
CHAPTER 5

# Chinese and U.S. AI and Cloud Multinational Corporations in Latin America

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## Introduction

Many analysts and pundits believe that Artificial Intelligence (AI) is becoming a major disruptive force to world order. Research has so far mainly focused on AI's potential effects on the balance of power, particularly the struggle for digital leadership between the U.S. and China, and to a lesser extent India, Russia, and the European Union.[1] In a nutshell, (neo)realist readings assume that to understand the impact of AI on the world order only state matters, specifically Great Powers and their military. The remaining nations will become data colonies, mere norm takers, or passive adopters of technologies developed elsewhere. By contrast, this chapter argues that the so-called Global South does matter, since it has become the playing field where the main multinational corporations (MNCs) of leading nations compete in exporting its AI technologies and services, shaping a private governance of AI.

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Despite the AI academic field has almost seven decades, recent advances in data, algorithms and digital infrastructures have brought it to the agenda of high politics. Indeed, the proliferation of digital devices has paved the way to a massive increase of data, producing a data deluge prone to sophisticated analysis. These big data require specific algorithms to detect patterns, among which deep learning approaches have produced outstanding results.[2] Besides, these algorithms are accessible to programmers for free through open-source deep learning frameworks, many developed by leading U.S. Big Tech companies, such as TensorFlow by Google or PyTorch by Facebook. Yet, these breakthroughs would have been impossible without more powerful Graphic Processing Units (GPUs). Although expensive, the access to such processing capacity at scale has become easier by buying computing power from cloud companies. This blurry concept refers to the provision of computing capability as a service,[3] which was the dominant model of computing before the invention of the PC.[4] Recognizing the importance of computing power for AI, MNCs are moving fast to build global networks of data centers, that is huge infrastructures consuming considerable energy in order to provide the needed computing power for AI services for its clients across the globe. Hence, if we want to understand the societal impacts of AI, we need to examine AI-Cloud-MNCs,[5] which are at the frontiers of developing and disseminating globally AI and the required cloud infrastructure.

Latin American states lack the capabilities to compete at the frontier of AI. Yet, these states have many firms and citizens capable of producing the critical resource of the AI-based economy: data.[6] Not surprisingly, we find that several Big Tech corporations, mainly from the U.S. and to a lesser extent from China, are offering AI-based products and services through the cloud to citizens, firms, and governments to help them embrace digitalization, a process that the COVID-19 pandemic has accelerated. Consequently, Latin American states are becoming increasingly entangled with these foreign AI-Cloud-MNCs that are shaping a private governance of AI and the cloud. This raises the following questions: What are the political strategies employed by MNCs of different home countries to shape the global governance of AI and the cloud in Latin America? What are the potential implications of these trends for development? How are states and civil society organizations engaging with these enterprises?

In order to shed light on these issues, the chapter will employ a Neo-Gramscian perspective to compare the material, discursive, and organizational resources mobilized by such MNCs in attempting to establish an hegemony for the governance of AI and the cloud, together with concepts from the critical global political economy literature. Methodologically, the chapter employs a case study approach, with MNCs as the unit of analysis. Specifically, I analyze the most relevant AI-Cloud-MNCs that are active in Latin America in terms of their home country and of global market share,[7] namely, Amazon and Microsoft from the U.S. and Huawei from China.

The main argument is that the spread of AI and the cloud will not necessarily usher a new era of abundance nor generate a new condition of dependence, but rather accentuate problematic processes of uneven and combined development in the region. This is a consequence of the ongoing war of position[8] among U.S. and Chinese AI-Cloud-MNCs to spread and govern these technologies, which so far is targeted to the most resourceful actors. Besides, states have been engaging in different ways with these foreign corporations, depending on specific social forces in each country, their preexisting relations with MNCs' home countries and their technological capabilities, while there are scarce counterhegemonic social forces criticizing these foreign AI-Cloud-MNCs.

The rest of the chapter is organized as follows. Section "Analytical Approach" outlines the analytical approach. Section "Digitalization and Latin America" describes relevant macro trends in Latin America regarding digitalization, followed by a synthesis of the main AI policies in AI-Cloud-MNCs' home states. Section "AI-Cloud-MNCs Strategies in Latin America" characterizes the material, discursive, and organizational strategies employed by AI-Cloud-MNCs in Latin America, whereas section "Uneven and Combined Development" describes how they contribute to processes of uneven and combined development. Finally, section "Latin American Strategies to Face AI-Cloud-MNCs" examines how states and civil society are relating with these strategies by AI-Cloud-MNCs operating in the region.

## Analytical Approach

This section introduces the analytical approach to criticize the nascent AI governance in the Global South, which draws ideas from the literature

on business strategy, international environmental governance, and uneven and combined development.

Levy and Newell[9] seminal contribution employed ideas inspired by Gramsci's analysis of hegemony to comprehend the political dimension of international environmental governance. By contrast to previous perspectives that focused on the interaction between MNCs and states,[10] the authors stressed the multiple other actors that may also influence governance processes. Besides, this approach goes beyond a purely economic analysis by indicating that other types of sources of power are equally important. Indeed, in order to comprehend how MNCs attempt to shape a regime, Levy and Newell propose to study the discursive and organizational strategies of such corporations, besides their material power. The latter covers, for example, the financial and infrastructural resources that a firm can mobilize, whereas the discursive strategies include concepts and slogans that corporation use to present their products and services under a positive light. Finally, the organizational dimension refers to the types of alliances that MNCs establish with states, other firms, NGOs, and intergovernmental organizations to protect and legitimize their market shares.

