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THESIS

**UNITED STATES NATIONAL SECURITY CONCERNS
WITH CHINESE ARTIFICIAL INTELLIGENCE
INITIATIVES IN LATIN AMERICA**

by

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**UNITED STATES NATIONAL SECURITY CONCERNS WITH CHINESE
ARTIFICIAL INTELLIGENCE INITIATIVES IN LATIN AMERICA**

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ABSTRACT

The United States and the Chinese are engaged in an artificial intelligence (AI) competition. The Chinese AI initiatives in Latin America have given it an initial advantage in the region against the United States. First, the thesis examines the Chinese broader technology initiatives and shows how the Chinese plan to use AI to gain advantages economically, politically, and militarily to become the world leader in AI. Next, the thesis examines data that shows how the Chinese have many countries in Latin America and the Caribbean that are using AI technology from Chinese companies, and that the United States has significantly fewer countries choosing its technology. Finally, the thesis explains that the United States has some advantages in AI development, but there is the potential for the United States to lose out to the Chinese in the Latin American and Caribbean market, which would negatively affect the United States' long-term national security. Therefore, the thesis argues that America should use security sector assistance to help improve Latin American and Caribbean indigenous capabilities and improve the relationships with United States private business, academia, and security institutions. The United States should implement changes so that it remains the AI partner of choice.

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LIST OF ACRONYMS AND ABBREVIATIONS

ASPI	Australian Strategic Policy Institution
AI/A.I.	Artificial Intelligence
BRI	Belt and Road Initiative
CEC	China Electronics Corporations
CEIEC	China National Electronics Import & Export Corporation
CHEC	China Harbor Engineering Company Ltd
CCCC	Communications Construction Company Ltd
CRVD	Companhia Vale do Rio Doce (Brazilian mining company)
COVID-19	Corona Virus Disease 2019
COCOM	Combatant Command
DSR	Digital Silk Road
DIME	Diplomatic, Information, Military, and Economic
IMET	International Military Education and Training
IOT	Internet of Things
JIAC	Joint Artificial Intelligence Center
MCF	Military-Civil Fusion
ML	Machine Learning
MSRI	Maritime Silk Road Initiative
NORINCO	China North Industries Group Corporation
OPE	Operational Preparation of the Environment
PLA	People's Liberation Army
PPD	Presidential Policy Directive
PRC	People's Republic of China
R&D	Research and Development
SREB	Silk Road Economic Belt
SSA	Security Sector Assistance
USSOUTHCOM	United States Southern Command
USNORTHCOM	United States Northern Command
5G	5th generation mobile network

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I. INTRODUCTION

AI holds the potential to be a major driver of economic growth and social progress.¹

Artificial intelligence is the future, not only for Russia but for all humankind. It comes with colossal opportunities, but also threats that are difficult to predict. Whoever becomes the leader in this sphere will become the ruler of the world.²

Artificial intelligence will likely change the character of warfare, and I believe whoever masters it first will dominate on the battlefield for many, many, many years. It's a fundamental game-changer. We have to get there first.³

A. RESEARCH QUESTION

This thesis answers the question, what are the United States national security concerns related to Chinese artificial intelligence and machine learning initiatives in Latin America?

1. Main Findings and Argument

The United States and the People's Republic of China are engaged in a competition including technology competition. The thesis examines how artificial intelligence and machine learning initiatives by the Chinese in Latin America and the Caribbean fit into the competition and how the artificial intelligence initiatives affect the United States national security concerns. Chapter two examines the Chinese broader technology initiatives and shows how the Chinese plan to use artificial intelligence to gain advantages economically, politically, and militarily to become the leader in artificial intelligence for the world.

¹ James Vincent, "China and the U.S. Are Battling to Become the World's First AI Superpower," The Verge, August 3, 2017, <https://www.theverge.com/2017/8/3/16007736/china-us-ai-artificial-intelligence>.

² Vladimir Putin, "'Whoever Leads in AI Will Rule the World': Putin to Russian Children on Knowledge Day," RT International, accessed July 31, 2020, <https://www.rt.com/news/401731-ai-rule-world-putin/>.

³ Joint Artificial Intelligence Center (JAIC), "DOD's AI 2020 Symposium and Exposition," accessed August 5, 2020, <https://www.ai.mil/ai2020.html>.

Chapter three shows how the Chinese have many countries in Latin America and the Caribbean that are using artificial intelligence technology from Chinese companies, and the United States has significantly less countries choosing their technology. The data used came from multiple sources that correlation data regarding Chinese artificial intelligence companies. Chapter four explains that the United States has some advantages in artificial intelligence development, but there is the potential for the United States to lose out to the Chinese in the Latin American and Caribbean market, which would negatively affect the United States long term national security. Therefore, the thesis argues that the United States should use security sector assistance to help improve Latin America and Caribbean countries indigenous capabilities and improve the relationships with United States private business, academia, and the security institutions. The United States should implement changes, so the United States remains the artificial intelligence partner of choice.

B. PROBLEM STATEMENT

Artificial intelligence (AI) and machine learning (ML) will change the world.⁴ At the same time, the United States is competing in great power rivalry or great power competition.⁵ China is challenging “American power, influence, and interests, attempting to erode American security and prosperity.”⁶ Among various tools, China is using artificial intelligence as means to engage in the competition because artificial intelligence has a geopolitical impact.⁷ As part of the Western Hemisphere, Latin American countries are a key terrain in which the competition is taking place.⁸ Since Latin American countries do

⁴ Vincent, “China and the U.S. Are Battling to Become the World’s First AI Superpower”; Putin, “Whoever Leads in AI Will Rule the World”; Joint Artificial Intelligence Center (JAIC), “DOD’s AI 2020 Symposium and Exposition,” accessed August 5, 2020, <https://www.ai.mil/ai2020.html>.

⁵ Jim Mattis, *Summary of the 2018 National Defense Strategy: Sharpening the American Military’s Competitive Edge* (Department of Defense, 2018), 1, <https://dod.defense.gov/Portals/1/Documents/pubs/2018-National-Defense-Strategy-Summary.pdf>; Ronald O’Rourke, *Renewed Great Power Competition: Implications for Defense—Issues for Congress*, Version 59, R43838 (Washington, D.C.: Congressional Research Service, 2020), 1–2, <https://crsreports.congress.gov/product/pdf/R/R43838/59>.

⁶ O’Rourke, *Renewed Great Power Competition: Implications for Defense—Issues for Congress*, 22.

⁷ The White House Office of Science and Technology Policy, *American Artificial Intelligence Initiative: Year One Annual Report* (United States of America: The White House Office of Science and Technology Policy, 2020), i, iv.

⁸ O’Rourke, *Renewed Great Power Competition: Implications for Defense—Issues for Congress*, 1–2.

not have robust technology, the Chinese can sell the technology to these countries. The technology and competition have and will have national security concerns if the United States cedes influence on China over the norms, ethics, and trading patterns regarding artificial intelligence in Latin America.⁹

In the event the United States does not become the partner of choice for artificial intelligence in Latin America, we will lose political, economic, or military influence there and, and from a practical standpoint, that will have severe consequences. If the United States stops being the partner of choice, then it can assume that national and economic security will be affected because regionally, there will be less United States infrastructure, standards, and investment, which has long-term national security consequences. Second, if Chinese technology companies can sell their products to some Latin American countries, then it is more likely that other countries in the region will bandwagon or what might be called economic bandwagoning or a bandwagon effect.¹⁰ Third, the Chinese introduction of artificial intelligence technology could enhance and complicate cyber-related concerns, including economic espionage, data collection, and surveillance concerns. Specifically, the increased number of Chinese artificial intelligence companies and software may give the Chinese increased vectors to collect information, conduct cyber espionage, conduct cyber-enabled information operations, or conduct offensive cyber operations.

Conversely, suppose the United States maintains and increases our Latin America role. In that case, it is safe to assume that positive economic benefits for American corporations reduce the cyber and intelligence security risks and influence the norms and ethics in the artificial intelligence worlds. From a realist perspective, it can be assumed that the United States does not want China influencing Latin American countries since, historically, the region has been considered America's backyard. If Chinese companies

⁹ Meg King et al., "Modern Conflict and Artificial Intelligence," Centre for International Governance Innovation, accessed April 15, 2021, <https://www.cigionline.org/modern-conflict-and-artificial-intelligence>.

¹⁰ Jeffrey H. Rohlfs, *Bandwagon Effects in High Technology Industries* | MIT Press EBooks | *IEEE Xplore* (Cambridge, Massachusetts and London, England: The MIT Press, 2001), 1, 55, <https://ieeexplore-ieee-org.libproxy.nps.edu/book/6276839>; Michael A. Cusumano, Yiorgos Mylonadis, and Richard S. Rosenbloom, "Strategic Maneuvering and Mass-Market Dynamics: The Triumph of VHS over Beta," *The Business History Review* 66, no. 1 (1992): 51, 86, <https://doi.org/10.2307/3117053>.

were to influence Latin American countries, then American values like free speech might not be the priority or the focus when setting the rules for the algorithms that run smart platforms.¹¹

For the United States to remain a partner of choice and succeed in great power rivalry, it must be able to quantify and evaluate its current status. The assumption for the thesis is that the United States wants to understand where it stands in comparison to China in the technology competition with artificial intelligence in Latin America. The United States will likely have to continue with the status quo or choose a different statecraft tool to adjust the policies or strategy for Latin America and artificial intelligence to ensure the United States' national security.

The research focuses on Chinese artificial intelligence initiatives inside of Latin America and the impacts on the United States' national security. The first area of research will be the Chinese domestic surveillance software sold to various countries and regimes in Latin America. Second, the research will focus on the impacts of Chinese artificial intelligence-enabled cyber operations in Latin America. Third, the thesis will answer if the United States has lost market share or influence in the region due to the competition with China regarding artificial intelligence and has that loss impacted our national security interests. Finally, the thesis will answer the question, what can the United States government, military, or commercial sector do about the artificial intelligence competition?

The standards, values, and ethics built into technology in general can be complicated, especially with a continually evolving technology like artificial intelligence. It can be assumed that the creation of artificial intelligence standards will be an area of competition in the “political and cognitive realms.”¹² The “winner-take-all” battle will likely be a long process, and there are likely different variables and strategies that the

¹¹ Sam Shead, “TikTok Apologizes after Being Accused of Censoring #BlackLivesMatter Posts,” CNBC, June 2, 2020, <https://www.cnbc.com/2020/06/02/tiktok-blacklivesmatter-censorship.html>.

¹² Raghu Garud, Sanjay Jain, and Arun Kumaraswamy, “Institutional Entrepreneurship in the Sponsorship of Common Technological Standards: The Case of Sun Microsystems and Java,” *The Academy of Management Journal* 45, no. 1 (2002): 210, <https://doi.org/10.2307/3069292>.

United States with a whole-of-government or whole-of-country approach can take to compete in the arena.¹³

C. LITERATURE REVIEW

The literature review consists of five sections: First, defining artificial intelligence since various technologies are associated with it, including automation, robotics, and machine learning. Second, the section reviews key statements and ideas from international leaders. Third, the review will describe scholarship, which discusses the U.S. competition with China for influence within the great power competition in Latin America. Fourth, it will describe research on artificial intelligence as a tool that can be used to influence and has geopolitical impacts. Fifth, the section will explore Latin America's artificial intelligence capabilities and the types of influence that the United States and China have with exporting their technology.

