Entretextos - Artículos/Articles/Aküjialu'u
Revista de Estudios Interculturales desde Latinoamérica y el Caribe
Facultad Ciencias de la Educación. Universidad de La Guajira. Colombia
ISSN: 0123-9333 / e-ISSN 2805-6159, Año: 20 N.º 40 (mayo-agosto), 2026, pp. 208-227
Para citar utilice este ARK: https://n2t.net/ark:/47886/19811114
Este trabajo fue depositado en Zenodo: DOI: https//doi.org/10.5281/zenodo.19811114
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Recibido: 18-03-2026· Aceptado: 25-04-2026

Algorithmic Coloniality, Digital Sovereignty, and Cognitive Justice in the 21st Century

Colonialidad Algorítmica, Soberanía Digital y Justicia Cognitiva en el Siglo XXI

Koukaaratka a'yataayapala kachuweera, juyeinmaa kachuweera epettuui jee jüta'ayapana ekiiru'ujatü ju'utpüna piantua po'loo jikii juya

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Abstract

The article analyzes the role of algorithmic systems in the reconfiguration of contemporary capitalism in Latin America, highlighting their impact on the distribution of power, knowledge production, and emerging forms of technological dependence. Based on a documentary review and an interdisciplinary approach that integrates digital political economy, dependency theory, and the concept of coloniality of power, it proposes the notion of algorithmic coloniality to explain the reproduction of economic, epistemic, and normative hierarchies through automated systems. The analysis, organized around infrastructural, epistemic, and normative dimensions argues that these architectures reinforce forms of digital subordination, while also opening possibilities for strategies aimed at technological sovereignty and cognitive justice.

Keywords: Latin America; algorithmic coloniality; artificial intelligence; digital sovereignty; cognitive justice.

Resumen

El artículo analiza el papel de los sistemas algorítmicos en la reconfiguración del capitalismo contemporáneo en América Latina, destacando su impacto en la distribución del poder, la producción de conocimiento y las nuevas formas de dependencia tecnológica. A partir de una revisión documental y un enfoque interdisciplinario que integra economía política digital, teoría de la dependencia y colonialidad del poder, se propone el concepto de colonialidad algorítmica para explicar la reproducción de jerarquías económicas, epistémicas y normativas mediante sistemas automatizados. El análisis, organizado en dimensiones infraestructural, epistémica y normativa, sostiene que estas

arquitecturas refuerzan formas de subordinación digital, pero también abren posibilidades para estrategias orientadas a la soberanía tecnológica y la justicia cognitiva.

Palabras clave: América Latina; colonialidad algorítmica; inteligencia artificial; soberanía digital; justicia cognitiva.

Jüküjia palitpütchiru'u

Ashajalaakat asanaasü jukua'ipapala kachuweera aku'yamajiapala jüpüla aku'majaa jüchikua wqashinnuupa'ajanakana juumainpa'ajanakana joolu'u Juumain Kusina, jamüin jüinala jiitajialu'u katsüinshaata, aku'majaa kasa jeketü ekiiru'ujee, jee müsia macheujaalaa kama'ana kachuweera. Jünainjee jüsanaaya karalouta jee jünainjee jü'yataayapala epettuui piamakua'ipakat akolochojia jüla'ulaase aletseepü, jünüikiima'a tü macheujaalakat jee ashunaawüshi oukaala atsüin, oulakünaka aküjia a'yataayapala joolu'u maka jaa'in ashunaa koukaaratkat atsüin jüpüla aküjaa ja'u juchotia e'ipapa'a aletseepia, aikale'era pütchi jee jukua'ipa laülawaa jukajee jukua'ipa alaülajira'ala jümüiwa'aya. Jüsanaayanainjee mapa, akolochojuushi jukua'ipaainjatükat jüshawale'eria epiapülee, jümaa tü macheujaalakat jee ashunaawüshi oukaala atsüin, oulakünaka aküjia a'yataayapala joolu'u maka jaa'in ashuna koukaaratkat atsüin jüpüla aküjaa ja'u juchotia ji'ipapa'a aletseepia, aikale'era pütchi jee jukua'ipa laülawaa, kaküjainsü jiain ku'yamalakaa aite'erüin jukua'upa oupümawaa jaujee epettuui, eerulaka mapa'aya apülapalaa jüpüla aikawolii o'uu jüpülapala kachuweeramaajatü jee kapülanii ekiirujutu.

Pütchi katsüinsükat: Ameerika kusinapa'a, jü'yataayapala ashunaa koukaaralü atsüin, inteligencia artificial münakat, jületseepia epettuui, kapülanii ekiirujutu.