As regards Bieler and Morton's historical materialist approach to the international economy, it rejects the fictitious clear-cut separation of concepts, such as dividing the national from the international, or considering the state as an homogeneous and indivisible unit distinct from other social forces.[11] Instead, this perspective has a radical ontology that accepts internal relations among concepts, such as the forces of production, state-society relations, and class struggle. Three concepts from this approach matter for understanding the emerging patterns of Global South relations with foreign AI-Cloud-MNCs: (a) class struggle; (b) interstate competition; and (c) uneven and combined development.

First, a historical materialist perspective assumes that capital, as a social relation, creates divisions between those who own it and the means of production versus those who must sell their labor power to survive.[12] This leads to specific social-property relations that vary in time; thus, it is not a deterministic economic approach. Contrarily, the social forces and struggles that unfold in varied particular historical contexts are at the center of the analysis. Besides, these social forces operate within the boundaries of preexisting material structures, thus, in this perspective, class struggle

is the link between structure and agency. Therefore, this historical materialist approach departs from realist, state-centric analysis, which is based on dichotomous understandings of states and markets.

Second, the need for social reproduction by capital and labor through the market explains the competitive drive in capitalism, which incentives innovation within and among countries,[13] encouraging economic rivalry in world politics. Indeed, with any new wave of technological innovation, states are pressured to imitate the leading countries in developing more productive relations of production to avoid lagging behind, such as AI currently illustrates. Firms from leading countries also need to expand to other markets to prevent the problem of overproduction[14] or excessive competition. Yet, internationalization processes depend on the specific social forces and their class struggles within their countries of origin, and how they are internalized by the recipient countries.[15] In this analysis, the role of ideas matter. In this line, constructivists and post-structuralists have made significant contributions; however, they are unable to explain why some sort of ideas come to be expressed and not others.[16] By contrast, a historical materialist approach understands that the ideas shaping such internationalization processes depend on the existing material structures and on the agency of specific, historically situated social forces and their organic intellectuals.[17]

Finally, not all states will relate equally to the internationalization of foreign MNCs, because these processes are shaped by their link to global capitalism. This is precisely the intuition that the concept of Uneven and Combined Development (U&CD) introduced by Trotsky attempts to capture. Instead of assuming that development is a linear process, U&CD accepts that there are multiple paths of development that societies might follow, shaped by how different sectors within a society connect to global capitalism. Taking the case of Russia, Trotsky[18] argued how some sectors were linked with the most advanced methods of capitalist production, whereas others remained excluded from such processes, thus the uneven. However, the advanced sectors in Russia still operated co-existing with stagnating ones, producing a specific set of production relations to the country, hence the combined. It is important to observe that Rosenberg[19] has recently expanded these ideas to claim that U&CD is a social theory of the international; however, the use of the concept in this paper is limited to the geographical unequal nature of the capitalist development process.[20] This is pertinent, because it challenges optimistic neoliberal beliefs on the positive outcomes derived from free trade.

In sum, the categories provided by Levy and Newell are useful to characterize the operation of AI-Cloud-MNCs in the Global South, whereas the concepts developed by Bieler and Morton help to understand the specificities of the emerging patterns of relation between states and foreign AI-Cloud-MNCs.

## Digitalization and Latin America

In order to contextualize how Latin American states link to foreign AI-Cloud-MNCs, it is important to bear in mind three macro-trends shaping digitalization in the region, namely, the Science, Technology, and Innovation (STI) deficit; the increased competition between the U.S. and China, and recurrent political instability.

The first trend is the persistent STI deficit in the region. While in developed countries there are dense links between firms and universities to commercialize new knowledge, Latin American universities remain scarcely linked to regional firms.[21] Additionally, in 2017, the total amount invested in R&D in Latin American countries only represented 3.1% of total global investments,[22] most coming from the public sector (58%), while in developed countries the private sector leads. There is an additional divide between states in the region, since most of the resources assigned to STI are concentrated in Brazil, México, and Argentina.[23] In this landscape, it is not surprising that in the specific field of AI, regional actors hardly appear in global rankings. Consequently, there is a clear need of partnerships with foreign AI-Cloud-MNCs to access such state-of-the-art technology.

The rise of China as a key investor and trading partner for many Latin American states is a second relevant and recent trend.[24] According to the U.S. foreign policy establishment, this is an unacceptable meddling to its historical influence in the region. Although such threat perception is not new, it has intensified since the expansion of President Xi Jinping's landmark project to Latin America, the Belt and Road Initiative (BRI).[25] Indeed, since the Trump administration launched its so-called Trade War against China, U.S. foreign policy has been systematically attempting to undermine the Asian superpower's global influence. This includes biased criticism of the BRI, spread of conspiracy theories over China's response to COVID-19, and the notorious boycott campaign against Huawei, among others. In this context, Secretary of State Mike Pompeo has popularized the realist reading that countries will have to

pick a side "[…] between freedom and tyranny."[26] Latin American states are not oblivious of such disputes, since several Chinese technology firms have been operating regionally, such as Alibaba, Didi, Huawei, Lenovo, Xiaomi, and ZTE to name a few. Unsurprisingly, the Trump administration has broken with the unwritten rule that a Latin American leads the Inter-American Development Bank, selecting instead a Cuban American hardliner, Mauricio Claver-Carone, who publicly stated that he seeks to instrumentalize the organization to push back against China's spread into the region.