1. Artificial Intelligence: Definitions and Variations in the Technology

The literature and research present several definitions of the meaning of artificial intelligence, ranging from sentient beings to aspects of machine learning. It is crucial to understand how to define the term so we can understand how it will apply to the thesis.

Araya and Nieto-Gomez give a detailed summary of artificial intelligence technology:

Since its inception some 60 years ago, artificial intelligence (AI) has evolved from an arcane academic field into a powerful driver of social transformation. AI and machine learning (ML) are now the basis for a wide range of mainstream commercial applications, including Web search, medical diagnosis, algorithmic trading, factory automation, ridesharing, and, most recently, autonomous vehicles. Deep learning — a form of ML — has dramatically improved pattern recognition, speech recognition, and

¹³ Charles W. L. Hill, "Establishing a Standard: Competitive Strategy and Technological Standards in Winner-Take-All Industries," *The Academy of Management Executive (1993-2005)* 11, no. 2 (1997): 7, 24.

natural language processing (NLP). However, AI is also the basis for a highly competitive geopolitical contest.¹⁴

Ovanessoff and Plastino explain that “AI is not a new field; much of its theoretical and technological underpinning was developed over the past 70 years by computer scientists such as Alan Turing, Marvin Minsky, and John McCarthy. Today, the term refers to multiple technologies that can be described in different ways.”¹⁵ As shown in Figure 1, Ovanessoff and Plastino explain and define how they view artificial intelligence.

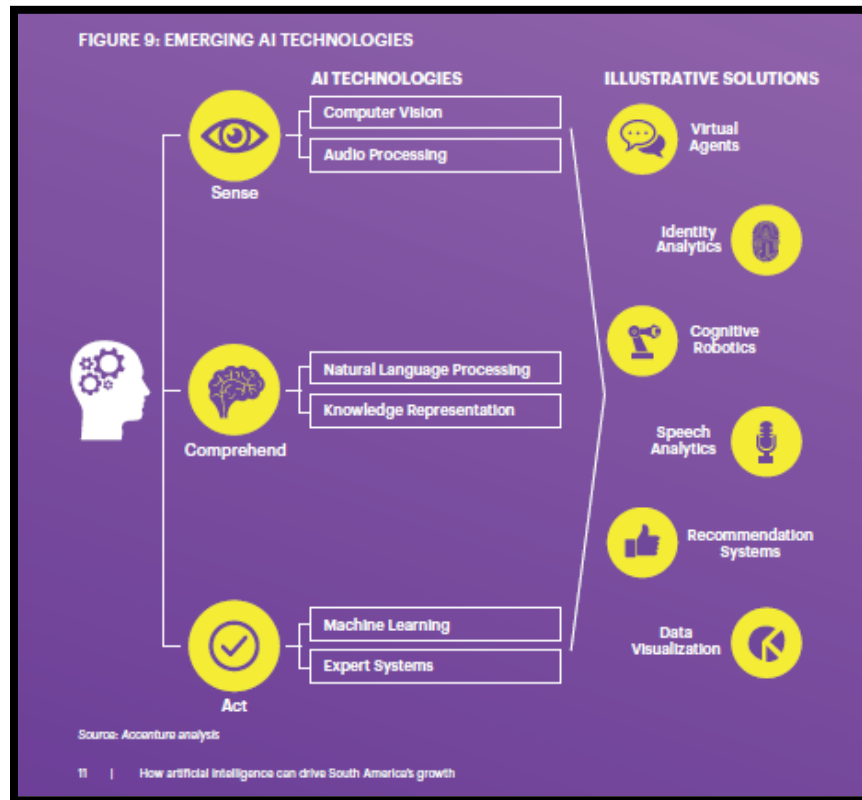


Figure 1. Three Types of AI.¹⁶

¹⁴ Daniel Araya and Rodrigo Nieto-Gomez, “Renewing Multilateral Governance in the Age of AI,” *Centre for International Governance Innovation*, no. Modern Conflict and Artificial Intelligence (November 23, 2020), <https://www.cigionline.org/articles/renewing-multilateral-governance-age-ai>.

¹⁵ Armen Ovanessoff and Eduardo Plastino, “How Artificial Intelligence Can Drive South America’s Growth” (Accenture, 2017), 10, https://www.accenture.com/_acnmedia/pdf-49/accenture-how-artificial-intelligence-can-drive-south-americas-growth.pdf.

¹⁶ Source: Ovanessoff and Plastino, 11.

As shown in Figure 1, Ovanessoff and Plastino argue that there are three types of artificial intelligence to include: sense, comprehend, and act.¹⁷ First, the sense is related to “computer vision and audio processing,” such as “facial recognition at border control kiosks.”¹⁸ Second, comprehension is related to “natural language processing,” for example, “language translation feature of search engine results.”¹⁹ Third, by the act, they describe as an “AI system,” which can “take action through technologies such as expert systems and inference engines, or undertake actions in the physical world” like self-driving cars.²⁰ The key to the recent growth of artificial intelligence is “unlimited access to computing power” and “growth in big data.”²¹ With the recent growth in artificial intelligence, the world has seen developments in virtual agents identify analytics, cognitive robotics, speech analytics, recommendation systems, and data visualization.²²

Arend Hintze argues four types of artificial intelligence: reactive machines, limited memory, the theory of mind, and self-awareness.²³ First, relative machines are the “most basic types of AI systems” like IBM’s chess-playing supercomputer, Deep Blue, or Google’s AlphaGo, which uses a neural network, a type of network that mimics the human brain.²⁴ Second, limited memory is a “this Type II class contains machines that can look into the past. Self-driving cars do some of this already. For example, they observe other cars’ speed and direction. That cannot be done in a just one moment, but rather requires identifying specific objects and monitoring them over time.”²⁵ Third, in the theory of mind in the future, machines will understand “thoughts and emotions that affect their own

¹⁷ Ovanessoff and Plastino, 22.

¹⁸ Ovanessoff and Plastino, 10.

¹⁹ Ovanessoff and Plastino, 10.

²⁰ Ovanessoff and Plastino, 10.

²¹ Ovanessoff and Plastino, 11.

²² Ovanessoff and Plastino, 11.

²³ Arend Hintze, “Understanding the Four Types of Artificial Intelligence,” November 14, 2016, <https://www.govtech.com/computing/Understanding-the-Four-Types-of-Artificial-Intelligence.html>.

²⁴ Hintze.

²⁵ Hintze.

behavior.”²⁶ Fourth, self-awareness or consciousness is “the final step of AI development,” in which machines can “build systems that can form representations about themselves.”²⁷

Another variation in defining artificial intelligence is that there are only “two types of artificial intelligence—hard and soft. Hard AI is having machines think like humans, while soft AI is focused on machines being able to do work that traditionally could only be completed by humans. The main difference is that soft AI doesn’t necessarily involve machines thinking like humans.”²⁸

Other definitions in the artificial intelligence and machine learning world include: Deep Learning and Extended Intelligence. Deep Learning is a catchall term for technology like skype, self-driving cars, translation apps, internet security, and online targeted ads.²⁹ Deep Learning combines “the most powerful machine learning technique” and requires “large datasets to achieve high performance.”³⁰ Extended intelligence “is using machine learning to extend the abilities of human intelligence.”³¹

For the purposes of the thesis, the working definition will include the broad topics when discussing artificial intelligence to include basic automation, rules-based systems, supervised learning, unsupervised learning, human-machine teaming, and aspirational AI.³²

²⁶ Hintze.

²⁷ Hintze.

²⁸ Julie Sobowale, “How Artificial Intelligence Is Transforming the Legal Profession,” ABA Journal, April 1, 2016, https://www.abajournal.com/magazine/article/how_artificial_intelligence_is_transforming_the_legal_profession.

²⁹ Cade Metz, “Finally, Neural Networks That Actually Work,” *Wired*, April 21, 2015, <https://www.wired.com/2015/04/jeff-dean/>; Cade Metz, “I Took the AI Class Facebookers Are Literally Sprinting to Get Into,” *Wired*, March 27, 2017, <https://www.wired.com/2017/03/took-ai-class-facebookers-literally-sprinting-get/>.

³⁰ Michael Horowitz et al., “Strategic Competition in an Era of Artificial Intelligence” (Washington, DC: Center for a New American Security, July 2018), <https://www.cnas.org/publications/reports/strategic-competition-in-an-era-of-artificial-intelligence>.

³¹ Scott Dadich, “Barack Obama Talks AI, Robo Cars, and the Future of the World,” *Wired*, October 12, 2016, <https://www.wired.com/2016/10/president-obama-mit-joi-ito-interview/>.

³² Naval Postgraduate School, “Harnessing AI Course - AI Group - Naval Postgraduate School,” accessed April 30, 2021, <https://nps.edu/web/ai-group/harnessing-ai-course>.

2. Key International Leaders' Statements on Artificial Intelligence

Leaders worldwide see the strategic impact on the world regarding how it has and will influence politics, economics, and national security. In 2016, President Obama's White House reported, "AI holds the potential to be a major driver of economic growth and social progress."³³ In 2016, President Obama talked about how algorithms could potentially take down financial networks or figure out how to launch nuclear weapons.³⁴ He explained that we need to develop "international norms, protocols, and verification mechanisms around cybersecurity generally, and AI in particular, is in its infancy."³⁵ He expounded that investment in cybersecurity and AI would be necessary to remain competitive domestically and internationally. Cybersecurity and artificial intelligence will require coordination to ensure that the information systems are secure from criminal threats, military threats, or espionage.³⁶ Automated cyber techniques will make 'spear phishing' easier to conduct by criminals and adversaries since systems will correlate data more accessible.³⁷ Also, artificial intelligence has so many facets and applications that it is difficult to define; therefore, in general, there is a concern that our leaders will not fully understand the potential of AI.³⁸

Vladimir Putin agreed with Barack Obama about the importance of artificial intelligence, but he framed it in a much more competitive way. In 2017, Vladimir Putin expressed, "Artificial intelligence is the future, not only for Russia but for all humankind. It comes with colossal opportunities, but also threats that are difficult to predict. Whoever becomes the leader in this sphere will become the ruler of the world."³⁹ Putin framed artificial intelligence in a realism perspective and very competitive perspective.

³³ Vincent, "China and the U.S. Are Battling to Become the World's First AI Superpower."

³⁴ Dadich, "Barack Obama Talks AI, Robo Cars, and the Future of the World."

³⁵ Dadich.

³⁶ Horowitz et al., "Strategic Competition in an Era of Artificial Intelligence," 17.

³⁷ Cade Metz, "Good News: A.I. Is Getting Cheaper. That's Also Bad News.," *The New York Times*, February 20, 2018, sec. Technology, <https://www.nytimes.com/2018/02/20/technology/artificial-intelligence-risks.html>.

³⁸ Dadich, "Barack Obama Talks AI, Robo Cars, and the Future of the World."

³⁹ Putin, "Whoever Leads in AI Will Rule the World'."

