings indicate that contemporary international influence increasingly depends on the capacity to build national knowledge systems. Rather than competing solely for material

resources, major powers seek leadership through scientific research, human capital development, and technological innovation. Consequently, knowledge production has become a fundamental source of international legitimacy and global influence, supporting the emergence of Global Cognitive Power as a defining feature of twenty-first-century geopolitics (De la Gándara, 2025; Gómez, 2020).

Educational Geopolitics and the Construction of International Influence

The Educational Geopolitics semantic network revealed that education has become a strategic instrument of contemporary international influence. The relationships among scientific diplomacy, academic cooperation, student mobility, educational internationalization, and technology transfer demonstrate that the circulation of knowledge is a central component of current geopolitical strategies. Universities and educational systems actively contribute to the development of international networks that extend state influence beyond territorial boundaries.

These findings indicate that education can no longer be understood solely as a sectoral public policy, but as a strategic arena where scientific, economic, and geopolitical interests converge. This interpretation supports the perspective of the geopolitics of knowledge, which views the production and dissemination of knowledge as key mechanisms through which international actors expand their influence over other social systems (Rosales, 2022; Tello, 2012).

Latin America Between International Cooperation and Cognitive Dependency

The Latin America semantic network revealed a dual configuration characterized by the coexistence of institutional strengthening and cognitive dependency. On the one hand, international cooperation, knowledge transfer, and university internationalization contribute to scientific development and the expansion of regional academic capacities. On the other hand, the adoption of external research and educational models may reinforce forms of dependency that constrain the region's scientific and educational autonomy (Arteaga, 2024; Zapata & Martínez, 2020).

From the perspective of complexity theory, these dynamics should be understood as complementary rather than contradictory processes operating within the same system. The findings suggest that international cooperation can simultaneously promote institutional development and reproduce dependency, depending on the conditions under which knowledge transfer occurs. Consequently, strengthening regional scientific capacity emerges as a key strategy for expanding Latin America's autonomy within global knowledge production networks (Viola & Mora, 2025).

Multipolar Educational Governance and the Global Circulation of Knowledge

The Multipolar Educational Governance semantic network revealed an international structure characterized by the simultaneous participation of multilateral organizations, global universities, scientific networks, and educational cooperation mechanisms. The findings indicate that international educational agendas are no longer shaped exclusively by states but increasingly by diverse actors capable of influencing educational policies and scientific priorities. The coexistence of North–South and South–South cooperation reflects the emergence of more decentralized and complex governance models. From this perspective, Multipolar Educational Governance provides a framework for understanding how knowledge circulates within the contemporary international system. Scientific and academic networks function as spaces where priorities are negotiated, consensus is built, and decisions are made that ultimately shape national educational systems (Luján, 2024; Zapata & Martínez, 2020).

The Emergence of Global Cognitive Power: Theoretical Contribution of the Study

The integration of the six semantic networks led to the emergence of a unifying analytical category: Global Cognitive Power. The findings demonstrate that contemporary international influence increasingly depends on the capacity to produce, legitimize, transfer, and disseminate knowledge, technologies, and educational models. This capacity is generated through the interaction of educational systems, universities, research centers, international organizations, and state strategies aimed at strengthening scientific and technological development.

The principal theoretical contribution of this study is the proposal of Global Cognitive Power as an analytical framework for explaining contemporary forms of international influence based on the strategic production and circulation of knowledge. From the perspective of complexity theory, this concept highlights that international relations operate within dynamic systems characterized by cooperation, competition, adaptation, and continuous feedback. Consequently, education, science, and innovation emerge as central components of contemporary global power, shaping new forms of leadership and influence within an increasingly multipolar international order.

CONCLUSIONS

The findings demonstrate that contemporary transformations in the international system have fundamentally reshaped traditional forms of power. The growing importance of education, science, technological innovation, and knowledge production indicates that global influence increasingly depends not only on military or economic capabilities but also on the ability to generate, legitimize, and disseminate strategic knowledge. Within this context, the transition toward a multipolar international order has fostered new forms of geopolitical competition in which knowledge has become a central source of international leadership.

The study shows that the United States, China, and Russia have incorporated higher education, scientific research, and technological innovation into their global strategies. Although each pursues distinct mechanisms of influence, all recognize knowledge as a strategic asset for strengthening their international position. Consequently, universities, research centers, scientific networks, and academic cooperation programs have become as significant as traditional foreign policy instruments in shaping global influence.