Yet, the influence that the U.S. or China may have to favor their corporations in Latin American states hinges on the changing regional and national politics. While during the 1990s the ideas of the Washington consensus prevailed, the first decade of the twenty-first century saw the rise to power of the Pink-Tide. This term covered different left-wing leaning governments that put again the state at the center of the development process, chiefly to address social inequalities, based on the export of natural resources[27] and closer relations with China. However, the fall of commodity prices smoothed the path to a change in the political cycle. Many countries, such as Argentina, Brazil, and Ecuador, swayed again to the center- and extreme-right of the political spectrum. These and other like-minded nations adapted to President Trump's America First policy by attempting to close the best possible deals with its powerful Northern neighbor, in many cases echoing Trump's anti-China rhetoric and undermining regional integration processes.[28] However, these right-wing parties remain highly contested, and so does the foreign policy approach to take with China and the U.S. In fact, after national elections, left-leaning national parties are back in power in Argentina and Bolivia, whereas the aftermath of the pandemic has put other right-wing governments under serious stress.

## AI Policies in the U.S. and China

Interstate competition is important to understand the profit-oriented logics of firms internationalizing abroad. Thus, the expansion of AI-Cloud-MNCs to Latin America cannot be analyzed separately from the AI policies of their home states. Below I briefly synthesize the main trends in China and the U.S., which mold the strategies of their national AI-Cloud-MNCs.

The U.S. government is actively supporting AI. On February 2019, the government released the American AI Initiative,[29] which aims to ensure its leadership in this area, reason why it is against over-regulation.[30] Besides, the support of AI is argued in order to protect the country's economic and national security (Salas-Pilco, Chapter 9 in this book). These aims must be understood in the context of the broader technological competition with its main strategic rival, China. To face the challenge, the U.S. government is fostering public-private partnerships, for instance, executives of the most important technology firms, such as Alphabet, Facebook, and Microsoft, are already part of the government's Defense Innovation Board, contributing to the militarization of AI (Arif, Chapter 10 in this book). Despite such strategic interest on AI, its deployment remains contested. For example, several human rights organizations have been seriously questioning the implementation of AI systems that may endanger civil and political rights, such as facial recognition. Likewise, even leading technology firms have faced stiff internal opposition from employees, who oppose developing AI systems for questionable military and surveillance projects. As regards Latin America, on December 2019, the U.S. State Department launched an initiative competing with the BRI, Growth in the Americas, which aims to encourage private investments in regional infrastructures, including 5G that is considered central for AI's future growth.

Regarding China, in 2017 the government released the Next Generation Artificial Intelligence Development Plan, which outlined steps to become the world leader by 2030.[31] As in the case of the U.S., China is cultivating both civilian and military applications of AI (Salas-Pilco, Chapter 9 in this book). Furthermore, President Xi Jinping frequently mentions AI as part of the digital dimension of the BRI, which seeks to facilitate the internationalization of Chinese technology companies in partner countries. Several Chinese AI champions, such as Alibaba, Baidu, Huawei, Tencent, among others, are actively supporting these plans. Regarding discussions on AI ethics, China certainly lags behind the U.S. The implementation of a social credit system or the notorious use of AI in Xinjiang has already raised criticism from Western states and human rights organizations. These cases undermine the legitimacy of the export of Chinese AI. Nonetheless, there are signs of citizens opposition to the unchecked use of AI, though far less than in the U.S.

## AI-Cloud-MNCs Strategies in Latin America

The global expansion of MNCs from the U.S. and China is paving the way to distinct strategies of commercializing and governing AI and the cloud. It is important to observe from the outset that the empirical material shows the preeminence of U.S.-based MNCs in providing AI and cloud services. Due to space limits, I considered the two most important cases, AWS and Microsoft, which illustrate the tough competition between U.S. companies. Chinese firms do lag behind, but they have been ramping up their interest in the region, particularly Huawei. These three firms are building partnerships with governments, firms, and civil society organizations in order to legitimize their operations, and build an AI hegemony. Yet, none totally dominates, which points to an ongoing war of positions among them. Table 5.1 synthesizes the main features of the three AI-Cloud-MNCs that are further analyzed below.