The China Standards 2035 plan also expressed the intent for the Chinese “government and leading technology companies to set global standards for emerging technologies like 5G internet, the Internet of Things (IoT), and artificial intelligence, among other areas.”⁴⁰

Artificial intelligence will change warfare. United States Secretary of Defense Esper said that “artificial intelligence will likely change the character of warfare, and I believe whoever masters it first will dominate on the battlefield for many, many, many years. It’s a fundamental game-changer. We have to get there first.”⁴¹ Esper spoke about this in 2018 when the Department of Defense established the Joint Artificial Intelligence Center (JAIC).⁴²

In 2019, President Trump continued the American stance that “continued American Leadership in AI is of paramount importance to maintaining the economic and national security of the United States and to shaping the global evolution of AI in a manner consistent with our Nation’s values, policies, and priorities.”⁴³ In March 2021, the interim national security guidance expresses that artificial intelligence, among other technologies, poses “both peril and promise.”⁴⁴ Overall, the leaders around the world see the future of artificial intelligence, which can be positive and negative depending on how the technologies get implemented.

⁴⁰ Alexander Chipman Koty, “The China Standards 2035 Plan: Is It a Follow-Up to Made in China 2025 ?,” China Briefing News, July 2, 2020, <https://www.china-briefing.com/news/what-is-china-standards-2035-plan-how-will-it-impact-emerging-technologies-what-is-link-made-in-china-2025-goals/>.

⁴¹ Joint Artificial Intelligence Center (JAIC), “DOD’s AI 2020 Symposium and Exposition.”

⁴² Joint Artificial Intelligence Center (JAIC), “About the JAIC - JAIC,” accessed April 22, 2021, <https://www.ai.mil/about.html>.

⁴³ The White House Office of Science and Technology Policy, *American Artificial Intelligence Initiative: Year One Annual Report*.

⁴⁴ White House, *Interim National Security Strategic Guidance* (Washington, DC: White House, 2021), 8, <https://www.whitehouse.gov/wp-content/uploads/2021/03/NSC-1v2.pdf>.

3. The United States and China Great Power Competition in Latin America

This section reviews what great power competition is and how it takes place in Latin America between the United States and China.

a. Great Power Competition

Great Power Competition or renewed great power competition is the common term for competition between the United States, China, and Russia.⁴⁵ However, it has also been described with “the term Cold War (or New Cold War, or Cold War II or 2.), particularly about the U.S.-China relationship,” and also includes “competitive world order, multipolar era, tripolar era, and [the] disorderly world (or era).”⁴⁶ The great powers compete for power and expand their influence through political, economic, and military strategies and tools.⁴⁷ Great Power Competition is a global struggle for geopolitical influence and strength. One area of competition is artificial intelligence.⁴⁸

Artificial Intelligence is important within great power competition for great power competition because if a country can dominate and control the marketplace, it will have economic, political, military, and intelligence advantages. Artificial Intelligence is an “emerging technology will have a deterministic and potentially transformative influence on military power, strategic competition, and world politics more broadly.”⁴⁹

b. Competition between China and United States in Latin America

Leigh Wendall argues that the United States and China will impact Latin American countries because there will be pressure to choose a side by choosing a technology

⁴⁵ Mattis, *Summary of the 2018 National Defense Strategy: Sharpening the American Military’s Competitive Edge*, 1; O’Rourke, *Renewed Great Power Competition: Implications for Defense—Issues for Congress*, 1–2.

⁴⁶ O’Rourke, *Renewed Great Power Competition: Implications for Defense—Issues for Congress*, 25.

⁴⁷ O’Rourke, 21.

⁴⁸ The White House Office of Science and Technology Policy, *American Artificial Intelligence Initiative: Year One Annual Report*, i, iv.

⁴⁹ James Johnson, “Artificial Intelligence & Future Warfare: Implications for International Security,” *Defense & Security Analysis* 35, no. 2 (April 3, 2019): 147, <https://doi.org/10.1080/14751798.2019.1600800>.

company or standard.⁵⁰ If Chinese technology become the norm or standard in some countries, other countries will be more likely to economically bandwagon since there are economic incentives and capability incentives to do so.⁵¹ Since the United States political atmosphere is challenging for Latin America, the Chinese focus on the Latin America region.⁵² In 2017, China's foreign direct investment in South America was \$25 billion, which has grown substantially since 2000.⁵³

Wendall also argues that China has increased influence since some countries have shifted their stance on Taiwan because of Chinese influence and investment, although the United States has warned other countries to avoid the trap.⁵⁴ Marc Lanteigne, an author of Chinese Foreign policy, explains that one of the critical foreign policy objectives of the Chinese is the reunification of Taiwan with mainland China.⁵⁵

Ellis, a leading Latin American and China scholar, argues that China presents a long-term and indirect national security challenge in the Western Hemisphere.⁵⁶ Ellis explains that yes, the Chinese are competitors, but the United States can view the competition as simply that and not a current direct threat to national security. Ellis argues that the Chinese are a “long-term challenge to U.S. national security” not by direct conflict, but by “encouragement of the gradual weakening of the U.S., vis-à-vis the P.R.C, as potential political, economic, and military challenger.”⁵⁷ Ellis explains that the “severity of the challenge, and its potential to transform from a difficult to define erosion of U.S.

⁵⁰ Leigh Wedell, “How Latin America Factors Into the US-China Rivalry,” *The Diplomat*, February 27, 2019, <https://thediplomat.com/2019/02/how-latin-america-factors-into-the-us-china-rivalry/>.

⁵¹ Rohlf, *Bandwagon Effects in High Technology Industries* | MIT Press EBooks | IEEE Xplore, 56–57.

⁵² Wedell, “How Latin America Factors Into the US-China Rivalry.”

⁵³ Wedell.

⁵⁴ Wedell.

⁵⁵ Marc Lanteigne, *Chinese Foreign Policy: An Introduction*, 4th ed. (London and New York: Routledge, 2020), 6.

⁵⁶ Evan Ellis, “China’s Security Challenge to the United States in Latin America and the Caribbean,” in David Denoon, Ed., *China, the United States, and the Future of Latin America* (New York: NYU Press, 2017), 14.

⁵⁷ Ellis, 345.

global position and long-term prosperity to an acute military threat, will depend, in part, on the adeptness of U.S. policymakers in navigating the landscape of threats and opportunities stemming from the rise of China as a dominate global actor.”⁵⁸

Ellis highlights that China “explicitly mentions its desire to expand and deepen interactions with Latin America and the Caribbean in 35 areas, including science and technology and military interactions.”⁵⁹ According to the Chinese government, the focus for the region is on “energy and resources, infrastructure construction, agriculture, manufacturing, science and technological innovation, and information technologies.”⁶⁰

Peter Smith, a Latin American author, agrees with Ellis about the fact that the United States has the upper hand in the competition in Latin America, but we must continue to uphold our democratic values. Smith argues that the United States “has been stronger and richer than its Latin American neighbors,” which has been a “persuasive and persistent reality.”⁶¹

4. Artificial Intelligence – Geopolitical Impacts – Tool of Influence

a. What are Geopolitics?

Any power struggle over a given territory. We are talking, therefore, not only about the influence of natural givens on balances of power (what Anglo-American experts on international relations sometimes call “geopolitics”) but also about the territorial aspects of rivalries and the localization of forces present in a broad international context.⁶²

⁵⁸ Ellis, “*China’s Security Challenge to the United States in Latin America and the Caribbean*,” in David Denoon, Ed., *China, the United States, and the Future of Latin America*.

⁵⁹ Ellis, 14; US-China Institute, “China’s Policy Paper on Latin America and the Caribbean,” September 2020, <https://china.usc.edu/chinas-policy-paper-latin-america-and-caribbean>.

⁶⁰ Ellis, “*China’s Security Challenge to the United States in Latin America and the Caribbean*,” in David Denoon, Ed., *China, the United States, and the Future of Latin America*, 342.

⁶¹ Peter H. Smith, *Talons of the Eagle: Latin America, the United States, and the World*, 4th ed. (University of California, San Diego: Oxford, 2012), 4.

⁶² Yves Lacoste, “Geography, Geopolitics, and Geographical Reasoning,” *Herodote* No 146–147, no. 3 (2012): 14–44.

b. *Geopolitical Impacts*

Overall, the United States leadership, China, and Russia have all realized that artificial intelligence will significantly impact politics, economics, and the military. They have all been moving forward to adapt their initiatives and strategies in which they are competing.

c. *Artificial Intelligence and National Security*

Horowitz, an author on national security and artificial intelligence, and others argue that artificial intelligence will “influence defense, diplomacy, intelligence, economic competitiveness, social stability, and the information environment, falling behind in AI development and implementation would present a risk for U.S. global economic and military leadership.”⁶³ He goes on to argue that the United States might be in a “new space race.”⁶⁴ The difference is that China has experienced a Sputnik moment, whereas the United States has not had that moment.⁶⁵ Although, in September 2020, the United States conducted its first “DOD AI symposium and Exposition,” which means the United States is at least taking the threat seriously.⁶⁶ Scott Kenney, a national security author, would argue that even with a Sputnik moment that the Chinese still have “substantial distance to travel before it approaches the level of innovation found in the world’s most advanced economies.”⁶⁷

Tim Stevens, an author about artificial intelligence and cyber, would agree with James Johnson that if artificial intelligence “left unchecked, the uncertainties and vulnerabilities created by the rapid proliferation and diffusion of AI could become a major

⁶³ Horowitz et al., “Strategic Competition in an Era of Artificial Intelligence,” 17.

⁶⁴ Horowitz et al., 17.

⁶⁵ Horowitz et al., 17.

⁶⁶ Joint Artificial Intelligence Center (JAIC), “DOD’s AI 2020 Symposium and Exposition,” accessed September 1, 2020, <https://www.ai.mil/ai2020.html>.

⁶⁷ Scott Kennedy, “The Fat Tech Dragon,” *Center for Strategic & International Studies (CSIS)*, August 29, 2017, v, <https://www.csis.org/analysis/fat-tech-dragon>.

potential source of instability and great power strategic rivalry.”⁶⁸ Johnson explains that “several AI-related innovations and technological developments that will likely have genuine consequences for military applications from a tactical battlefield perspective to the strategic level.”⁶⁹ Stevens focuses the argument by explaining that artificial intelligence will have strategic and tactical consequences, especially for cybersecurity for the military and intelligence community.⁷⁰

d. *Artificial Intelligence, Economics, and Politics*

Scott Dadich and Daniel Susskind explain that economically, artificial intelligence will create new jobs and industry this type of change by changing the type of jobs required due to increased machine learning capabilities and increased robotics, which shifts job requirements.⁷¹ James Johnson explains that due to reduced costs in automated systems like low-cost remotely piloted aircraft and increased digital and physical infrastructure, national security institutions will have to adjust to continue to compete.⁷²

Politically, governments will need to adjust to mitigate the risks of people losing jobs due to changes in the economy and ensure that the business and political and national security institutions remain competitive. Susskind argues that technology will likely increase economic inequality and potentially create a world without work.⁷³ Governments and the labor market will have to make shifts in investment in education and training to ensure that there is no political unrest or economic decline since people potentially will lose jobs to machine learning and automation.

⁶⁸ Johnson, “Artificial Intelligence & Future Warfare,” 147; Tim Stevens, “Knowledge in the Grey Zone: A.I. and Cybersecurity,” *Journal of Digital War*, 2020, <https://doi.org/10.1057/s42984-020-00007w>.