The analysis also highlights Latin America's strategic role within contemporary knowledge dynamics. While international cooperation, knowledge transfer, and educational internationalization have strengthened regional scientific capacities, they have also generated

challenges related to cognitive dependency. These findings underscore the importance of reinforcing regional scientific development and educational autonomy to enhance Latin America's participation in global knowledge networks.

From an institutional perspective, the results reveal that international educational governance is evolving toward a polycentric model involving multilateral organizations, global universities, scientific networks, and international cooperation mechanisms. This transformation demonstrates that the governance of knowledge increasingly depends on interactions among multiple actors rather than on state-centered structures alone.

The principal theoretical contribution of this study is the formulation of Global Cognitive Power, defined as the capacity of state, institutional, and transnational actors to produce, legitimize, transfer, and position knowledge, technologies, and educational models capable of influencing other social systems. This concept extends conventional approaches to international relations by incorporating epistemological and educational dimensions into the analysis of contemporary geopolitical influence.

Finally, this research strengthens complexity theory as an analytical framework for understanding the relationships among education, knowledge, and power. It argues that twenty-first-century geopolitical competition increasingly revolves around the capacity to generate innovation, develop human capital, and lead scientific agendas. Accordingly, the study proposes advancing toward a Complexity Theory of Global Cognitive Power, recognizing education as a strategic component of contemporary international relations and a key driver of emerging forms of global power.

Conflict of Interest Statement

The authors declare that they have no conflicts of interest related to this research.

Author Contributions

Jorge de Jesús Fajardo Molinares: Conceptualization, Methodology, Investigation, Formal Analysis, Data Curation, Software, Visualization, Validation, Project Administration, Resources, Writing – Original Draft, and Writing – Review & Editing.

Artificial Intelligence Statement

The authors declare that artificial intelligence tools were used solely as a support resource during the preparation of this manuscript. These tools did not replace the intellectual work of the authors at any stage of the research process. The interpretation of the evidence, conceptual development, theoretical formulation, analysis, conclusions, and final writing were carried out exclusively by the authors. After rigorous review using plagiarism detection tools, the authors confirm that this manuscript is the result of their own original intellectual work and has not been generated or previously published through any electronic platform or artificial intelligence system.

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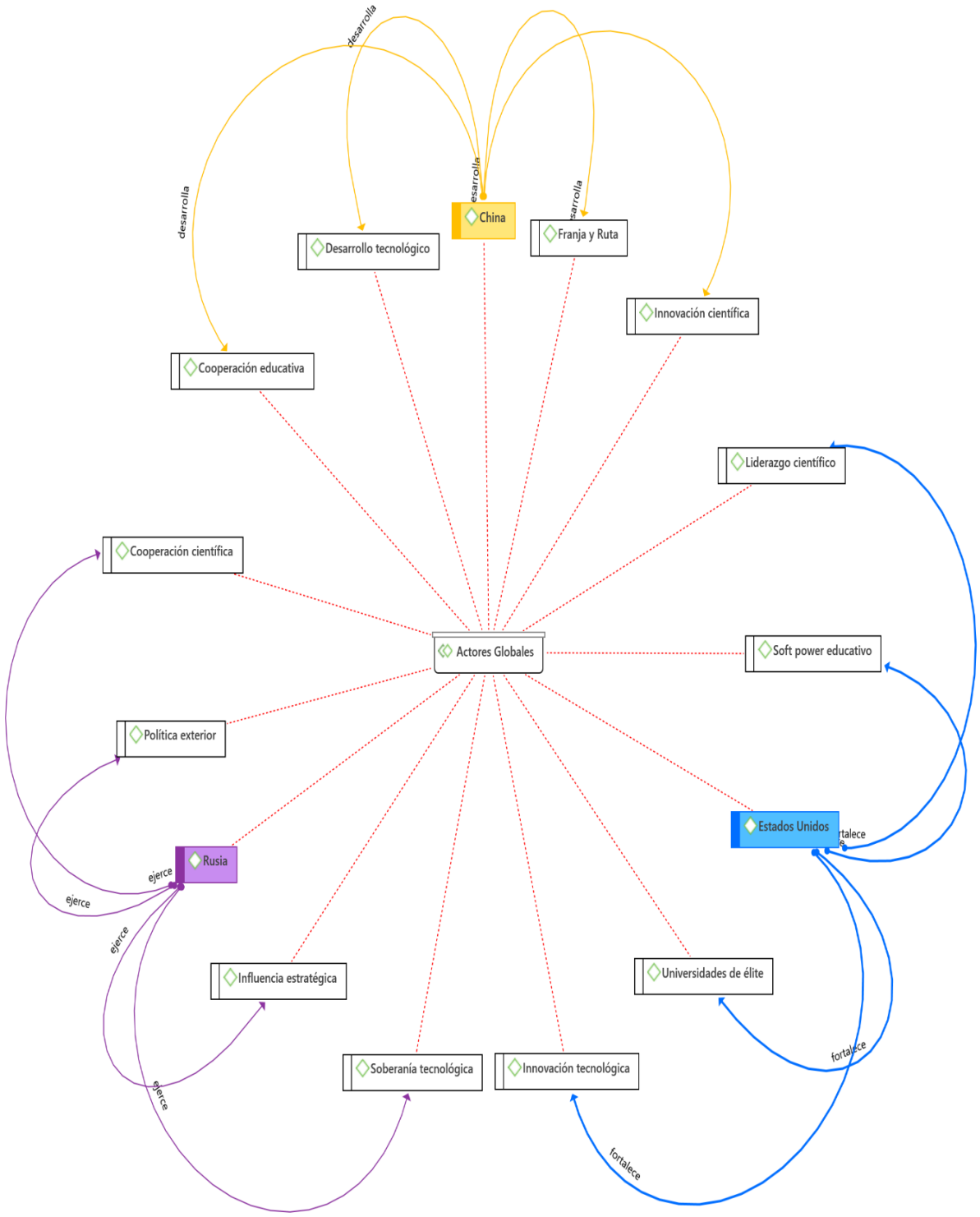
DOI: https://doi.org/10.71112/pswymb08