### *Amazon Web Services (AWS)*

AWS is the cloud business unit of Amazon that began proving IT infrastructure as a service in 2006. Pioneering this business opportunity, AWS has become the largest company in terms of market share of IaaS

**Table 5.1** Features of the main Chinese and U.S. AI-Cloud-MNCs operating in Latin America

| | *Amazon* | *Microsoft* | *Huawei* |
|---|---|---|---|
| AI and Cloud business unit | Amazon Web Services (AWS) | Microsoft Azure | Huawei Cloud |
| Home Country | US | US | China |
| Data centers in Latin America | 1 in São Paulo | 1 in São Paulo | 1 in Chile<br>1 in Lima<br>1 in México City<br>1 in Buenos Aires<br>1 in São Paulo |
| Revenue (2019) in billion US$ | 280.52 | 125.5 | 121.72 |
| Net income (2019) in billion US$ | 11.59 | 39.24 | N/A |
| Research & Development (2019) in billion US$ | 35.93 | 16.88 | 17.4 (estimated) |

(47.8%), gaining 15.5 billion US$ of revenues in 2018. Besides infrastructure, AWS is the most influential firm in providing AI as a service by making state-of-the-art machine learning algorithms available to its clients. Organizationally, although AWS does not have decades long experience in Latin America, its leading position in the cloud sector has paved the way for the company's expansion in the region. In 2011, Amazon opened its first data center in São Paulo, Brazil, which reduced the communication delays of its services for regional users.[32] Since then, AWS has been enabling the digitalization of multiple actors in Latin America; for example, it provides the digital infrastructure to the main AI-based unicorns of the region, such as Rappi, the Colombian services delivery platform or Nubank, a Brazilian fintech. Even MercadoLibre, the main regional e-commerce company that competes with Amazon uses AWS. Public institutions, such as the Mexican national electoral institute, universities, and NGOs are also clients of AWS cloud and AI services.

In comparison with other US-based firms, AWS does not advocate an ethical approach to AI. The firm has no public AI ethics board, nor has it established a committee to regulate how its services are used. It has neither developed a specific discursive approach to attract new business partners in the region based on AI. This has raised criticism in the U.S., where law enforcement agencies have deployed AWS's facial recognition technologies for surveillance purposes, despite their far higher error rates with non-white people.[33] In reply, AWS has made public a guide rejecting much of the criticism, blaming clients instead for improper application of its AI.[34] Only after the repercussions caused by the death of George Floyd did the firm introduce a one-year ban to the use of facial recognition technology by police forces in the U.S. Nonetheless, it is fair to conclude that AWS prioritizes keeping and augmenting its global market share in the cloud and AI, rather than expressing concern for the unethical uses of such technologies.

In Latin America, AWS's market and organizational power has become more visible since it announced its plans to build a new regional data center. In a sort of remake of the competition between U.S. states to attract Amazon's second headquarters, Argentina's and Chile's governments have been competing to persuade AWS to build its data centers in their territories, striving to offer the best conditions. Leaks revealed that the Chilean Production Development Corporation, in charge of promoting national production and economic growth, classified AWS's

project as strategic; thus, it deserved a 9 million US$ subsidy.[35] Likewise, Argentina pledged a reduction of taxes and labor costs to AWS, and given the data center would be operating in a free trade zone, the firm would neither pay taxes for energy consumption,[36] an excessive offering for cloud infrastructure that utilizes a lot of energy. Both right-wing administrations prioritized the attraction of AWS under the promise that everyone would equally benefit from the externalities of such a project, a claim that needs to be seriously questioned, since it omits the fact that the profits to be extracted by AWS do seem far more substantial. Nevertheless, by 2020, AWS's final decisions remained to be confirmed, since the ongoing political and economic upheavals in both countries have clouded the stable economic situation that the company expected.

### *Microsoft*

Since its foundation in 1975, Microsoft has expanded to several business units, reaching a total market capitalization of over US$1.2 trillion, thus, its material power is significant. The firm has built a sophisticated network of subsidiaries and business partners across the world, including Latin America, where it has been investing for decades. Microsoft Azure is the firm's brand for cloud services, which provides several AI-related services. In 2013, the firm built its first data center in Brazil in order to meet regional demands and to compete with AWS.

In contrast to Amazon, Microsoft has taken an advocacy role in promoting the potential of AI. This involves investment in several social and environmental initiatives of AI for Good, including a program named AI for Health that became highly demanded during the pandemic. This optimist view on AI has been detailed in a book, where Microsoft stresses that this technology is a tool to augment human ingenuity,[37] a catchphrase frequently repeated by its employees in presentations across Latin America. Thus, instead of fear, we ought to be open to the new opportunities and societal transformations that AI will unleash. However, the firm is also concerned about potential abuses of AI, such as facial recognition, reason why Microsoft calls for more regulation in this area in particular, and the need of global regulation of AI more generally. In this line, Microsoft has made public principles for developing responsible AI systems and created internal structures to ensure such deployments, something absent in Amazon.

To disseminate these views in Latin American, the company has organized two Microsoft AI tours across selected countries in the region, which consist in the arrangement of a national event, where its subsidiaries show AI applications. The events are free and organized in trendy parts of the cities. Apart from marketing, the main aim is to sell paid technical certifications for those interested in learning Azure's services. Microsoft employees tout that they are democratizing AI by making such new technologies accessible to everyone.[38] This global slogan resonates well in Latin American countries, which have gone through a process of democratization during the 1980s; thus, besides access, the term refers to a shared value for the importance of democracy, which is something that Chinese firms cannot pitch about.

During Microsoft AI tours, the company has presented tailored reports for each country. The 2018 series were elaborated with an Argentinean thing tank, CIPPEC, whereas the 2019 reports were written by a U.S.-based consultancy company, DuckerFrontier.[39] Overall, these reports reproduce Microsoft's main discursive strategy to justify the urge to adopt AI. In a nutshell, they argue that if Latin American countries maximize AI's adoption, then, it would lead to better paid jobs, more profits for firms and higher levels of economic growth based on the increase of productivity. The allure of AI that Microsoft describes is certainly attractive to local politicians and firms willing to spur sluggish regional economic growth.