⁶⁹ Johnson, “Artificial Intelligence & Future Warfare,” 147.

⁷⁰ Stevens, “Knowledge in the Grey Zone: A.I. and Cybersecurity,” 1.

⁷¹ Dadich, “Barack Obama Talks AI, Robo Cars, and the Future of the World”; Daniel Susskind, *A World without Work* (New York: Metropolitan Books, 2020).

⁷² Johnson, “Artificial Intelligence & Future Warfare,” 159–60.

⁷³ Susskind, *A World without Work*.

During his presidency, Barack Obama explained that artificial intelligence would affect medicine, transportation, electricity, improved economy, and prosperity.⁷⁴ President Obama commented that societies would have to avoid losing jobs, increasing inequality, and suppress wages since artificial intelligence could displace jobs in various professions.⁷⁵ Governments and businesses will have to invest in “re-skilling” the workforce.⁷⁶

5. Latin America Artificial Intelligence Review – Latin America AI/ Reactions to China and U.S.

a. Latin America

In general, authors like Georgy Allen, David Dollar, Ted Piccone, and Ellis would agree that China is competing for influence and taking advantage of opportunities in Latin America. However, they would also agree that the United States overall has the advantage over China in the region. Latin America will be a terrain in which great power competition occurs since China and Russia attempt to influence America’s geopolitical backyard. Artificial intelligence and other technologies are one area of competition.⁷⁷ Latin America’s relationship has evolved because of recent United States politics that have led some countries in the region to seek economic and political support from China.⁷⁸

China has been more willing to help with loans, investment, and trade.⁷⁹ For example, China has sought oil and minerals from Venezuela, and China gave loans to

⁷⁴ Dadich, “Barack Obama Talks AI, Robo Cars, and the Future of the World.”

⁷⁵ Dadich; Fabio Caversan and Stefanini Marco, *Chapter 2. Latin America: The Next Big AI Talent Pool in the Global Talent Competitiveness Index 2020: Global Talent in the Age of Artificial Intelligence* (Fontainebleau, France: INSEAD, the Adecco Group, and Google Inc, 2020), 43, <https://www.insead.edu/sites/default/files/assets/dept/globalindices/docs/GTCI-2020-report.pdf>.

⁷⁶ Bruno Lanvin and Felipe Monteiro, “The Global Talent Competitiveness Index: Global Talent in the Age of Artificial Intelligence” (INSEAD, 2020), <https://gtcistudy.com/wp-content/uploads/2020/01/GTCI-2020-Report.pdf>.

⁷⁷ Robert Morgus et al., “Are China and Russia on the Cyber Offensive in Latin America and the Caribbean?,” *New America and Florida International University*, July 2019, 35–36, <https://gordoninstitute.fiu.edu/policy-innovation/publications/are-china-and-russia-on-the-cyber-offensive-in-latin-america-and-the-caribbean.pdf>; Wedell, “How Latin America Factors Into the US-China Rivalry.”

⁷⁸ Wedell, “How Latin America Factors Into the US-China Rivalry.”

⁷⁹ Wedell.

Venezuela for its infrastructure.⁸⁰ China has a trans-Amazonian railway project with Brazil and Peru and working a canal in Nicaragua.⁸¹ The Chinese allegedly have a scientific base in Argentina.⁸² All the investment, loans, and trade deals are typically in the Chinese interest, and the countries have to make political concessions, but in recent years, there has been some push back against China.⁸³ China has been marketing and selling its face recognitions surveillance capabilities to countries in South America.⁸⁴ For example, Ecuador purchases a system from China that includes integrated surveillance cameras, drones, thermal devices, and an artificial intelligence analysis center.⁸⁵

In general, artificial intelligence is another technology that both the United States and China can sell to the region, which in turn would influence the region economically and specifically with the developing norms associated with the technology. Some countries in Latin America are taking the loans and seeking support from China, but countries in Latin America are concerned about Chinese influence just as much as there is concern about U.S. influence.⁸⁶

From 2013 – 2018, China led the world in investment in artificial intelligence and how “60 percent of the total AI investment and funding over that time. In 2017, China

⁸⁰ Miquel Vila Moreno, “The Geopolitics of China in Latin America in Donald Trump’s Era,” *Institute of Advanced Studies in Geopolitics and Auxiliary Sciences (IsAG)*, April 30, 2017, https://isagitalia.org/the-geopolitics-of-china-in-latina-america-in-donald-trump-era/wp_8846263/.

⁸¹ Vila Moreno.

⁸² Cassandra Garrison, “China’s Military-Run Space Station in Argentina Is a ‘Black Box,’” *Reuters*, January 31, 2019, <https://www.reuters.com/article/us-space-argentina-china-insight-idUSKCN1PP0I2>; Vila Moreno, “The Geopolitics of China in Latin America in Donald Trump’s Era.”

⁸³ Vila Moreno, “The Geopolitics of China in Latin America in Donald Trump’s Era”; Miquel Vila Moreno, “China Adapts to a Changing Latin America,” March 13, 2020, <https://thediplomat.com/2020/03/china-adapts-to-a-changing-latin-america/>.

⁸⁴ Evan R. Ellis, *U.S. National Security Implications of Chinese Involvement in Latin America* (Carlisle Barracks, Pennsylvania: Strategic Studies Institute, U.S. Army War, 2005), 9–10; Charles Rollet, “Ecuador’s All-Seeing Eye Is Made in China – Foreign Policy,” *Foreign Policy*, August 9, 2018, <https://foreignpolicy.com/2018/08/09/ecuadors-all-seeing-eye-is-made-in-china/>.

⁸⁵ Rollet, “Ecuador’s All-Seeing Eye Is Made in China – Foreign Policy.”

⁸⁶ Ted Piccone, “China and Latin America: A Pragmatic Embrace,” *Brookings* (blog), July 20, 2020, 1, <https://www.brookings.edu/research/china-and-latin-america-a-pragmatic-embrace/>.

accounted for 70 percent of the 39.5 billion U.S. dollars invested in artificial intelligence worldwide in that year.”⁸⁷

The Chinese understand that they need to gain economic influence and power to win in great power competition. Therefore, the Chinese target people, the military, and infrastructure to steal economic and military data to close the gap.⁸⁸ Since artificial intelligence will enable cyber operations and the Chinese have stolen technology, conducted surveillance, and hacked business, the Chinese will likely use artificial intelligence technology to improve and adapt these capabilities.

Georgy Allen, David Dollar, and Ted Piccone generally would agree that China’s artificial intelligence is essential strategically for China and that the Chinese have an investment in Latin America, although it is unlikely to lead to military conflict. Allen argues that “China’s government views AI as a high strategic priority and is devoting the required resources to cultivate AI expertise and strategic thinking among its national security community.”⁸⁹ David Dollar, an author on Latin America, summarizes how “China has made headlines in Latin America through some large investments in countries that have poor governance, notably Venezuela and Ecuador. Yet the largest share of China’s ODI has gone to Brazil, a country with relatively good governance in Latin America.”⁹⁰ China is attempting to gain access to natural resources in the area of poor governance.⁹¹ Dollar argues that the investment in Venezuela is an example of “Beijing filling the void left by a decline American Presence.”⁹² Dollar generally agrees with

⁸⁷ Thomas Alsop, “Global AI Investment & Funding Share 2013–2018,” Statista, March 2, 2020, <https://www.statista.com/statistics/941446/ai-investment-and-funding-share-by-country/>.

⁸⁸ Kevin Townsend, “The United States and China - A Different Kind of Cyberwar,” *Security Week*, January 7, 2019, 1–5.

⁸⁹ Gregory C. Allen, “Understanding China’s AI Strategy: Clues to Chinese Strategic Thinking on Artificial Intelligence and National Security” (Washington, D.C.: Center for New American Security, 2019), 22, <https://www.cnas.org/publications/reports/understanding-chinas-ai-strategy>.

⁹⁰ David Dollar, “China’s Investment in Latin America,” *Brookings* (blog), January 4, 2017, 3–4, <https://www.brookings.edu/research/chinas-investment-in-latin-america/>.

⁹¹ Dollar, 17.

⁹² Dollar, 18.

Piccone in the fact that China’s investment has been relatively benign and unlikely to generate conflict.⁹³

b. Latin America Artificial Intelligence Capabilities

There is a knowledge gap of artificial intelligence development and education in Latin America that is increasing. Therefore, people with more resources can access the best tools and education, leapfrogging them ahead of the overall population. Fortunately, technology has enabled alternatives that offer opportunities to more people as well.”⁹⁴

Latin America shows initiatives in artificial intelligence development, especially in business, where about 80% of large businesses use artificial intelligence.⁹⁵ Artificial intelligence “could help raise living standards, lower healthcare costs, and promote government accountability.”⁹⁶ Latin America could develop artificial intelligence talent, making the region a “global delivery [centers] for AI applications.”⁹⁷

For example, in 2018, Mexico became “one of the first ten countries in the world to deliver a National Strategy for AI.”⁹⁸ Mexico “was the first Latin American country to formulate a national AI strategy in 2018, with key objectives outlined for reducing corruption and crime, improving public health and boosting financial inclusion.”⁹⁹ Since

⁹³ Dollar, 18.

⁹⁴ Caversan and Marco, *Chapter 2. Latin America: The Next Big AI Talent Pool in the Global Talent Competitiveness Index 2020: Global Talent in the Age of Artificial Intelligence*, 43.

⁹⁵ MIT Technology Review Insights, “The Global AI Agenda: Latin America,” MIT Technology Review, June 8, 2020, <https://www.technologyreview.com/2020/06/08/1002864/the-global-ai-agenda-latin-america/>.

⁹⁶ Jose Murillo, “Forbes Insights: Achieving AI’s Promise In Latin America,” *Forbes*, May 21, 2020, <https://www.forbes.com/sites/insights-ibmai/2020/05/21/achieving-ais-promise-in-latin-america/>.

⁹⁷ “GTCI Report 2020 - Global Talent in the Age of Artificial Intelligence,” *GTCI Report 2020* (blog), accessed August 23, 2020, <https://gtcistudy.com/key-findings/>.

⁹⁸ Emma Martinho-Truswel et al., “Towards an AI Strategy in Mexico: Harnessing the AI Revolution” (Mexico City: British Embassy in Mexico through the Prosperity Fund, Oxford Insights, and C Minds, June 2018), 6, https://7da2ca8d-b80d-4593-a0ab-5272e2b9c6c5.filesusr.com/ugd/7be025_e726c582191c49d2b8b6517a590151f6.pdf; Caversan and Marco, *Chapter 2. Latin America: The Next Big AI Talent Pool in the Global Talent Competitiveness Index 2020: Global Talent in the Age of Artificial Intelligence*.