Appendices

Figure 1

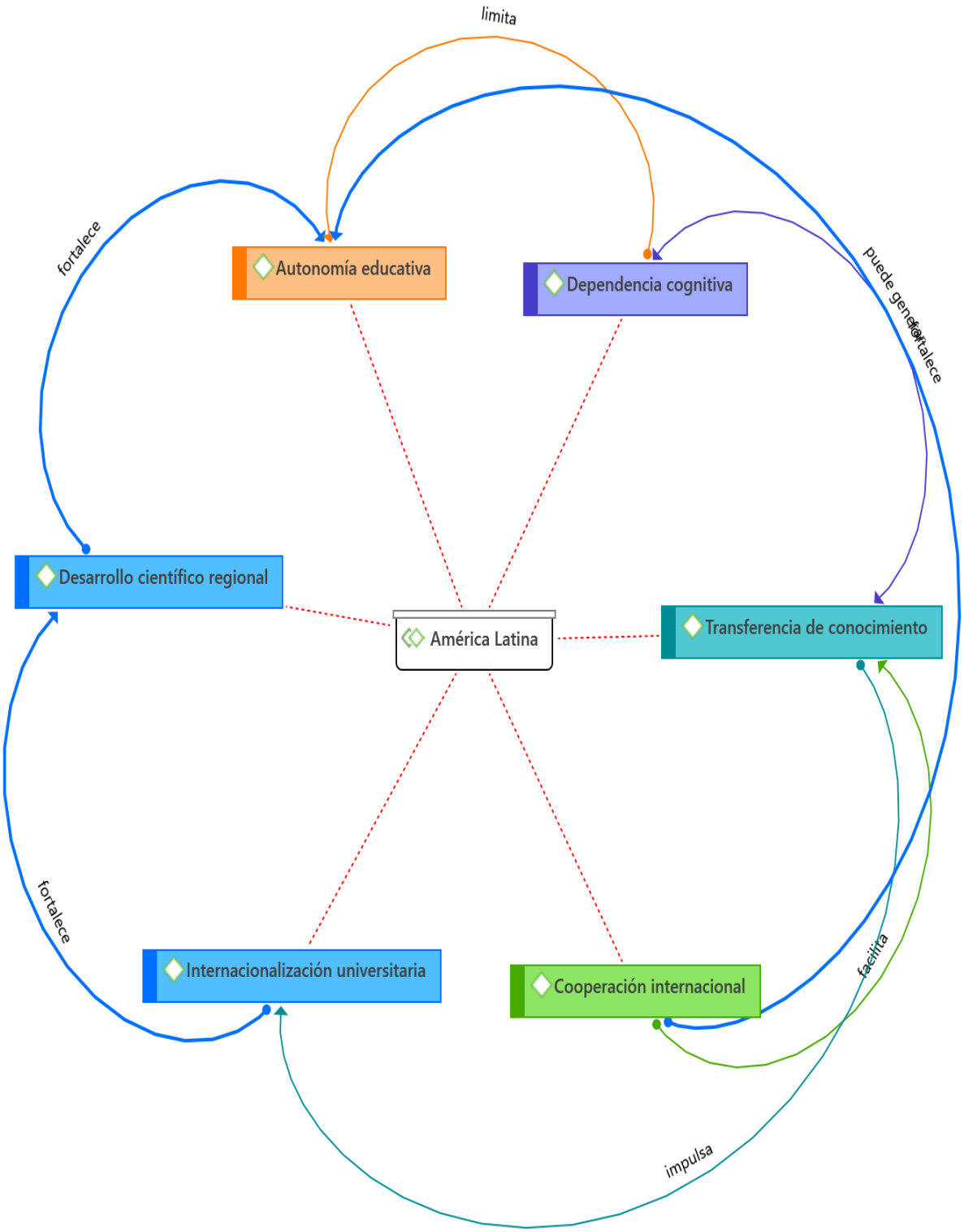
Semantic Network: Global Actors. Source: Prepared by the authors