I. Introduction. Digital Infrastructure and Reconfiguring Contemporary Power

The development of digital infrastructures and data systems has become a principal component of contemporary capitalism. The expansion of digital networks has transformed the economic and social dynamics of the world system, consolidating new forms of accumulation based on data extraction and processing (Castells, 2010; Srnicek, 2018; Zuboff, 2019).

Advances in automation, artificial intelligence and robotization are also redefining the organization of work and production processes. Numerous studies indicate that these technologies modify labor structures and productivity, generating profound transformations in global labor markets (Brynjolfsson & McAfee, 2014; Frey & Osborne, 2017; Acemoglu & Restrepo, 2020).

In Latin America, insertion in this digital economy has markedly asymmetrical features. A sizable portion of the technologies used in the region – cloud infrastructures, algorithmic architectures, AI services, and digital platforms – are developed outside the region. Local capacity for research, technological innovation and computational knowledge production continues to be limited compared to the main global innovation centers.

Digital infrastructures are now at the heart of the global economy. Digital platforms, data centers, cloud computing services, and algorithmic systems are part of the structures that regulate the circulation of information, economic production, and the exercise of power in the contemporary world system (Sassen, 2016; Couldry & Mejias, 2019).

This situation maintains continuity with historical patterns of the world system. For much of the twentieth century, peripheral economies occupied subordinate positions in the international division of labor, linked to the export of raw materials and the import of industrial goods. The digital economy does not eliminate these asymmetries; it introduces new forms of reorganization of economic, technological, and cognitive power.

The concept of algorithmic coloniality opens new lines of research on the geopolitics of artificial intelligence and on the ways in which societies in the Global South can construct strategies of technological sovereignty.

1. From Industrial Dependence to Digital Dependence

The theory of dependence, developed by authors such as Raúl Prebisch, Theotonio Dos Santos, Fernando Henrique Cardoso and Enzo Faletto, argued that underdevelopment is not a stage prior to development, but the result of an unequal insertion in the world economy. In this scheme, technological innovation, capital, and productive capacity were concentrated in the industrial centers, while the peripheral economies played subordinate roles within the global structure.

In the twenty-first century this structure does not disappear, although it adopts new configurations. Dependency is no longer organised exclusively around industrial production or the export of raw materials and is moving towards the control of digital infrastructures, intellectual property associated with computational models and the concentration of large volumes of data.

The infrastructure that sustains contemporary artificial intelligence systems—computational processing power, foundational model development, and massive data storage—is concentrated in large technology companies and innovation centers located in the Global North. In contrast, a large part of Latin American countries participates as consumers of digital services, data generators, and users of technological platforms.

This process involves a transition from industrial dependence to a form of digital and cognitive dependence. If in previous stages the periphery exported raw materials and imported manufactured goods, in the digital economy it exports data, patterns of behavior and digital attention, while incorporating classification, prediction and decision-making systems developed outside the region.

The resulting inequality is not limited to the economic level. It also involves the control of informational infrastructure and knowledge production systems, configuring relations of subordination that operate simultaneously in technological, epistemic, and institutional dimensions.

2. Coloniality of power and algorithmic classification

The concept of coloniality of power, developed by Aníbal Quijano (2000), allows us to understand how the global hierarchies constructed during colonial modernity continue to structure power relations beyond the formal end of colonialism.

Coloniality is not simply a legal or political regime inherited from colonialism, but a matrix of power that durably organizes the production of knowledge, the international division of labor, structures of authority, and forms of subjectivity.

In the digital age, this matrix does not disappear; on the contrary, it is reconfigured through technological infrastructures and automated classification systems.

Social classification no longer operates exclusively through state censuses, bureaucratic systems, or explicit racial hierarchies, but also through automated predictive models that assign probabilities, risks, and profiles to individuals and populations.

Artificial intelligence (AI) systems classify populations into categories such as:

- Credit Risk
- Employability
- Danger
- Reliability
- Informational relevance

These systems can reproduce historical biases—racial, gender, or territorial—when trained on data that reflect pre-existing structural inequalities.

Algorithmic coloniality can be defined as the reproduction and reconfiguration of hierarchies of power, knowledge, and social classification inherited from colonialism through algorithmic systems and digital technologies, particularly in the context of artificial intelligence, big data, and automated governance. This concept stems from Aníbal Quijano's notion of the coloniality of power, according to which the structures of domination created during European colonial expansion—especially racial classification, the international division of labor, and epistemic hegemony—continue to organize global relations even after the formal end of colonialism.

In the digital age, these structures do not disappear; they are reconfigured into technological infrastructures and automated sorting systems. Algorithms used to process large volumes of data, make automated decisions, or produce social predictions operate as new social categorization devices, capable of classifying populations according to variables such as risk, productivity, reliability, or relevance.