⁹⁹ Murillo, “Forbes Insights.”

then, the Mexican legislature and local governments have been advancing the policies.¹⁰⁰ Mexico is considered one of the “largest Spanish-speaking region [s]generating data, and consequently, a gigantic incubator of AI technologies.”¹⁰¹

Another example, Chilean and Peruvian mining companies are using autonomous machines.¹⁰² Automation is saving the company money and increasing efficiency.¹⁰³ Another example is Argentina using “machine-learning-based tools that let citizens in Argentina report problems like potholes and uncollected garbage.”¹⁰⁴

Latin America has “good examples of AI initiatives” in Latin America, but Latin America has several challenges to increase the development, which include: “lack of specialized AI talent,” “lack of data to use in AI systems,” “insufficient or incorrect understanding of AI technology in the marketplace,” and “insufficient funding.”¹⁰⁵ Like the mining industries, companies lack the data, especially in large amounts, to make as artificial intelligence useful as it could be.¹⁰⁶ However, Mexico and other developing countries have economic difficulties that “slow down the potential of their progress, contribution, and technological leadership.”¹⁰⁷

¹⁰⁰ Enrique Zapata and Constanza Gomez-Mont, “Mexico: The Story and Lessons behind Latin America’s First AI Strategy.” (Caracas: CAF (Development Bank of Latin America), June 4, 2020), 8, <http://scioteca.caf.com/handle/123456789/1587>.

¹⁰¹ Global Legal Insights, “AI, Machine Learning & Big Data Laws and Regulations | Mexico | GLI,” Text, GLI - Global Legal Insights International legal business solutions (Global Legal Group, 2020), United Kingdom, <https://www.globallegalinsights.com/practice-areas/ai-machine-learning-and-big-data-laws-and-regulations/mexico>.

¹⁰² Ovanessooff and Plastino, “How Artificial Intelligence Can Drive South America’s Growth,” 3; Murillo, “Forbes Insights”; Alishba Imran, “Mining Companies Using AI, Machine Learning And Robots,” Medium, March 18, 2019, <https://blog.prototypr.io/mining-companies-using-ai-machine-learning-and-robots-e6dcdebacc3>.

¹⁰³ Imran, “Mining Companies Using AI, Machine Learning And Robots.”

¹⁰⁴ Murillo, “Forbes Insights.”

¹⁰⁵ Caversan and Marco, *Chapter 2. Latin America: The Next Big AI Talent Pool in the Global Talent Competitiveness Index 2020: Global Talent in the Age of Artificial Intelligence*, 42.

¹⁰⁶ Imran, “Mining Companies Using AI, Machine Learning And Robots.”

¹⁰⁷ Global Legal Insights, “AI, Machine Learning & Big Data Laws and Regulations | Mexico | GLI.”

c. Regional Reactions

Piccone, a nonresident senior fellow at the Brookings Institute, recently argued that regional Latin America and the Caribbean countries have accepted Chinese investment in the earlier through the mid-2020, but the “honeymoon” for China is over in Latin America since the regional view has shifted to “a more programmatic embrace circumscribed by a mix of both popular and elite skepticism of the benefits of getting too close to Beijing.”¹⁰⁸

Piccone argues that the United States “woken up to the long-term threat Chinese poses,” but the United States has recently “failed to leverage these trends by setting the proper tone or substance for policies that would help swing relations back towards Washington.”¹⁰⁹

6. Thesis Roadmap

The thesis is broken down into three additional chapters. Chapter two reviews the overall Chinese global strategies regarding artificial intelligence and other technologies. Chapter two highlights that the Chinese want to be the leader in artificial intelligence. Chapter three focuses on the Chinese artificial intelligence initiatives in Latin America. Chapter three shows that the Chinese have a numerical advantage of the number of countries using Chinese artificial intelligence technology over the United States. Chapter four concludes with findings and recommendations. Overall, the Chinese appear to have an advantage, and if the United States wants to remain the partner of choice, then America must react to counter the Chinese moves in Latin America and the Caribbean.

¹⁰⁸ Piccone, “China and Latin America,” 1.

¹⁰⁹ Piccone, 1.

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II. CHINESE STRATEGIC ARTIFICIAL INTELLIGENCE PLANS AND GOALS

A. INTRODUCTION

The chapter will review the various Chinese strategic goals and plans regarding economic, technology, and artificial intelligence. Overall, the Chinese military-civil fusion gives them some effectiveness and advantages in the artificial intelligence competition.¹¹⁰ The recent national security commission on artificial intelligence clearly summarizes China's artificial intelligence and what the chapter explores:

China is organized, resourced, and determined to win the technology competition. A.I. is central to China's global expansion, economic, and military and domestic stability. It has had a head start on executing a national A.I. plan as part of larger plans to lead the world in several critical emerging technology fields. Beginning in 2017, China established A.I. goals, objectives, and strategies tied to specific timelines with resources by committee leadership to lead the world in A.I. by 2030. China is executing a centrally directed systematic plan to extract A.I. knowledge from abroad through espionage, talent recruitment, technology transfer and investment. It has ambitious plans to build and train a new generation of AI engineers in new AI hubs. It supports "national champion" firms (including Huawei, Baidu, Alibaba, Tencent, iFlytek, and SenseTime) to lead development of AI technologies at home, advance state-directed priorities that feed military and security programs under the rubric of military-civil fusion, and capture markets abroad. It funds massive digital infrastructure projects across several continents. China developed an intellectual property (IP) strategy and is trying to set global technical standards for AI development. And its laws make it all but impossible for a company in China to shield its data from the authorities.¹¹¹

B. CHINESE ECONOMIC AND TECHNOLOGY INITIATIVES

The People's Republic of China (PRC) has various initiatives to gain economic and technology growth and influence include the well-known Belt and Road Initiative (BRI),

¹¹⁰ Christopher Ashley Ford, "Technology and Power in China's Geopolitical Ambitions," *United States Department of State* (blog), June 20, 2019, <https://www.state.gov/technology-and-power-in-chinas-geopolitical-ambitions/>.

¹¹¹ Eric Schmidt et al., *Final Report: National Security Commission on Artificial Intelligence* (National Security Commission on Artificial Intelligence, 2021), 25, <https://www.nsc.gov/wp-content/uploads/2021/03/Full-Report-Digital-1.pdf>.

Maritime Silk Road Initiative (MSRI), Silk Road Economic Belt (SREB), Digital Silk Road (DSR), Made in China 2025, China Standards 2035, and the New Generation AI Development plan to name a few.¹¹² The various technology initiatives are highlighted in Figure 2.

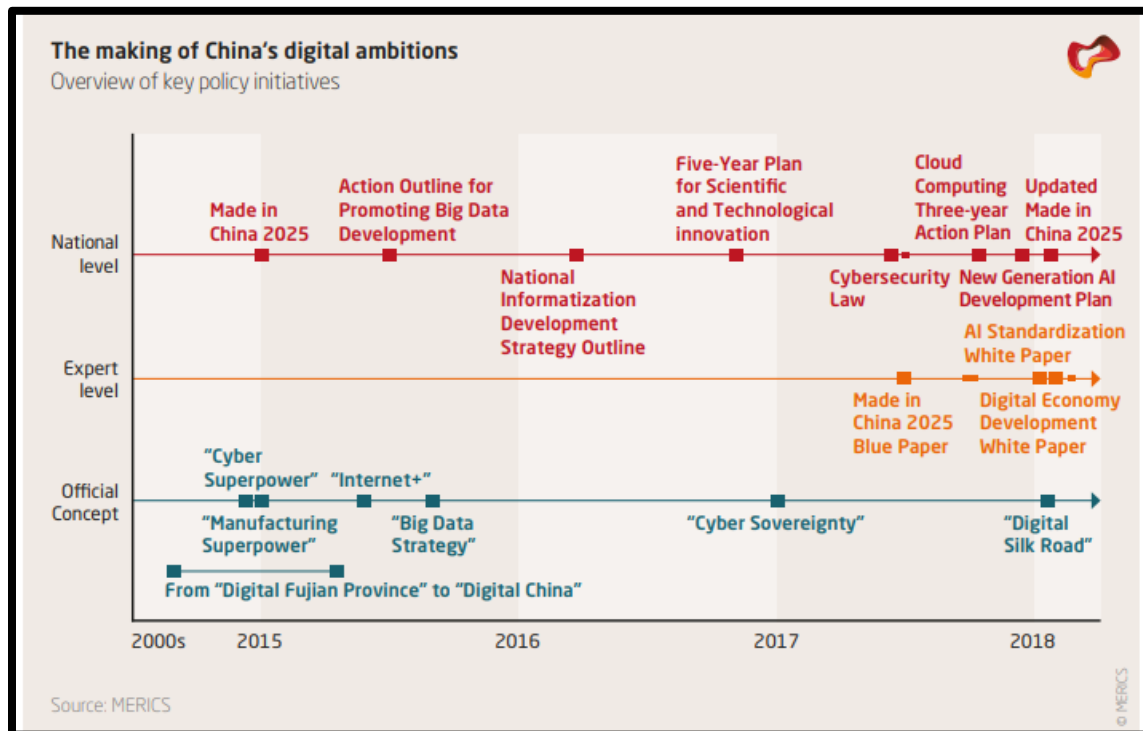


Figure 2. Chinese Digital Ambitions.¹¹³

¹¹² Jean-Marc F. Blanchard and Colin Flint, "The Geopolitics of China's Maritime Silk Road Initiative," *Geopolitics* 22, no. 2 (April 3, 2017): 223–45, <https://doi.org/10.1080/14650045.2017.1291503>; Alexander Chipman Koty, "The China Standards 2035 Plan: Is It a Follow-Up to Made in China 2025?," China Briefing News, May 20, 2020, <https://www.china-briefing.com/news/what-is-china-standards-2035-plan-how-will-it-impact-emerging-technologies-what-is-link-made-in-china-2025-goals/>; "China's Digital Silk Road: Strategic Technological Competition and Exporting Political Illiberalism," Council on Foreign Relations, accessed June 22, 2020, <https://www.cfr.org/blog/chinas-digital-silk-road-strategic-technological-competition-and-exporting-political>.

¹¹³ Source: Kristin Shi-Kupfer and Mareike Ohlberg, "China's Digital Rise: Challenges for Europe," *MERICS - Mercator Institute for China Studies*, no. No 7 (April 2019): 14, <https://www.merics.org/en/report/chinas-digital-rise>.

C. CHINESE ARTIFICIAL INTELLIGENCE AND TECHNOLOGY COMPETITION GOALS

The Chinese want to become leaders in technology and communication, including artificial intelligence, robotics, machine learning, quantum computing, and 5G.¹¹⁴ To implement this policy, the Chinese have increased their funding for artificial intelligence and other technologies which show that they are attempting to improve.¹¹⁵

Since artificial intelligence will enable cyber operations and the Chinese have stolen technology, conducted surveillance, and hacked business, the Chinese will likely use artificial intelligence technology to improve and adapt these capabilities. This is a national security threat to the United States. Allen argues that “China’s government views AI as a high strategic priority and is devoting the required resources to cultivate AI expertise and strategic thinking among its national security community.”¹¹⁶

D. CHINESE ARTIFICIAL INTELLIGENCE

Although the Chinese are disadvantaged regarding the number of artificial intelligence experts and amount of experience they have, the Chinese aspire to gain a technological advantage on the United States specifically with artificial intelligence and understand that it enhances its military capabilities and improves economically.¹¹⁷ The Chinese Communist Party (CCP) domestically has used the various forms of artificial intelligence to help improve social control through new artificial intelligence surveillance,

¹¹⁴ Shi-Kupfer and Ohlberg, “China’s Digital Rise: Challenges for Europe.”