Despite the framing of ethical AI, in practice, things do not always turn as expected. For instance, in 2018, the government of the Argentinean Province of Salta announced they entered into partnership with Microsoft to use AI to predict the name and address of teenagers destined to suffer from undesired pregnancy. According to the provincial government, this foresight would allow the health services to address such a serious public health problem in advance. However, soon after its announcement, Argentine AI researchers denounced grave technical and conceptual errors in the application of the system that cast doubts on its claims,[40] such as predicting the future based on a problematic database of past unwanted teenage births. Even worse, the initiative was highly criticized for its racist and misogynist presumptions, discriminating teenagers of lower-resources, instead of facing the endemic sexist violence in the Province. Although Microsoft may not bore the whole responsibility of this outcome, this case illustrates the limits of the grandiloquent promises

by corporations to apply AI to address urgent regional social challenges ethically.

### *Huawei*

Huawei was founded in 1987 by Ren Zhengfei as a private company headquartered in Shenzhen, originally providing network equipment to telecommunication carriers.[41] From its early years, Huawei follows a strategy to invest considerably in R&D, both in China and by strategically opening R&D centers in foreign markets to gain competitive advantages.[42] These investments certainly paid off, allowing Huawei to pass from a latecomer to an innovative company, even leading in some areas, such as 5G.

The internationalization of the company began in the 1990s with its expansion to developing countries in order to gain trust and know-how from these markets to later access more advanced ones.[43] Since then, the firm has diversified to several business units, such as the electronics consumer market, or its cloud business unit, Huawei Cloud.[44] Huawei now operates in over 170 countries, with a market capitalization value similar to those of leading U.S. technology companies. Regarding Latin America, Huawei started opening subsidiaries around two decades ago, hence, it already has knowledge of local markets and a network of partners and customers. In several countries it organizes periodic Huawei summits to show its products and services. In contrast to U.S. competitors, Huawei Cloud launched data centers in smaller markets, such as Chile and Perú, both countries that had recently joined the BRI.

There are two main differences between the AI discourse of Huawei and the other corporations analyzed in this chapter. First, Huawei makes a distinct bet on the technologies that will transform the future, for example, during the launch of Huawei's data center in Chile, the company's president, Edward Deng, said:

> Cloud, AI, IoT, and 5G will be important drivers of digital transformation. Every industry can make significant progress by adopting these technologies. [...] We will empower governments and enterprises across Latin America and facilitate regional economic development.[45]

This statement explicitly links AI to other technological drivers of digitalization, namely, the Internet of Things (IoT) and the fifth generation

of telecommunication networks (5G), which is expected to be 100 times faster than 4G and able to service multiple devices simultaneously. As such, analysts perceive 5G as a game changer, that will pave the way to massive applications of AI. As one of the leading firms controlling patents and know-how on 5G, Huawei is supposed to have a competitive advantage over its foreign competitors, representing a challenging threat to the commanding market share of U.S. AI-Cloud-MNCs.

Second, the firm does not have an active global AI ethics advocacy position. Yet, Huawei has released a White Paper discussing AI Security, where it recognizes the technical, societal, and legal challenges that its application faces, and pledges to work together with all relevant stakeholders to develop new "[…] codes of conduct, standards, and laws to enhance AI security and privacy protection."[46] More broadly, Huawei frames its services as a contribution to the sustainable development goals by stressing its aim of "[…] bridging the digital divide and promote digital inclusion."[47] In this line, the firm has also launched several corporate social responsibility initiatives to train students from Latin America and to propel AI applications that address the digital divide, environmental challenges, the COVID-19 pandemic, among others.

Notwithstanding, Huawei faces considerable challenges. The Trump administration banned the sale of semiconductors to Huawei, which has put the sustainability of many of its business units under considerable pressure. Furthermore, the U.S. has led a global demonization campaign against Huawei, which is accused of facilitating espionage from the Chinese State and the export of an authoritarian model of governance. This has paved the way to the U.S. Clean Network program which aims "[…] to address the long-term threat to data privacy, security, human rights and principled collaboration posed to the free world from authoritarian malign actors."[48] By December 2020, Brazil, Ecuador, and Dominican Republic joined the program, which is explicitly targeted against Huawei and other Chinese corporations.

## Uneven and Combined Development

Despite the differences among foreign AI-Cloud-MNCs, their discursive power aims to convey the promise that AI will augment humans and firms' capabilities. As such, there is nothing to fear from AI powered innovations. As the argument goes, previous technological revolutions did cause loss of jobs, but these were only temporarily disruptions until

the workforce adapted. AI-Cloud-MNCs argue it will be no different this time, and they will provide the tools to embrace digitalization. This vision, advanced for obvious self-interest reasons, is also shared by techno-utopians, idealist engineers and scientists, in many cases naïve or not sensitive enough to the persisting asymmetries in our contemporary global capitalist economy. By contrasts, techno-pessimists fear that this new wave of automation is not as the previous ones, rather a far more threatening process that will considerably reduce employment, generating more global instability and even posing an existential menace to the human race. Instead of siding with these extreme positions, in the following I argue that AI will intensify processes of uneven and combined development in Latin America.