Algorithmic coloniality manifests itself when:

- The criteria for technological classification are designed from centers of global technological power (in the global North).
- The data used to train artificial intelligence systems to reproduce historical inequalities.
- Algorithmic models are universally applied without considering specific social, cultural, or historical contexts.

As a result, algorithms can reproduce or amplify structural biases related to:

- Race
- Gender
- territory
- Social class
- Language
- access to digital resources.

In this sense, algorithmic coloniality implies that the power to define social categories, produce knowledge, and organize economic and political life is shifted towards technological infrastructures controlled by external corporate and geopolitical actors, generating new forms of technological dependence and epistemological subordination.

For regions such as Latin America, Africa or Southeast Asia, this phenomenon can translate into a new modality of global asymmetry, where digital technologies reproduce historical patterns of domination through neutral processes of automation and data analysis. Algorithmic coloniality describes the continuity of colonial power structures in the technological architecture of the digital age, where algorithms function as contemporary instruments of classification, control, and knowledge production.

In the Latin American space, this dynamic acquires implications. Algorithmic models designed in different sociocultural contexts can be applied without critical adaptation to profoundly different social realities, producing analytical distortions, social exclusions, and misclassifications. Algorithms have become central instruments for organizing the circulation of information and automated decision-making. Recent research has analysed the social power of algorithms and their growing influence on contemporary digital governance (Beer, 2017; Gillespie, 2014; Kitchin, 2017).

3. Platform capitalism and concentration of power

Platform capitalism has established itself as one of the predominant forms of economic organization in the current phase of global capitalism. Digital platforms function as intermediaries that collect and process large volumes of data, organize interactions between users, and transform these activities into economic value. Its power is based on the control of strategic digital infrastructures and the ability to establish private rules that, in practice, regulate large spaces of social life. The processes are part of broader

dynamics of *datafication* of social life, in which everyday practices, behaviors, and social relations become data that can be processed within the digital economy (Arriagada, 2020). Global epistemic hegemony is thus translated into technological architectures that make indigenous languages, informal economies, community practices, and social dynamics of the region invisible, reproducing in the digital space the historical asymmetries of the world system.

Artificial intelligence systems play a significant role in the organization and expansion of these platforms. Through data analysis and predictive models, these systems make it possible to segment markets, anticipate behavior patterns, and automate various decision-making processes. In this way, digital platforms not only facilitate economic transactions, but also influence the organization of social relations, access to information and the circulation of knowledge.

The concentration of data and processing capacities generates strong network effects that tend to consolidate dominant positions in the digital market. This process favors the formation of oligopolistic or monopolistic structures in the technological field. As a result, there is an accumulation of power that combines economic, informational, and political dimensions.

From a structural perspective, this phenomenon can be interpreted as part of a broader transformation of the contemporary world system. Centers of global power are no longer defined solely by the control of financial or industrial capital, but also by the ability to concentrate and manage cognitive resources, digital infrastructures, and global data flows.

4. Critical articulation for Latin America

The convergence between the approaches of dependence, coloniality and platform capitalism allows us to interpret the development of advanced digital technologies as part of a global power structure. Rather than constituting a purely technical innovation, its expansion is inscribed in economic, political, and epistemological relations that organize the contemporary world system.

From a critical Latin American perspective, the central problem does not lie in technological adoption per se, but in the historical and institutional conditions under which such adoption occurs. When these technologies are developed primarily in innovation hubs in the global North and deployed in other regions without institutional or contextual adaptation processes, they can reproduce historical patterns of subordination.

In this context, the expansion of advanced digital systems can reinforce center-periphery dynamics if the countries of the region participate only as consumers of externally developed technologies. However, margins can also be opened for the development of own capacities when policies aimed at digital sovereignty, sustained investment in scientific research, and the construction of regulatory frameworks appropriate to the social and institutional realities of the region are promoted.

From this perspective, the contemporary dispute is not limited to the economic field. It also involves the control of the processes of knowledge production and the technological infrastructures that organize the circulation of information. Digital architecture and technical standards actively participate in the definition of social, economic, and cultural categories that guide decision-making processes in various institutional areas.

II. Methodology

The study is framed in a theoretical reflection supported by documentary review and interdisciplinary conceptual analysis**.** The methodological approach is qualitative and is oriented to the analysis of the transformations associated with the expansion of digital infrastructures and artificial intelligence systems in the contemporary economy.

The research is based on a review of academic literature specializing in digital political economy, sociology of technology, decolonial studies, and world-system theory. Academic production from different fields of social sciences is examined with the purpose of identifying theoretical debates related to digital platforms, algorithmic governance, technological inequality, and digital sovereignty.