¹¹⁵ Alsop, “Global AI Investment & Funding Share 2013–2018.”

¹¹⁶ Allen, “Understanding China’s AI Strategy: Clues to Chinese Strategic Thinking on Artificial Intelligence and National Security,” 22.

¹¹⁷ Graham Webster et al., *Full Translation: China’s “New Generation Artificial Intelligence Development Plan”* (2017) (New America, 2017), <http://newamerica.org/cybersecurity-initiative/digichina/blog/full-translation-chinas-new-generation-artificial-intelligence-development-plan-2017/>; Paul Triolo, Elsa Kania, and Graham Webster, *Translation: Chinese Government Outlines AI Ambitions through 2020* (New America, 2018), <http://newamerica.org/cybersecurity-initiative/digichina/blog/translation-chinese-government-outlines-ai-ambitions-through-2020/>; Elsa B. Kania, *Battlefield Singularity: Artificial Intelligence, Military Revolutions, and China’s Future Military Power* (Washington, DC: Center for a New American Security (CNAS), 2017), 8, <https://www.cnas.org/publications/reports/battlefield-singularity-artificial-intelligence-military-revolution-and-chinas-future-military-power>.

which affects domestic security and censorship.¹¹⁸ In Latin America, as exemplified by in Ecuador and Venezuela, the thesis has shown that Chinese technology was used in a similar manner.¹¹⁹ Both the United States and the Chinese government likely want to avoid an artificial intelligence arms races, but both agree that it is highly likely.¹²⁰ The Chinese have put out various reports and plans regarding artificial intelligence, and the United States recently written a national security commission on artificial intelligence.¹²¹

The “New Generation AI Development Plan” and other Chinese reports underscores China’s goal to become the world’s artificial intelligence leader by 2030.¹²² First, the plan is address and improve Chinese research and development.¹²³ Second, the goal is to improve the number of products and applications are that associated with AI.¹²⁴

¹¹⁸ Hugh Harsono, “China’s Surveillance Technology Is Keeping Tabs on Populations Around the World,” June 18, 2020, <https://thediplomat.com/2020/06/chinas-surveillance-technology-is-keeping-tabs-on-populations-around-the-world/>; Shead, “TikTok Apologizes after Being Accused of Censoring #BlackLivesMatter Posts”; Kania, *Battlefield Singularity: Artificial Intelligence, Military Revolutions, and China’s Future Military Power*, 8.

¹¹⁹ Angus Berwick, “A New Venezuelan ID, Created with China’s ZTE, Tracks Citizen Behavior,” Reuters, November 14, 2018, <https://www.reuters.com/investigates/special-report/venezuela-zte/>; Rollet, “Ecuador’s All-Seeing Eye Is Made in China – Foreign Policy.”

¹²⁰ Schmidt et al., *Final Report: National Security Commission on Artificial Intelligence*, 11; Greg Allen and Taniel Chan, *Artificial Intelligence and National Security*, Belfer Center Paper (Cambridge, Massachusetts: Harvard Kennedy School: Belfer Center for Science and International Affairs, 2017), 3; Horowitz et al., “Strategic Competition in an Era of Artificial Intelligence,” 8; Allen, “Understanding China’s AI Strategy: Clues to Chinese Strategic Thinking on Artificial Intelligence and National Security,” 5.

¹²¹ China Electronics Standardization Institute (CESI) and The 2nd Industrial Department of the Standardization Administration of China, *Artificial Intelligence Standardization White Paper* (Center for Security and Emerging Technology (CSET), 2020), <https://cset.georgetown.edu/publication/artificial-intelligence-standardization-white-paper/>; Webster et al., *Full Translation*; Triolo, Kania, and Webster, *Translation*; Schmidt et al., *Final Report: National Security Commission on Artificial Intelligence*.

¹²² Webster et al., *Full Translation*; Office of the Secretary of Defense, *Military and Security Developments Involving the People’s Republic of China 2020*, Annual Report to Congress (Washington, DC: Office of the Secretary of Defense, 2020), 142; Kania, *Battlefield Singularity: Artificial Intelligence, Military Revolutions, and China’s Future Military Power*, 9.

¹²³ Webster et al., *Full Translation*; Office of the Secretary of Defense, *Military and Security Developments Involving the People’s Republic of China 2020*, 142; Kania, *Battlefield Singularity: Artificial Intelligence, Military Revolutions, and China’s Future Military Power*, 9.

¹²⁴ Webster et al., *Full Translation*; Office of the Secretary of Defense, *Military and Security Developments Involving the People’s Republic of China 2020*, 142; Kania, *Battlefield Singularity: Artificial Intelligence, Military Revolutions, and China’s Future Military Power*, 9.

Third, the intent is to market and grow the Chinese artificial intelligence industry.¹²⁵ In short, the Chinese want to improve the entire process from R&D to marketing, to gaining market share in order to become the artificial intelligence leader.¹²⁶ As we have seen in the thesis, Latin America does not have robust artificial intelligence capabilities; therefore, some Latin America countries are open to buying or receiving products and capabilities, especially when they come at a low short-term cost. Also, specifically in the plan, the Chinese have encouraged their companies to “pursue a ‘going out’ strategy,” which we have seen in Latin America with acquisitions, investment, and establishing “research and development centers abroad.”¹²⁷

E. CHINESE MILITARY-CIVIL FUSION (MCF)

Overall, the Chinese are attempting to grow their economic, technological, and military strength.¹²⁸ The technology aspect is central to economic development and military development.¹²⁹ The Chinese are investing about \$1.4 trillion in the recent five-year plan in “building ‘new infrastructure’ through AI, data centers, 5G, the Industrial Internet, and other new technologies.”¹³⁰ For the military development, the Chinese are using an approach called “military-civil fusion” (MCF)” to allow for technological and economic benefits while the military grows.¹³¹ President Xi’s goal is “dual circulation theory,” from which he wants domestic consumption and “technological self-sufficiency

¹²⁵ Webster et al., *Full Translation*; Office of the Secretary of Defense, *Military and Security Developments Involving the People’s Republic of China 2020*, 142; Kania, *Battlefield Singularity: Artificial Intelligence, Military Revolutions, and China’s Future Military Power*, 9.

¹²⁶ Triolo, Kania, and Webster, *Translation*; Webster et al., *Full Translation*; China Electronics Standardization Institute (CESI) and The 2nd Industrial Department of the Standardization Administration of China, *Artificial Intelligence Standardization White Paper*; Schmidt et al., *Final Report: National Security Commission on Artificial Intelligence*, 14.

¹²⁷ Kania, *Battlefield Singularity: Artificial Intelligence, Military Revolutions, and China’s Future Military Power*, 10.

¹²⁸ Office of the Secretary of Defense, *Military and Security Developments Involving the People’s Republic of China 2020*, V.

¹²⁹ Office of the Secretary of Defense, 142.

¹³⁰ Adam Segal, “The Coming Tech Cold War with China,” *Foreign Affairs*, September 11, 2020, <https://www.foreignaffairs.com/articles/north-america/2020-09-09/coming-tech-cold-war-china>.

Ford, “Technology and Power in China’s Geopolitical Ambitions”; Office of the Secretary of Defense, *Military and Security Developments Involving the People’s Republic of China 2020*, 19.

after decades of export-led growth.”¹³² One aspect of all the civil military fusion is that the Chinese want to become the “premier global AI innovation center by 2030, potentially surpassing the United States in the process.”¹³³

The PLA have concerns about a United States “technological surprise attack.”¹³⁴ Therefore, the PLA are using the United States as a pacing threat much in the same way that the United States talks about China.¹³⁵ The PLA foresee significant changes in warfare due to artificial intelligence and its various applications.¹³⁶ Specifically, the PLA believe that “AI will accelerate the process of military transformation, causing fundamental changes to military units’ programming, operational styles, equipment systems, and models of combat power generation.”¹³⁷ The PLA’s goal is to take advantage of artificial intelligence to gain military advantages and seize the initiative in the new and future wars.¹³⁸

¹³² Segal, “The Coming Tech Cold War with China.”

¹³³ Kania, *Battlefield Singularity: Artificial Intelligence, Military Revolutions, and China’s Future Military Power*, 6; Horowitz et al., “Strategic Competition in an Era of Artificial Intelligence,” 12.

¹³⁴ Kania, *Battlefield Singularity: Artificial Intelligence, Military Revolutions, and China’s Future Military Power*, 12.

¹³⁵ Kania, 12.

¹³⁶ Schmidt et al., *Final Report: National Security Commission on Artificial Intelligence*, 22–23; Kania, *Battlefield Singularity: Artificial Intelligence, Military Revolutions, and China’s Future Military Power*, 13; Office of the Secretary of Defense, *Military and Security Developments Involving the People’s Republic of China 2020*, 161–62.

¹³⁷ Kania, *Battlefield Singularity: Artificial Intelligence, Military Revolutions, and China’s Future Military Power*, 13; Office of the Secretary of Defense, *Military and Security Developments Involving the People’s Republic of China 2020*, 161–62.

¹³⁸ Office of the Secretary of Defense, *Military and Security Developments Involving the People’s Republic of China 2020*, 161; Kania, *Battlefield Singularity: Artificial Intelligence, Military Revolutions, and China’s Future Military Power*, 13; Allen, “Understanding China’s AI Strategy: Clues to Chinese Strategic Thinking on Artificial Intelligence and National Security,” 8; Horowitz et al., “Strategic Competition in an Era of Artificial Intelligence,” 13.

F. CYBER ESPIONAGE AND INTELLECTUAL PROPERTY THEFT

Artificial Intelligence technology is open source so the technology is easily copied, and artificial intelligence will enable cyber-attacks and cyber espionage.¹³⁹ The People Republic of China (PRC) “maintains a robust capacity to conduct cyber operations through the combined use of network and psychological operations, media propagation, and electronic warfare capabilities” which artificial intelligence will assist and improve the capabilities.¹⁴⁰ The PRC conducts operational preparation of the environment (OPE) and conducts cyberwarfare across the spectrum of diplomatic, information, military, and economic (DIME).¹⁴¹ The PRC conducts cyber-espionage and cyber-enabled information operations to target other countries to advance their diplomatic, military, and economic goals.¹⁴² The Chinese have also compelled “foreign firms to transfer technology as a condition for access to its market,” but the Chinese have also conducted cyber espionage to gain technology information.¹⁴³ The United States has reacted to these thefts negatively and sees it as national security and economic threat, and in 2017 “launched an investigation into Chinese efforts to secure technology and IP through such practices.”¹⁴⁴ Reporting in

¹³⁹ Kai-Fu Lee, *AI Super-Powers: China, Silicon Valley, and the New World Order* (Boston and New York: Houghton Mifflin Harcourt, 2018), 83; Schmidt et al., *Final Report: National Security Commission on Artificial Intelligence*, 2, 7, 9, 19, 22.

¹⁴⁰ Morgus et al., “Are China and Russia on the Cyber Offensive in Latin America and the Caribbean?,” 9; Office of the Secretary of Defense, *Military and Security Developments Involving the People’s Republic of China 2020*, 162; Schmidt et al., *Final Report: National Security Commission on Artificial Intelligence*, 23; Office of the Director of National Intelligence, *Annual Threat Assessment of the U.S. Intelligence Community* (Washington, DC: Office of the Director of National Intelligence, 2019), 8, <https://www.dni.gov/files/ODNI/documents/assessments/ATA-2021-Unclassified-Report.pdf>.