DOI: https://doi.org/10.71112/pswymb08

Figure 2

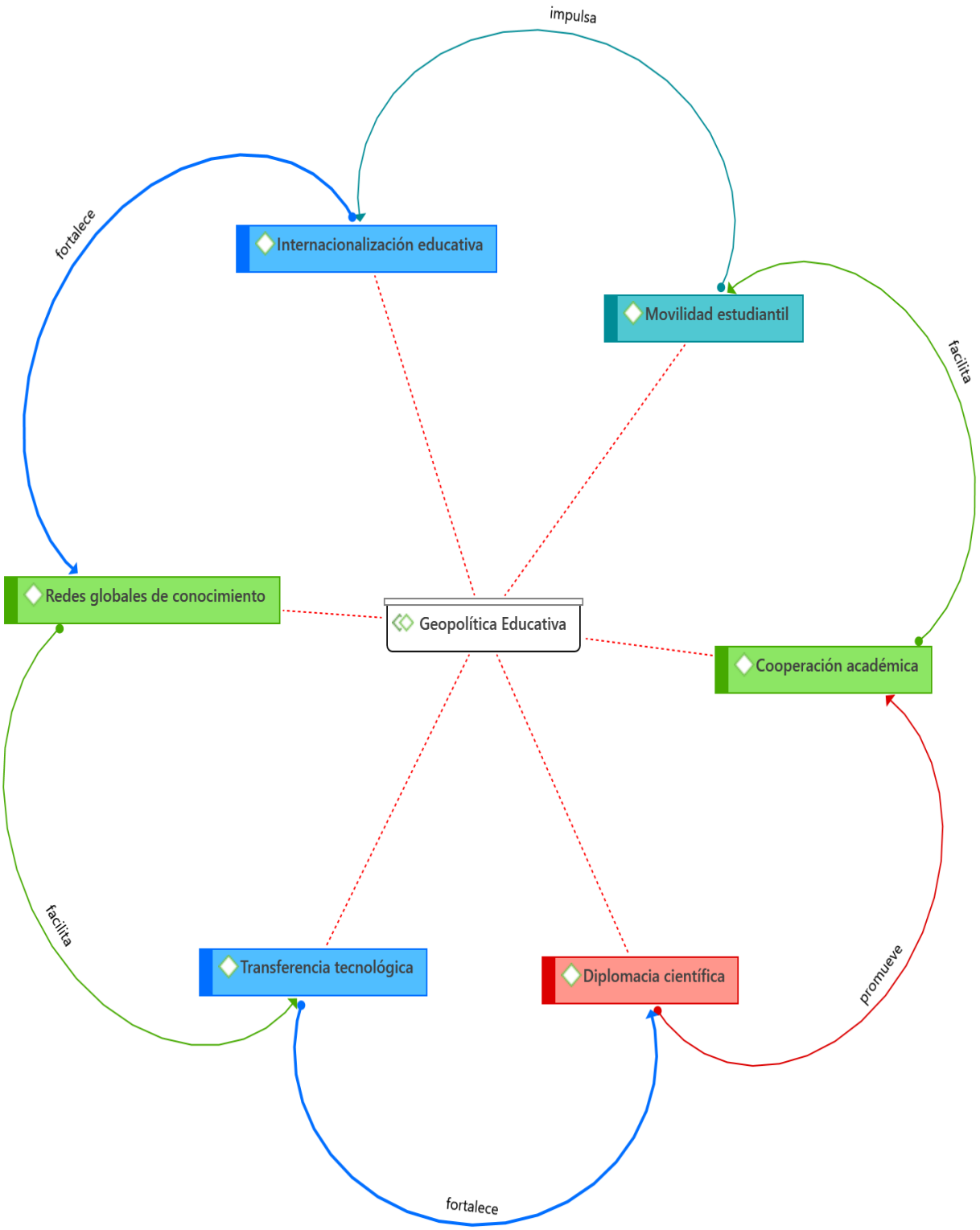
Semantic Network: Latin America. Source: Prepared by the authors