Likewise, a comparative analysis of public policies linked to the development and regulation of digital technologies in Latin America is incorporated**.** For this purpose, institutional initiatives, and regulatory frameworks in countries such as Brazil, Mexico, Chile, and Argentina are considered, selected for their relevance in the recent development of national strategies in terms of digital transformation and technological governance.

The analysis is developed from a critical hermeneutical perspective, oriented to the interpretation of the power relations that cross the contemporary configuration of digital infrastructures. The interest of the study is not focused on the measurement of quantitative effects, but on the examination of the institutional, economic, and geopolitical frameworks that condition the expansion of algorithmic systems and their relationship with historical trajectories of technological dependence and epistemic subordination.

In this analytical context, the category of algorithmic coloniality is introduced, used to examine the relationship between technological architecture, knowledge production, and reorganization of global hierarchies in the digital economy.

III. Algorithmic coloniality

The concept of algorithmic coloniality seeks to describe a transformation in the forms of organization of knowledge and power in the digital age. If modern coloniality structured the world system through racial, epistemological, and economic classifications, that placed Europe as the centre of legitimacy and large regions of the world as subordinate peripheries, digital technologies introduce new modalities of social classification.

In this context, technological infrastructures and data analysis systems are playing an increasing role in the organization of economic, social, and political life. Automated decisions, recommendation systems, and predictive models incorporate classification criteria that influence areas such as credit, employment, security, or the flow of information.

Coloniality does not disappear in this new technological environment. Rather, it is reconfigured through digital infrastructures, technical standards, and information processing systems developed in global technology centers. These systems may incorporate cultural assumptions, categorization criteria, and epistemological frameworks that do not always reflect the social and historical realities of the regions where they are subsequently applied.

In this sense, the expansion of digital technologies raises questions about the global distribution of knowledge, the control of informational infrastructures and the capacity of States and societies to actively participate in the definition of the technological architectures that organize contemporary social life.

1. Digital reproduction of the hierarchy of knowledge

Contemporary AI systems are primarily developed in academic and corporate environments located in major technology hubs in the global North. Foundational models are trained using large volumes of data that incorporate linguistic contexts, cultural frameworks, and normative criteria specific to those environments of technological production.

When these models are implemented in Latin America without processes of institutional adaptation or contextualization, it is not only a technology transfer that occurs. Classification schemes and interpretative criteria that influence the way in which social, economic, or administrative problems are defined are also transferred.

Under these conditions, the ability to establish categories such as risk, merit, reliability, or productivity tends to be concentrated in spaces outside the region. Data analysis systems and predictive models are not only involved in operational processes; they also participate in the production of categories that structure decision-making in different institutional spheres.

From this perspective, the notion of algorithmic coloniality refers to a form of dependence that is not limited to access to digital technologies. It also involves the production and circulation of knowledge encoded in technological infrastructures. The central issue is related to the location of the centers where the models are designed, the classification criteria are established and the informational architecture that organizes the digital economy are controlled.

2. Biased data and amplification of inequalities

Artificial intelligence systems developed outside the region, trained on datasets that reflect historical inequalities and applied in different institutional contexts, can reproduce or intensify pre-existing social gaps.

Machine learning models operate from patterns identified in the data used during their training. When these data incorporate structural inequalities, these inequalities can be transferred to the results produced by algorithmic systems.

3. Various areas illustrate this problem

- Credit evaluation systems can penalize territories or populations that have historically had less access to financial services.
- Algorithms used in labor contracting processes can reproduce differences associated with gender, social origin, or educational trajectory.
- Predictive systems applied in security policies can reinforce processes of territorial stigmatization when they are based on historical records of police intervention.

Automating decision-making processes does not necessarily eliminate the biases present in the source data. In some cases, it can consolidate them into technical systems that present their results as derived from statistical or mathematical procedures.

In societies characterized by prominent levels of social inequality, as is the case in several Latin American countries, the application of models developed in other institutional contexts poses important challenges. Without mechanisms for critical evaluation, public regulation and local production of technological knowledge, algorithmic systems can contribute to reproducing forms of social exclusion that are less visible due to their technological mediation.

4. Epistemic exclusions and invisible languages

One of the most relevant aspects of the so-called algorithmic coloniality is related to the limited cultural and linguistic representation in contemporary digital systems. Many language models have been developed from large volumes of data produced in dominant languages, which favors the centrality of global languages and reduces the presence of indigenous languages and cultural expressions typical of various regions of Latin America.