¹⁴¹ Office of the Secretary of Defense, *Military and Security Developments Involving the People’s Republic of China 2020*, 83; Morgus et al., “Are China and Russia on the Cyber Offensive in Latin America and the Caribbean?,” 10,15; Office of the Director of National Intelligence, *Annual Threat Assessment of the U.S. Intelligence Community*, 8, 20.

¹⁴² Peter Navarro, *FULL TRANSCRIPT: White House National Trade Council Director Peter Navarro on Chinese Economic Aggression - by Hudson Institute* (Hudson Institute, 2018), 5, <http://www.hudson.org/research/14437-full-transcript-white-house-national-trade-council-director-peter-navarro-on-chinese-economic-aggression>; Morgus et al., “Are China and Russia on the Cyber Offensive in Latin America and the Caribbean?,” 15–16.

¹⁴³ Michael J. Mazarr, Timothy R. Heath, and Astrid Stuth Cevallos, “China and the International Order,” *Rand Corporation*, May 21, 2018, 52–53, https://www.rand.org/pubs/research_reports/RR2423.html.

¹⁴⁴ Mazarr, Heath, and Cevallos, 53.

Latin America, the use of Chinese artificial technology give the Chinese extra tools for intelligence collection and influence.¹⁴⁵ The placement and access of technology infrastructure and artificial intelligence-enabled surveillance technology will give the Chinese the ability to conduct economic espionage, cyber-attacks, and disinformation campaigns.¹⁴⁶

G. CONCLUSION

In sum, the Chinese want to become the leader of the world in artificial intelligence to give them economic, military, and political benefits and advantages. The centrally planned artificial intelligence technology initiatives have supported Chinese companies going abroad to regions like Latin America. The Chinese companies gain placement and access to acquire artificial intelligence technology and companies through legal investment and through nefarious means or exploitation. The data and technology capabilities gain feeds into the military and state security intelligence capabilities and knowledge.

Although Silicon Valley has a lot of A.I. expertise, the Chinese government focus and financial support has and will allow the Chinese to gain on the United States in artificial intelligence.¹⁴⁷ The Chinese understand that to win in a great power competition; they need to gain economic influence and power. Therefore, the Chinese have targeted people, governments, businesses, militaries, and infrastructure to steal economic and military data to close the gap.¹⁴⁸ The Chinese have argued that these claims are not true and that there is “no evidence of security flaws, or of Chinese intelligence accessing any information from a company like Huawei.”¹⁴⁹ The thesis research has shown that Huawei is operating

¹⁴⁵ Harsono, “China’s Surveillance Technology Is Keeping Tabs on Populations Around the World.”

¹⁴⁶ Derek Scissors, *Chinese Economic Espionage Is Hurting the Case for Free Trade* (The Heritage Foundation, 2012), <https://www.heritage.org/trade/report/chinese-economic-espionage-hurting-the-case-free-trade>; Schmidt et al., *Final Report: National Security Commission on Artificial Intelligence*, 19.

¹⁴⁷ Lee, *AI Super-Powers: China, Silicon Valley, and the New World Order*, X, 83.

¹⁴⁸ Townsend, “The United States and China - A Different Kind of Cyberwar,” 1–5.

¹⁴⁹ Akinori Kahata, “Assessing the Impact of U.S.-China Technology Competition and Decoupling: Focusing on 5G,” December 16, 2020, <https://www.csis.org/blogs/technology-policy-blog/assessing-impact-us-china-technology-competition-and-decoupling>.

in Latin America. Various Chinese laws can obligate or compel companies to support Chinese government intelligence operations.¹⁵⁰

¹⁵⁰ Murray Scot Tanner, “Beijing’s New National Intelligence Law: From Defense to Offense,” Lawfare, July 20, 2017, <https://www.lawfareblog.com/beijings-new-national-intelligence-law-defense-offense>.

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III. CHINESE ARTIFICIAL INTELLIGENCE INITIATIVES IN LATIN AMERICA

A. INTRODUCTION

The United States and China are engaging in technology competition.¹⁵¹ For the policy makers, business leaders, strategics, and practitioners, the state of the competition is important especially if the goal of the Chinese is to become the “premier global AI innovation center” by 2030 with the intent of the PLA to leapfrog the United States.¹⁵² To frame the current state of the competition between the United States and China in Latin America, this chapter will explore Chinese influence in Latin America. While, the section will briefly review Chinese military, political, and economics activities in the region, it will primarily focus on the primary section focus will be the Chinese artificial intelligence, surveillance technologies and economic activities since they represent the greatest and most lasting, potential impact in Latin America.

Overall, the chapter shows the general expansion of artificial intelligence technology being sold to countries around the world to include Latin America and the Caribbean. In Latin America and the Caribbean, the data shows that more countries are exclusively using Chinese artificial intelligence surveillance technology than the United States or any other country from companies like Huawei. The chapter looks at Venezuela and Ecuador to see the impacts of Chinese artificial intelligence technology. In Venezuela, the Chinese support with loans and investment along with artificial intelligence surveillance technology which was used to repress dissent against the regime has allowed Maduro to stay in power. In Ecuador, the Chinese sold artificial intelligence surveillance software to the country. The Chinese have used Ecuador as a marketing tool since the Chinese technology helped Eduardo during a recent earthquake and in hospitals during the COVID-19 pandemic.

¹⁵¹ Kania, *Battlefield Singularity: Artificial Intelligence, Military Revolutions, and China’s Future Military Power*, 6.

¹⁵² Kania, 4, 6.

B. THE GLOBAL EXPANSION OF AI SURVEILLANCE¹⁵³

Based on the world map in Figure 3, Latin America shows that they have leaned towards Chinese artificial intelligence technology. The map shows that the world consists mostly of the United States and Chinese artificial intelligence technology. Also, it appears that the Chinese have a lead in Africa and South America since some countries exclusively have just Chinese artificial intelligence technology.

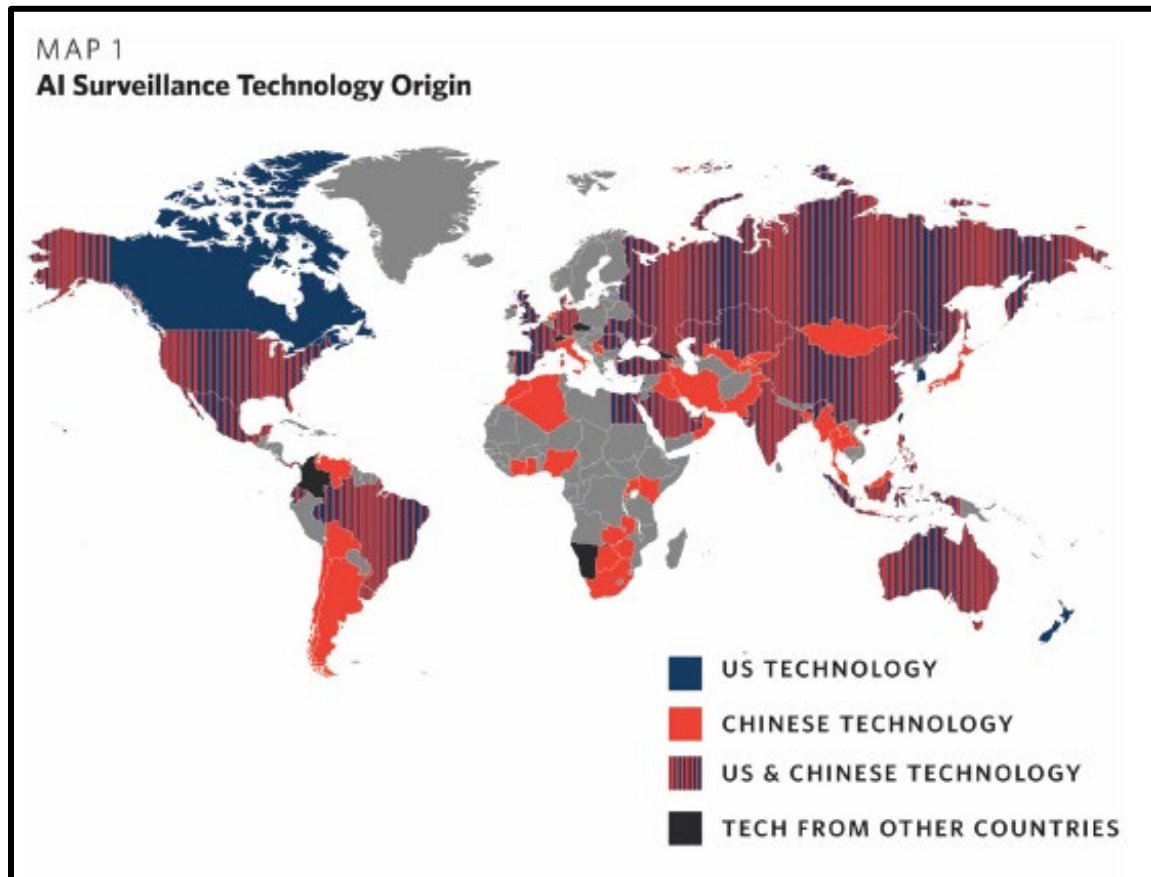


Figure 3. Global Expansion of AI Surveillance.¹⁵⁴

¹⁵³ Steven Feldstein and Steven, *The Global Expansion of AI Surveillance* (Washington, DC: Carnegie Endowment for International Peace, 2019), FY21JSOUFORUMSQ3.

¹⁵⁴ Source: Feldstein, 3.

Overall, research shows 75 out of 176 countries “actively using AI technologies for surveillance.”¹⁵⁵ For Latin America, 10 countries in Latin America currently use artificial intelligence technologies as seen Figure 4.¹⁵⁶



Figure 4. AI Surveillance in Latin America.¹⁵⁷

Overall, globally, 63 countries that have Chinese AI technology, and 36 of those countries signed onto the Chinese Belt and Road Initiative (BRI).¹⁵⁸ The main Chinese companies involved include Huawei, Hikvision, Dahua, and ZTE, but the primary

¹⁵⁵ Feldstein, 1.

¹⁵⁶ Feldstein, 25–28.

¹⁵⁷ Source: Feldstein, 3.

¹⁵⁸ Feldstein, 1.

company is Huawei.¹⁵⁹ These companies provide various forms of artificial intelligence surveillance technology, smart city/safe city platforms, facial recognition systems, and smart policing platforms.¹⁶⁰

C. LATIN AMERICAN ARTIFICIAL INTELLIGENCE DATA

Latin America and the Caribbean have demonstrated a “sizable take-up of AI surveillance instruments” from the Chinese.¹⁶¹ Specifically, based on this report, ten countries have artificial intelligence technology: Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Mexico, Panama, Uruguay, and Venezuela reportedly have artificial intelligence surveillance technology, but only Bolivia and Venezuela are tied to the belt and road initiative.¹⁶² As seen on in Figure 3, Argentina, Bolivia, Chile and Venezuela exclusively use Chinese Technology.¹⁶³ The following countries share United States and Chinese technology: Brazil, Ecuador, Mexico, Panama, and Uruguay.¹⁶⁴ Of note, Panama signed on to the BRI. Finally, according to the report, Colombia uses only Japanese technology.¹⁶⁵ Although, in 2020, a Chinese surveillance company called DaHu gave Columbia thermal cameras, which is not included in this the data for this section.¹⁶⁶ Therefore, Chinese technological influence is found within 9 of the 10 countries, whereas the United States technological influence extends to only 5 of the 10 countries, and the United States shares all of them with China. The next data from additional reports will add to the number of countries and territories that China has their technology in, but the research does not provide data on whether the United States has technology in those

¹⁵⁹ Feldstein, 1.