DOI: https://doi.org/10.71112/pswymb08

Figure 3

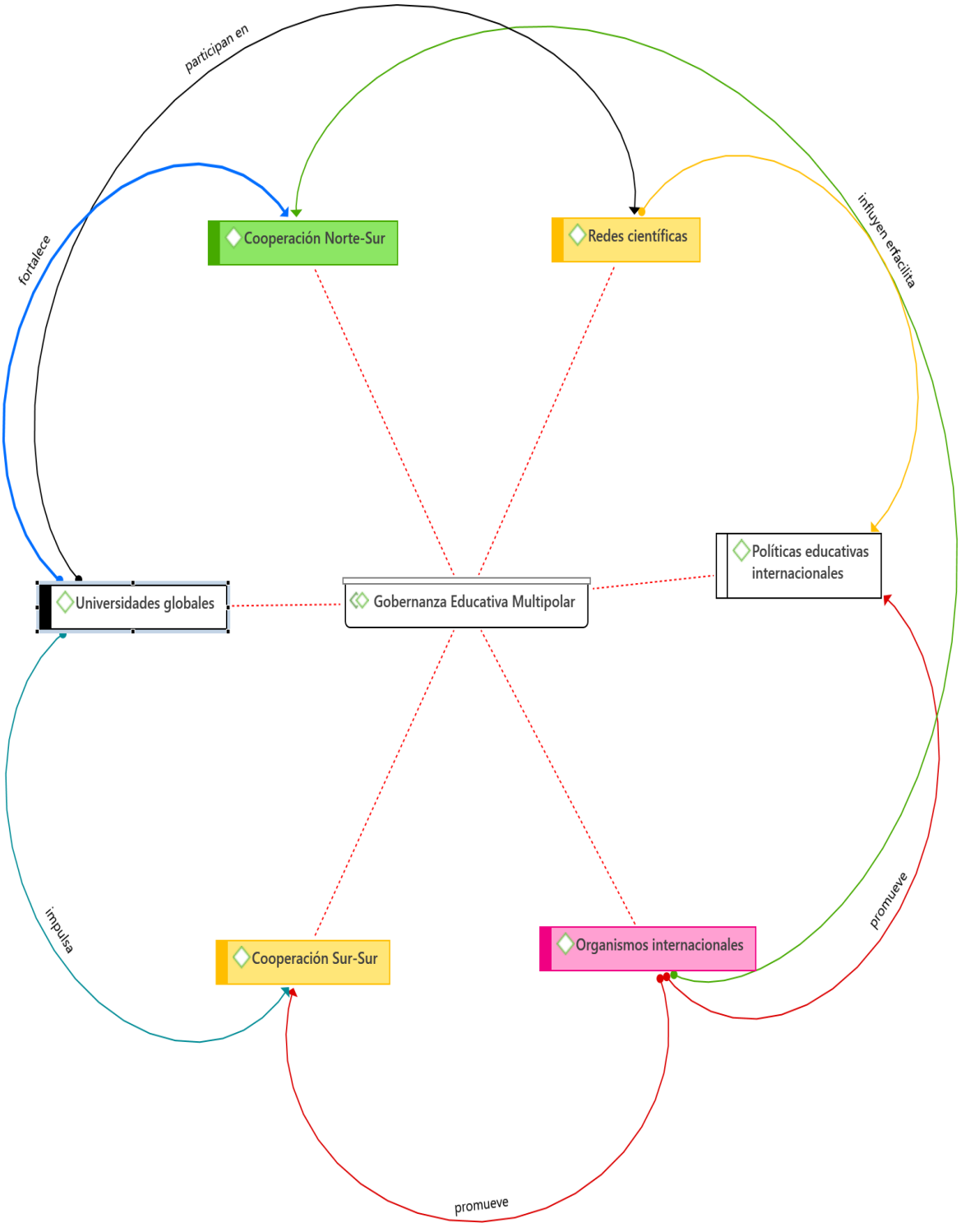
Semantic Network: Educational Geopolitics. Source: Authors' own elaboration.