One usual trope advanced by AI-Cloud-MNCs is that this new technology will unleash a spur in productivity and economic growth. However, this claim neglects that in Latin America, the first adopters and main beneficiaries of AI-based innovations are the most dynamic export-oriented sectors, which specialize in the exploitation of natural resources. Unsurprisingly, the regional events organized by AI-Cloud-MNCs are targeted toward firms from these sectors, where they even showcase the successful use of AI by early adopters in agriculture, mining, and oil exploration. For instance, Fig. 5.1 shows Microsoft's poster advertising its 2018 AI event in Argentina. The image shows a female agricultural worker and a legend that asks: What are you going to achieve today?, in clear reference to how AI could help to improve the productivity of the already very wealthy agricultural export-oriented industry of the country. Even Huawei's CEO, when asked by journalists about potential AI applications in the region, he answered that "[…] if Latin American countries can make better use of natural resources with artificial intelligence, they will generate a huge bonanza."[49]

The upshot of these trends is that it seems unlikely that every industry and citizen will equally benefit from the adoption of AI. Besides, statements of AI accelerating the export of natural resource-based industries should be seriously questioned, because they neglect the historical and very problematic nature of the natural resource curse that the region suffers, which most countries have been trying to combat, though unsuccessfully. Surely, few tech savvy and resourceful start-ups may triumph in adopting AI solutions, but from the literature we know that innovation capabilities are geographically clustered and contribute to regional


**Fig. 5.1** Poster advertising Microsoft's AI at Buenos Aires' downtown (*Source* Photo by the author taken on March 2019)

development unevenly.[50] Hence, it is unreasonable to expect a different outcome from AI.

The future of work is another central issue in global debates on AI, which is even more problematic in Latin America, a region that has been enduring high levels of unemployment, underemployment, and of informal jobs during decades. Indeed, on average, 53% of the population in the region works in the informal economy.[51] Although some workers may benefit from few high-paid technical jobs in the formal economy, large parts of the population lack the skills and resources to become AI literate, thus, they may simply be excluded from the high paying and new digital jobs that the AI revolution promises. Instead, they may lose

jobs from automation or become precarious workers for gig economy AI-based platforms, such as Uber or Rappi, which are already causing social conflicts in many Latin American countries.

Obviously, these are not new issues. It could even be argued that the creation of inequalities is a central aspect of capitalism.[52] Besides, the transition to information of knowledge societies that began in the 1990s already brought the discussion of the growing digital divide to the fore. Indeed, in the case of ICT sector, there are many countries where the success of its firms and workers contrasts notably with those from lower productivity ones. But AI has the potential to worsen these divides, since it hinges on capabilities, such as knowing how to code, having advanced calculus levels, access to modern digital infrastructure, and so on, which take time to develop, something hard to accomplish in a region where education is a privilege for the few. Therefore, AI has the potential to exacerbate the class gap, and the ongoing conflict among them.

## Latin American Strategies to Face AI-Cloud-MNCs

Given these stakes, Latin American states have important decision to make with regard to how they interact with foreign AI-Cloud-MNCs. In a contribution discussing data, growth and development, Weber[53] identified four strategies that states could follow to promote growth via transnational data value chains: (a) linking with U.S. firms; (b) linking with Chinese firms; (c) mix of links with a and b; or (d) creating independent data value chains. Although Weber thought these categories for developed, but data dependent countries, such as European ones, they are still useful to examine the emerging patterns of Latin American states with AI-Cloud-MNCs. However, these analytical categories can be complemented by a historical materialist approach to offer better insights into specific case studies and non-state actors. In this line, this section applies and extends Weber's approach to Latin America.

U.S.-based AI-Cloud-MNCs have been operating in most countries during years, thus the default option for states is to engage with them to accelerate the process of digitalization. Only those countries with sharp geopolitical rivalry with the U.S., such as Cuba and Venezuela, are linking exclusively with Chinese firms. For instance, Cuba has signed agreements with China to create a joint center for AI, while President Maduro has stated that Venezuela will rollout the country's future 5G network with Chinese firms. Yet, the ongoing polarization in Venezuela, product of

class struggle, may alter the situation if U.S.-backed opposition forces arrive to power.

Despite its potential to incorporate Latin American countries to the AI revolution, both strategies are like a double-edged sword, because they link local actors to AI in a dependent way to foreign corporations. Indeed, foreign AI-Cloud-MNCs as key nodes in the provision of AI services seem to be the ones to benefit the most from the promised AI revolution, rather than local firms since they are becoming providers to most of them. Furthermore, the digital infrastructure of local firms will depend on the policies from the foreign AI-Cloud-MNCs home countries, making them vulnerable to arbitrary changes, espionage, and other cyber risks. The dependence will be even more problematic when AI-Cloud-MNCs become indispensable for the provision of AI-based services in the public sector and the military, which might cause a hard to reverse loss of digital sovereignty. For these reasons, the challenges identified by Weber[54] for devising a leapfrogging development strategy based on foreign AI-Cloud-MNCs from just one country do seem considerable.