This linguistic asymmetry has concrete implications. The limited availability of digital tools in indigenous languages limits the access of many communities to basic technological services. At the same time, the automatic interpretation of texts or discourses from diverse cultural contexts can produce simplified or inaccurate representations of indigenous peoples' social practices and forms of knowledge.

Likewise, the limited presence of non-Western intellectual traditions and worldviews in digital systems contributes to restricting the diversity of perspectives incorporated in contemporary technological environments. When data repositories and language models are built primarily from dominant cultural sources, other forms of knowledge tend to fall outside digital coding processes.

From a critical sociological perspective, this situation can be understood as a form of epistemic exclusion. The production of knowledge mediated by technological

infrastructures not only organizes information but also delimits which knowledge is integrated into digital systems and which remains marginal. In this sense, current technological transformations raise questions about the diversity of knowledge represented in information systems and about the conditions in which different forms of knowledge manage to be incorporated into the digital architecture that organizes the contemporary circulation of knowledge.

5. Automated Regulations and Codified Power

Artificial intelligence systems incorporate assumptions about behavior, efficiency, risk, and social value. Such assumptions are not alien to normative criteria, even when they are formulated as technical parameters. In this sense, classification and prediction models are not mere operational instruments, but devices that translate certain criteria of social order into codified procedures.

Algorithmic systems intervene in inclusion and exclusion processes, prioritize profiles, assign probabilities, and establish priorities. Its relevance lies not only in the automation of decisions, but also in the ability to introduce regulatory criteria without necessarily visible public deliberation.

From this perspective, the so-called algorithmic coloniality can also be understood as a shift in the capacity to classify and manage populations towards digital infrastructures of transnational scope. Functions that were once predominantly associated with the State—identifying, recording, categorizing, administering—are increasingly dependent on technological systems designed and operated outside national control frameworks.

6. Latin America in the face of the dilemma

For Latin America, the problem is not only in incorporating innovative technologies, but in the structural conditions under which this incorporation occurs. Without its own technological development capacities, without regulatory frameworks appropriate to regional realities, and without investment in local production of data and knowledge, the region can deepen contemporary forms of dependence.

In this context, algorithmic coloniality should not be understood as an inevitable outcome, but as a plausible trend when technological subordination, institutional weakness and the absence of digital sovereignty strategies predominate. Hence the importance of promoting policies aimed at strengthening scientific and technical capacities, expanding regional participation in technological design, and building public criteria for the regulation of automated systems.

IV. Democracy and algorithmic governance

The incorporation of artificial intelligence systems in electoral processes, digital platforms and public management devices introduces relevant transformations in the functioning of contemporary democracies. These systems not only mediate the

circulation of political information, but can also influence the formation of preferences, the segmentation of audiences and the structuring of public agendas.

One of the main problems is opaque micro-segmentation. Political campaigns can use predictive models to identify specific profiles, preferences, and concerns of differentiated segments of the electorate. Unlike traditional propaganda, this type of segmentation allows different, and even incompatible and incompatible messages, to be distributed without a common space for public scrutiny.

In several recent electoral processes, the use of large databases has been observed to classify voters according to patterns of digital consumption and behavior in networks. In Latin America, the growing centrality of platforms in political communication has highlighted the ability to guide public narratives without sufficiently clear mechanisms of transparency and control.

A second problem is the automation of disinformation. The mass production of texts, images or videos of plausible appearance can affect public deliberation and weaken trust in institutions, political actors, and electoral procedures. Coordinated networks of automated accounts have intervened in different electoral debates in the region, amplifying polarizing discourses or eroding the credibility of authorities.

A third aspect concerns the use of algorithmic systems in public administration. When these systems engage in the allocation of subsidies, prioritization of social policies, or risk assessment, the lack of transparency can make it difficult to understand the criteria applied and limit the possibilities of appeal and control. An automated system that determines priorities for access to social programs based on opaque variables can reproduce pre-existing exclusions without providing those affected with sufficient information about the procedure.

This does not imply that data analysis systems are not of public utility. Under appropriate conditions of regulation, supervision, and institutional responsibility, they can contribute to the strengthening of certain state capacities. Among other possibilities, they can facilitate tax audits, support anti-corruption mechanisms by detecting anomalies in contracting or improve administrative processes and access to services.

The central issue, therefore, is not exclusively technical. It refers to the distribution of design, supervision, and audit power. Without transparency, public control and institutional accountability, these systems can weaken the quality of democracy. Under appropriate governance frameworks, they can contribute to strengthening certain state functions and control mechanisms.

V. Labor market and structural inequality

The automation associated with artificial intelligence systems affects different national economies unequally. In countries with high informality, low productivity, and little social protection, as is the case in much of Latin America, its effects can be especially disruptive.