DOI: https://doi.org/10.71112/pswymb08

Figure 4

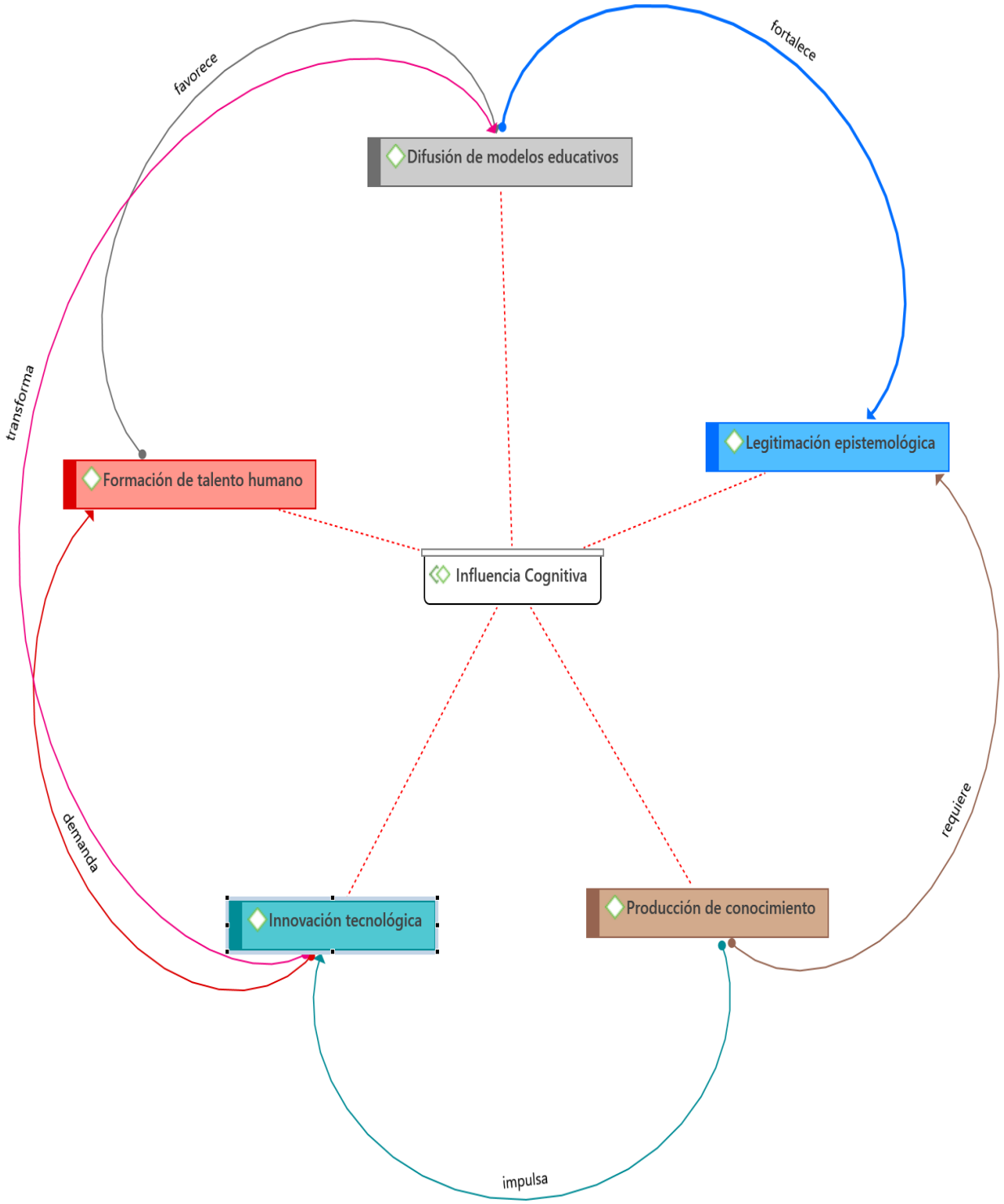
Semantic Network: Multipolar Educational Governance. Source: Authors' own elaboration.



DOI: https://doi.org/10.71112/pswymb08

Figure 5

Semantic Network: Cognitive Influence. Source: Authors' own elaboration.



DOI: https://doi.org/10.71112/pswymb08

Figure 6

Semantic Network: Reconfiguration of the International Order. Source: Authors' own elaboration