In order to offset such an excessive dependence, it would seem reasonable for states to diversify links with AI-Cloud-MNCs from multiple home countries. Understandably, the current trend is a hedging strategy between U.S.-based and China-based AI-Cloud-MNCs. Take the case of Chile, which despite being a close U.S. strategic ally, it has joined the BRI aiming to position the nation on top of the regional interstate competition over which country benefits the most in trading with China. The strategy has attracted investments by Huawei, which opened a new data center in the capital. Illustrating these points, during the announcement of the investment, the director of Chile's agency in charge of attracting foreign investments said:

> *Huawei's investment to offer its public cloud in Chile to cover Chile and the rest of Latin America reinforces our country's position as a digital hub and leader in the region in technological and infrastructure transformation […] We are currently living with the Artificial Intelligence, so we have to be well prepared as a country and prepare our infrastructure for the work of the future.*[55]

However, the unraveling of the bilateral relation between the U.S. and China may put under pressure such an approach. As previously explained, the Trump's administration Clean Network program has intended to

persuade other states to ban Chinese technology firms. However, the efforts have not been entirely successful in Latin America, since only three countries subscribed to the program. Therefore, although they may be limits to the hedging strategy, the large number of countries resisting U.S. pressure indicates that there are many other factors shaping national policies toward Chinese AI-Cloud-MNCs. For instance, the country's historical relation with the U.S.; the balance between different social forces, such as the sectors with strong economic links with China and the U.S., the military's strategic position, the president's view, the increased anti-American perception after the arrival of Trump to the presidency, and so on; and national AI capabilities.

Techno-nationalist policies are feasible in Latin American countries with enough scale and policy autonomy to support national data companies and massively promote national research in AI, the cloud, and other digital technologies. Yet, it seems a farfetched option even in the countries with historical experience in industrialization most likely to apply them, namely, Argentina, Brazil, and Mexico. After all, AI is not the main priority of the current crises-laden administrations, and the capabilities gap with leading AI-Cloud-MNCs is significant. Nonetheless, given the history of resource nationalism in the region, the introduction of new regulations demanding data localization, the promotion of national AI industries, and other measures that strengthen national AI endeavors cannot be overruled in the future.

There are other options that Latin American countries could explore to balance such uneven and combined development process. First, there are different mechanisms for regionalism, such as Mercosur, UNASUR, CELAC, and so on. Although the last years have seen a weakening of these integration processes, it should not be precluded that in a future, if political alliances converge, digitalization could be incorporated into the regional agenda in order to harmonize an approach to balance the excessive asymmetry with extra-regional actors. Second, Latin American states could prefer to converge toward the norms that the European Union is developing to regulate AI and the cloud. This may increase regional states' leverage to regulate Chinese and U.S.-based AI-Cloud-MNCs and curtail negative impacts of these digital technologies. Third, Latin American states could increase its support and participation in the multilateral initiatives launched by the United Nations to regulate new emerging technologies.

Finally, AI-Cloud-MNCs have been employing its resources to construct links with different organizations that legitimize its strategies. By contrast, there is only a nascent group of civil society organizations attempting a war of positions that could challenge the discursive power and alliances of these corporations, pressuring them to develop AI technologies in really more sustainable pathways. Latin American countries have a long record of popular mobilization, which could be activated if the worst fears on AI start becoming a reality, or if demands for data sovereignty increase. Although this is still not the case, the scenario is likely under the light of emerging evidence that the so-called ethical approach to AI advanced by U.S. MNCs is a coordinated strategy to ensure that the technology is not over-regulated, safeguarding its profits.[56]

## Conclusions

The spread of AI to Latin America depends on foreign MNCs offering such services through their cloud infrastructure in the region. Contrary to those who believe in a new digital dependence or a new future of endless opportunities and sustainable development based on AI, this chapter has argued that foreign AI-Cloud-MNCs may exacerbate patterns of unequal and combined development in Latin America. By analyzing the strategies of the main firms operating in the region, namely Amazon, Microsoft, and Huawei, this chapter has argued that the companies are in a war of position to dominate the cloud and AI market, attempting to become key partners that help private and government actors alike to spur digitalization. Despite these firms have considerable market and organizational power, they differ in their discursive strategies. Microsoft is actively advocating for the ethical use of AI, though in terms convenient for the company, whereas Amazon has shunned from entering into such discussions, preferring to extend and preserve its market advantage. As regards Huawei, it bets to outsmart the rest with its rollover of 5G and by spreading a development-oriented discourse on AI. Yet, all firms are primarily targeting the most resourceful actors in the region, casting doubt on claims to the shared benefits of AI.

Except for Cuba and Venezuela, most Latin American countries are trying to engage both with companies from China and the U.S. Thus, there is still no hegemony by any firm, and the decoupling of Internet that so many Western analysts predict and fear seems unlikely. This hedging

strategy seems rational, given the STI deficits and the uncertainty over how the AI race between China and the U.S. may turn out. However, it may not be enough to reverse the already troublesome patterns of uneven and combined development in Latin America that AI and the cloud may deepen. Therefore, more carefully thought national AI and cloud development policies seem urgently needed to increase the beneficiaries of this new wave of digitalization.