Among the most exposed sectors are administrative services, routine office tasks, certain segments of retail, customer service, and various basic data processing activities. In these areas, the expansion of automated systems can reduce the demand for certain intermediate tasks and accelerate the transformation of skills required in the labor market.

This does not necessarily mean a total disappearance of employment, but it does mean a meaningful change in its composition. Automated service tools can decrease the need for human operators; digital inventory management systems can reduce administrative functions; and automated analysis applications can replace some standardized accounting tasks.

In economies marked by structural informality, this transition is more complex. Many workers lack safety nets, access to job retraining or sufficient technical training to adapt to new production demands. In the absence of redistributive policies, inclusive training, and expanded access to technical and scientific education, automation can deepen wage, cognitive, and territorial inequalities.

In this scenario, a new international division of labor is taking shape. The main technology centers concentrate model design, infrastructure, data, and income derived from innovation, while large peripheries remain inserted in less complex tasks, consumption of platforms, and subordinate jobs within global digital value chains. Part of the Latin American workforce is already involved in data labeling, content moderation, and other ancillary tasks linked to the operation of global systems, while the main intellectual property and value added remain in external corporations.

Inequality thus takes on an additional dimension linked to the control of knowledge, infrastructure, and the capacity for innovation. For Latin America, the challenge is not to stop automation, but to articulate policies for job reconversion, university strengthening, investment in research and adaptive social protection. Without this, the region can consolidate an insertion of low technological complexity and high dependence on external architectures.

In general terms, both in the democratic and in the workplace, the effects of artificial intelligence depend less on an autonomous technological logic than on the institutional and power structures in which its implementation is inscribed.

VI. Cognitive Justice and Epistemologies of the South

The discussion on artificial intelligence in Latin America cannot be reduced to issues of infrastructure, regulation, or employment. It also refers to a dispute over production, legitimation, and circulation of knowledge. In this context, the notion of cognitive justice acquires special relevance.

Cognitive justice is based on the recognition that there is no single legitimate regime to produce knowledge. It implies admitting the plurality of scientific, technical, community, indigenous and popular knowledge; and to examine the conditions under which some acquire centrality while others are marginalized. In the digital context, this

implies not only discussing access to technology, but also participation in its design and in the definition of its categories of operation.

1. Epistemologies of the South and technological production

The epistemologies of the South have pointed out that dominant knowledge has historically been defined by centers of power that make peripheral experiences invisible. In the digital field, this dynamic reappears when artificial intelligence models are trained on data originating in contexts of the global North. The expansion of automated systems has also raised concerns about the reproduction of social inequalities. Numerous studies show that algorithms can reinforce patterns of structural discrimination when applied in areas such as credit, employment, or the management of social services (Noble, 2018; O'Neil, 2016; Eubanks, 2018).

The opacity of algorithmic systems also poses challenges in terms of transparency and accountability. The inner workings of many algorithms remain inaccessible to users and regulators, making democratic control of these technologies difficult (Pasquale, 2015).

This has concrete consequences. Linguistic models tend to prioritize dominant variants of Spanish or English, while indigenous languages such as Quechua, Aymara, Guarani, or Nahuatl are poorly represented. Cultural recommendation systems tend to privilege productions that are widely integrated into global circuits. Credit evaluation algorithms can operate with assumptions that are not suitable for contexts marked by economic informality or by unconventional forms of productive organization.

When these architectures are applied without critical mediations, forms of epistemic exclusion occur. It is not only a question of unequal access, but of the absence of certain knowledge, experiences, and rationalities within the very logic of the system.

2. Algorithmic design with cross-cultural perspective

A more active regional participation in the design of algorithmic systems requires developing its own capacities for research, infrastructure and technological production incorporating intercultural perspectives.

This could be expressed, for example, in the development of linguistic models trained with corpora in indigenous languages and regional variants; in systems applied to agriculture that integrate local knowledge on climate cycles and biodiversity; or on educational platforms sensitive to Latin American historical and cultural contexts.

Cognitive justice does not require isolating oneself from global technological developments but rather expanding the regional capacity to intervene in their design, adaptation, and policy guidance.

3. Inclusive STEM education and the cognitive gap

A principal component of this agenda is the democratization of access to education in science, technology, engineering, and mathematics. Without a broad and inclusive base

of technical training, algorithmic production will tend to concentrate on already privileged social and territorial elites.

In Latin America, gender, class, and territory gaps in technological education remain deep. If technological development remains concentrated in socially homogeneous groups, the resulting systems are likely to reproduce partial visions of the social world.