## Notes

1. Johnson, "Artificial Intelligence & Future Warfare"; European Commission, "Artificial Intelligence for Europe"; Hoadley and Sayler, "Artificial Intelligence and National Security"; Lee, *AI Superpowers*; Scott, Heumann, and Lorenz, "Artificial Intelligence and Foreign Policy"; Tinnirello, "Offensive Realism and the Insecure Structure of the International System."
2. Chollet, *Deep Learning with Python*.
3. The specific terminology employed is Software as a Service (SaaS), Infrastructure as a Service (IaaS), and Platform as a Service (PaaS).
4. Mosco, *To the Cloud*.
5. With this term I refer to technology MNCs whose business models depend on providing AI and the cloud infrastructure to other state and non-state actors.
6. Vila Seoane and Saguier, "Cyberpolitics and IPE: Towards a Research Agenda in the Global South."
7. According to Gartner "Worldwide IaaS Public Cloud Services Market Grew 31.3% in 2018.", in 2018 the Infrastructure as a service cloud market was dominated by the following firms AWS (47.8%), Microsoft Azure (15.5%), Alibaba (7.7%), Google (4%) and IBM (1.8%).
8. A military metaphor used by Gramsci on how subaltern groups could use different sources of power and alliances to beat more powerful adversaries Levy and Newell, "Business Strategy and International Environmental Governance.". Here I adapt it to the strategies of business firms.
9. Levy and Newell.
10. Fagre and Wells, "Bargaining Power of Multinationals and Host Governments."
11. Bieler and Morton, *Global Capitalism, Global War, Global Crisis*, 6.
12. Bieler and Morton, 37.
13. Bieler and Morton, 38.
14. Bieler and Morton, 39.
15. Bieler and Morton, 127.
16. Bieler and Morton, 52.

17. Bieler and Morton, 74.
18. Trotsky, *The History of the Russian Revolution. Volume I*.
19. Rosenberg, "Basic Problems in the Theory of Uneven and Combined Development. Part II."
20. Bieler and Morton, *Global Capitalism, Global War, Global Crisis*; Kiely, "Spatial Hierarchy and/or Contemporary Geopolitics"; D'Costa, "Uneven and Combined Development."
21. RICYT, "El Estado de la Ciencia: Principales indicadores de ciencia y tecnología Iberoamericanos."
22. RICYT.
23. RICYT.
24. CEPAL, "Iniciativa China de La Franja y La Ruta Es Una Oportunidad Para Inversiones Inclusivas y Sostenibles: CEPAL."
25. Bousquet, "Celac Driving Latin America and the Caribbean Along the New Silk Road Route!"
26. Pompeo, "Communist China and the Free World's Future."
27. Ruckert, Macdonald, and Proulx, "Post-Neoliberalism in Latin America."
28. Deciancio and Dalponte.
29. White House, "Artificial Intelligence for the American People."
30. Stolton, "Avoid Heavy AI Regulation, White House Tells EU."
31. State Council of the People's Republic of China, "Notice of the State Council Issuing the New Generation of Artificial Intelligence Development Plan."
32. Barr, "Now Open—South America (Sao Paulo) Region—EC2, S3, and Much More."
33. For more details on the relation between AI and surveillance, see Perez-Des Rosiers, Chapter 6 in this book.
34. Punke, "Some Thoughts on Facial Recognition Legislation."
35. Palacios and Orellana, "Corfo Busca Seducir a Amazon Con Subsidio Para Data Center de US$1.000 Millones."
36. Do Rosario and Soper, "Amazon Plans $800 Million Data Center in Argentina."
37. Microsoft, "The Future Computed: Artificial Intelligence and Its Role in Society."
38. Microsoft, "Democratizar La IA, Center LATAM."
39. Albrieu et al., "Inteligencia Artificial y Crecimiento Económico. Oportunidades y Desafíos Para México"; Microsoft, "Futuro Del Trabajo: En Los Próximos Diez Años, Argentina Podría Tener Un 56% de Empleo Calificado Si Maximizara La Adopción de Inteligencia Artificial."
40. LIIA, "Sobre La Predicción Automática de Embarazos Adolescentes, Laboratorio de Inteligencia Artificial Aplicada."
41. Huawei, "Annual Report."
42. Fan, "Innovation, Globalization, and Catch-Up of Latecomers."

43. Fu, Sun, and Ghauri, "Reverse Knowledge Acquisition in Emerging Market MNEs."
44. Huawei, "Annual Report."
45. Huawei Cloud, "HUAWEI CLOUD Empowers Digital Transformation of Industries in Latin America with New Chile Region."
46. Huawei GSPO Office, "Thinking Ahead About AI Security and Privacy Protection: Protecting Personal Data & Advancing Technology Capabilities," 30.
47. Huawei, "Annual Report," 3.
48. U.S. Department of State, "The Clean Network."
49. La República, "Huawei Sobre Perú: 'Sacar Provecho de Sus Recursos Con Inteligencia Artificial Para Generar Más Bonanza.'"
50. Fan, Wan, and Lu, "China's Regional Inequality in Innovation Capability, 1995–2006"; Iammarino, Rodriguez-Pose, and Storper, "Regional Inequality in Europe."
51. Salazar-Xirinachs and Chacaltana, "Políticas de Formalización En América Latina: Avances y Desafíos."
52. Bieler and Morton, *Global Capitalism, Global War, Global Crisis*.
53. Weber, "Data, Development, and Growth."
54. Weber.
55. Huawei Cloud, "HUAWEI CLOUD Empowers Digital Transformation of Industries in Latin America with New Chile Region."
56. Ochigame, "The Invention of 'Ethical AI': How Big Tech Manipulates Academia to Avoid Regulation."

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