Promoting inclusive STEM education means expanding training opportunities in public schools, strengthening scholarships for students in rural areas, incorporating intercultural perspectives into curricula, and fostering links between universities and local communities. The expansion of cognitive abilities is a relevant condition for any strategy of technological autonomy.

4. The epistemic dispute

In the end, the problem is political and epistemological. Programming implies defining categories of interpretation; Classifying involves assigning value, risk, or priority; Deciding through automated systems means institutionalizing certain criteria of social order.

If Latin America does not intervene in the definition of algorithmic standards, it will continue to be subordinated to external conceptual frameworks that do not necessarily reflect its social and historical diversity. The notion of cognitive justice aims precisely to problematize this asymmetry and to underline that technological development is also a space of conflict around legitimate forms of knowledge and the normative horizons of collective life.

In this context, regional autonomy depends not only on economic growth, but also on the ability to produce one's own knowledge and incorporate it into the digital infrastructures that organize growing dimensions of social life.

VII. Transnational Citizenship and Digital Borders

Human mobility is a structural dimension of contemporary Latin America. Millions of people circulate between countries in the region and to the United States and Europe, configuring forms of transnational citizenship in which rights, identities and ties exceed the strict framework of the nation-state.

In this context, the expansion of digital systems is modifying the state's management of mobility. The border is no longer presented only as a geographical limit, but also as a space of technological classification.

1. Automated immigration control

Digital systems are increasingly involved in biometric identification processes, evaluation of migratory applications, cross-referencing of databases and detection of patterns considered suspicious. A visa applicant can be assessed, prior to any substantive human review, by systems that integrate travel history, biometric data, administrative records, and other indicators.

The central problem is not only technical. If these systems have been trained with data that associates certain territories or social profiles with risk or instability, they can reproduce structural biases against people from impoverished or stigmatized regions. Exclusion does not disappear; it adopts probabilistic and less visible modalities.

2. Biometrics and surveillance

The use of facial recognition at airports, border crossings and urban spaces raises relevant questions in terms of privacy, due process, and fundamental rights. A misidentification resulting from poor databases or less accurate models for certain population groups can lead to profound consequences, such as undue arrests or unjustified restrictions on mobility.

The asymmetry is particularly significant when the persons concerned are unaware of the classification criteria that condition their administrative or legal situation.

3. Invisible exclusions and differentiated citizenship

In contexts of intense regional mobility, automation can contribute to consolidating differentiated forms of citizenship. Systems that prioritize procedures according to estimates of formal labor insertion, economic stability, or other indicators can reinforce pre-existing disadvantages of those who come from trajectories marked by informality or precariousness.

From the perspective of transnational citizenship, this is problematic because effective access to rights begins to depend on digital architectures whose functioning is beyond the knowledge and control of the subjects involved.

4. Ethical governance and human rights

Faced with this scenario, the regulation of automated systems applied to human mobility must be articulated with human rights standards. This requires, among other elements, the right to explanation for automated decisions, effective appeal mechanisms, transparency in the criteria used, protection of personal and biometric data, and independent oversight.

The expansion of digital frontiers does not eliminate the need for democratic accountability; on the contrary, it makes it more demanding.

VIII. Digital sovereignty and the regional agenda

If digital technologies reconfigure power relations, Latin America needs a regional strategy that strengthens its decision-making capacity. Digital sovereignty does not equate to technological isolation, but to the effective possibility of intervening in strategic issues related to infrastructure, data, regulation, and knowledge production.

1. Regional cloud infrastructure

A considerable part of Latin American data storage and processing today depends on infrastructures controlled by foreign corporations. This situation generates technological dependence, geopolitical vulnerability, and regulatory limitations.

The development of regional cloud infrastructure could expand control over strategic data, especially in sensitive areas such as health, education, or public administration.

2. Data Policy Coordination

The lack of regional articulation weakens the negotiating position of Latin American countries vis-à-vis large technology corporations. When each state negotiates in isolation, power asymmetries intensify.

Building common standards in data protection, competition and algorithmic regulation could strengthen regional advocacy capacity and reduce regulatory fragmentation.

3. South-South cooperation in artificial intelligence

South-South cooperation is a strategic alternative for sharing infrastructure, developing joint research, promoting regulatory standards, and strengthening regional scientific capacities. Latin American university consortia and research networks could play a significant role in the production of linguistic models, data analysis systems and tools adapted to regional contexts.

4. Asymmetry and bargaining power

The expansion of global digital platforms has given rise to new forms of economic accumulation based on massive data mining. This is a phenomenon described as a form of data colonialism, in which human experiences are transformed into exploitable resources within digital capitalism (Couldry & Mejias, 2019; Couldry & Yu, 2018).

The consolidation of the platform society has reorganized entire sectors of the economy through digital infrastructures controlled by a small number of global technology companies (Van Dijck, Poell & De Waal, 2018).

These transformations can be analyzed from the perspective of world system theory, which highlights the persistence of structural hierarchies between centers and peripheries within the global economy (Wallerstein, 2004; Arrighi, 2007). From this perspective, contemporary technological inequalities reflect historical patterns of concentration of economic power and knowledge.

Latin American dependency theory had already pointed out that global economic development is organized based on asymmetrical relations between central and peripheral economies (Cardoso & Faletto, 1969). In the context of digital capitalism, these relationships take on new forms linked to the control of technological infrastructures, data, and artificial intelligence systems.

The concept of coloniality of power allows us to understand how these technological hierarchies are articulated with historical structures of domination in the production of

knowledge and in the organization of the world system (Quijano, 2000; Mignolo, 2011).

Algorithmic coloniality can be understood as the reproduction of economic, epistemic, and normative hierarchies through digital infrastructures and automated decision-making systems concentrated in global technology centers.

Without a regional agenda, Latin American countries face in a fragmented manner corporate actors with far superior technological, financial, and legal resources. This prolongs, in the digital sphere, historical dynamics of dependency.

5. Convergence between citizenship and sovereignty

The relationship between transnational citizenship and digital sovereignty is close. If citizens increasingly interact with global digital infrastructures, states need effective capacity to regulate them and subject them to public principles.

Without its own infrastructure, without regional coordination, and without robust regulatory frameworks, Latin America runs the risk of becoming a space for technological implementation without sufficient decision-making capacity on its conditions of use. Digital sovereignty, therefore, also refers to a geopolitical issue and to the collective capacity of the region to intervene in the definition of the conditions of its technological insertion.

IX. Conclusion: Artificial Intelligence and Cognitive Autonomy in Latin America

Artificial intelligence occupies an increasingly prominent place on the Latin American horizon not only as a technological innovation, but as a strategic dimension of contemporary transformations of power, knowledge, sovereignty, inequality, and citizenship.

Various critical approaches have raised the need to develop alternative models of digital governance. The notion of cognitive justice proposes to recognize the plurality of knowledge and promote a more equitable distribution of knowledge on a global scale (Santos, 2014). Discussions on technology and data in the Global South also underscore the importance of strengthening regional scientific capacities and developing regulatory frameworks that reduce contemporary forms of digital dependency (Milan & Treré, 2019).

The regulation of artificial intelligence and digital markets is one of the main challenges for contemporary political systems. Public policies must balance technological innovation, economic competition, and protection of social rights in a context of rapid technological transformation (Varian, 2019). These transformations are also part of broader processes of reconfiguration of global capitalism and structural crises of the contemporary economic system (Harvey, 2010; Gonzales-Lara, 2025).

For the region, the underlying issue is not merely technical. It relates to the way in which Latin America is inserted into a broader reconfiguration of the world system, in

which power is increasingly articulated around digital infrastructures, data economies, and algorithmic architectures. In this context, dependency is no longer expressed only through debt, raw materials, or unequal trade exchange, but also through forms of technological and cognitive subordination.

The notion of algorithmic coloniality is useful to describe this process: automated systems that can reproduce historical hierarchies under neutral technical formats. When a system classifies migratory risk, prioritizes access to credit, or modulates the circulation of information, it not only processes data; it intervenes in the distribution of opportunities, rights, and forms of recognition.

From this perspective, the question of justice in the twenty-first century includes a cognitive dimension. It is not only a question of distribution of resources, but also of participation in the production of knowledge, in the definition of categories and in the design of technological infrastructures. For Latin America, a region traversed by persistent inequality, cultural diversity, and high human mobility, the expansion of artificial intelligence can reinforce existing exclusions or contribute to new institutional capacities, depending on the policy and regulatory frameworks that accompany its development.

The articulation between digital sovereignty and transnational citizenship acquires, at this point, a particular relevance. Latin American diasporas can play a significant role as knowledge circulation networks, technical links, and institutional mediations between national contexts and global innovation spaces.

Cognitive autonomy, in this framework, does not imply technological autarchy. Rather, it refers to the ability to negotiate, produce one's own knowledge, develop infrastructure, strengthen regional cooperation, and intervene in the ethical governance of digital systems from perspectives compatible with human rights and epistemic plurality.

The development of artificial intelligence functions as a privileged field to observe the structural tensions of the region. Old asymmetries and new forms of power converge there. What is at stake is not only the adoption of certain technologies, but the ability of Latin America to actively participate in defining the political, normative, and cognitive conditions of the contemporary digital order.

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Biodata

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