¹⁶⁰ Feldstein, 1.

¹⁶¹ Feldstein, 8.

¹⁶² Feldstein, 25–28.

¹⁶³ Feldstein, 25–28.

¹⁶⁴ Feldstein, 25–28.

¹⁶⁵ Feldstein, 25–28.

¹⁶⁶ Raymond R. Dua Jr., “The Rise of Chinese Technology in Latin America,” August 12, 2020, <https://theglobalamericans.org/2020/08/the-rise-of-chinese-technology-in-latin-america/>.

countries. The other countries and territories include Peru, Trinidad and Tobago, British Virgin Islands, Guatemala, and the Dominican Republic.

Overall, the Chinese artificial intelligence companies have a numerical advantage over the United States and other countries marketing similar artificial intelligence technology, which gives the Chinese a potential long-term economic and strategic advantage. Although the data is imperfect since companies have different incentives to keep information private or publicize it, the fact that approximately 90% of the countries in Latin America are using Chinese technology compared with 50% for the United States is a stark contrast. The data suggests that the Chinese have at least some sort of advantage, which could lead to economic bandwagoning and a strategic advantage in the artificial intelligence technology competition due to the effects of standardization and complementary products.¹⁶⁷ Artificial intelligence represents a growing and expanding field, and Thomas Edison, although describing electricity, could have been talking about the future of artificial intelligence: “It is a field of fields...it holds the secrets which will reorganize the life of the world.”¹⁶⁸ In general, throughout the world, the amount of Chinese artificial intelligence technology accessed by the number of countries has increased.¹⁶⁹ Throughout the world, the Chinese use soft loans and subsidize all equipment for foreign businesses.¹⁷⁰ In short, Latin American countries choose Chinese artificial intelligence and surveillance because of Chinese investment, lower cost, and easier access, compared to the United States due to their export restrictions established in 2018.¹⁷¹

¹⁶⁷ Cusumano, Mylonadis, and Rosenbloom, “Strategic Maneuvering and Mass-Market Dynamics,” 86.

¹⁶⁸ Schmidt et al., *Final Report: National Security Commission on Artificial Intelligence*, 7.

¹⁶⁹ Feldstein, *The Global Expansion of AI Surveillance*, 2.

¹⁷⁰ Feldstein, 2.

¹⁷¹ Harsono, “China’s Surveillance Technology Is Keeping Tabs on Populations Around the World.”

D. HUAWEI

Exemplifying Huawei's significant role as AI and surveillance technology exporter, it has sold or given technology to approximately 50 countries according to the Carnegie Endowment for International Peace.¹⁷² Huawei reported triple their numbers from the 2015 annual report, and in the 2018 annual report claimed that "safe city solutions now serve over 700 cities across more than 100 countries and regions including Brazil and Mexico" among others.¹⁷³ In the Huawei 2019 annual report, the company states, "Huawei has helped more than 200 cities across over 40 countries and regions implement smart city projects"¹⁷⁴ In the Huawei 2020 annual report, however, the company states, "smart city solutions currently serve over 700 cities across more than 40 countries and regions."¹⁷⁵ Due to the discrepancies in reported numbers, Huawei and China have focused on selling their products throughout the world, which is the key point.

E. MAPPING CHINA'S A.I SURVEILLANCE

According to an April 2019 report, which looked at 43 countries, and there were 75 smart city projects throughout the world, which include "sensors, facial recognition cameras, and police body cameras connected to intelligence common centers."¹⁷⁶ In the follow-on report of November 2019 report, the report included a more expansive list of Chinese companies and focused on artificial intelligence and surveillance, the number of

¹⁷² Feldstein, *The Global Expansion of AI Surveillance*, 1.

¹⁷³ Sheena Chestnut Greitens, "Dealing with Demand for China's Global Surveillance Exports," *Global China: Assessing China's Growing Role in the World* (The Brookings Institute, April 28, 2020), 2, <https://www.brookings.edu/research/dealing-with-demand-for-chinas-global-surveillance-exports/>.

¹⁷⁴ Huawei, "Huawei Annual Report 2019" (Shenzhen: Huawei Investment & Holding Co., Ltd., 2019), 34, <https://www.huawei.com/us/annual-report/2019>.

¹⁷⁵ Huawei, "Huawei Annual Report 2020" (Shenzhen: Huawei Investment & Holding Co., Ltd., 2020), 27, <https://www.huawei.com/en/annual-report/2020>.

¹⁷⁶ Feldstein, *The Global Expansion of AI Surveillance*, 16; Danielle Cave et al., "Mapping China's Tech Giants," *Issues Paper, Mapping China's Technology Giants* (Australia: Australian Strategic Policy Institute (ASPI), April 2019), 10, <https://www.aspi.org.au/report/mapping-chinas-tech-giants>; Greitens, "Dealing with Demand for China's Global Surveillance Exports," 2.

smart city projects jumped from 75 to 115, with the majority concentrated in Europe, Africa, and South America.¹⁷⁷

According to the ASPI website tracker, currently eight countries and one territory utilize Chinese artificial intelligence or surveillance technology although the majority have surveillance technology.¹⁷⁸ The countries and territories include: Argentina, Chile, Bolivia, Brazil, Peru, Colombia, Panama, and British Virgin Islands as seen in Figure 5.¹⁷⁹ The important takeaway is that Peru and the British Virgin Islands are new countries and territory added to the list for the Chinese. It is interesting to note that the report does not include Ecuador or Venezuela.

¹⁷⁷ Fergus Ryan, Danielle Cave, and Vicky Xiuzhong Xu, “Mapping More of China’s Tech Giants: AI and Surveillance,” Issues Paper, Mapping China’s Technology Giants (Australia: Australian Strategic Policy Institute (ASPI), November 28, 2019), 4, <https://www.aspi.org.au/report/mapping-more-chinas-tech-giants>.

¹⁷⁸ Danielle Cave et al., “Mapping China’s Tech Giants | Australian Strategic Policy Institute,” Mapping China’s Tech Giants | Australian Strategic Policy Institute, 2021, <https://chinatechmap.aspi.org.au/>.

¹⁷⁹ Cave et al.

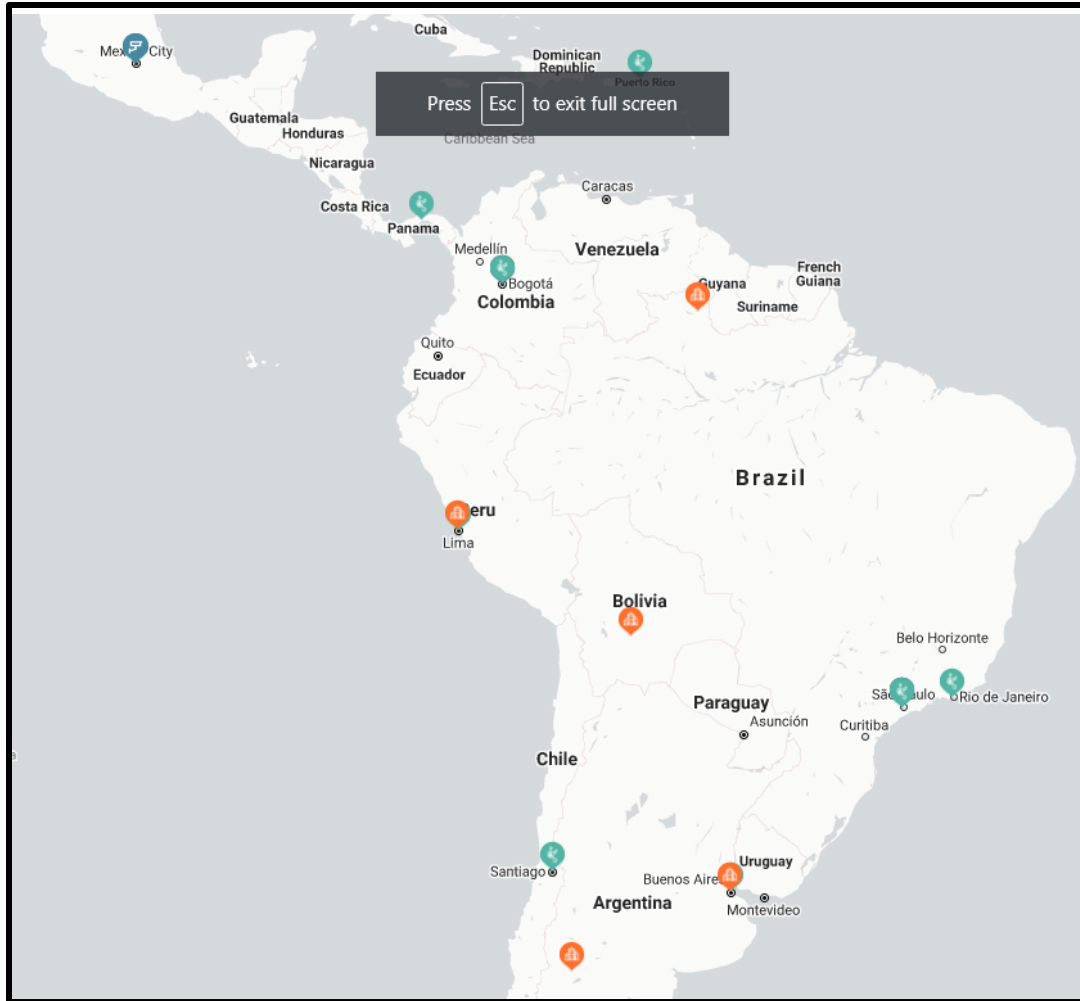


Figure 5. ASPI Map of AI and Surveillance Software in Latin America.¹⁸⁰

F. CHINESE GLOBAL SURVEILLANCE EXPORTS¹⁸¹

In Figures 5, 6 and 7, Ecuador, Paraguay, Guyana, Suriname, and French Guiana are the only countries in South America without Chinese surveillance technology.¹⁸² Based on the report, Guatemala and the Dominican Republic are new countries receiving Chinese technology that were not reported in other sources.

¹⁸⁰ Source: Cave et al.

¹⁸¹ Greitens, “Dealing with Demand for China’s Global Surveillance Exports.”

¹⁸² Greitens, 4.

Reportedly, the China National Electronics Import & Export Corporation (CEIEC), a subsidiary of China Electronics Corporations (CEC), is linked to the PRC defense industry and “has contributed significantly to public security technology projects in several countries in Latin America.”¹⁸³ Also of note, in 2017, China Electronics Corporations (CEC) signed “contracts with Venezuela, Bolivia, and Trinidad and Tobago to build public security networks.”¹⁸⁴ Trinidad and Tobago likely can be included in countries with domestic surveillance since it is likely that public security networks referred to domestic surveillance.

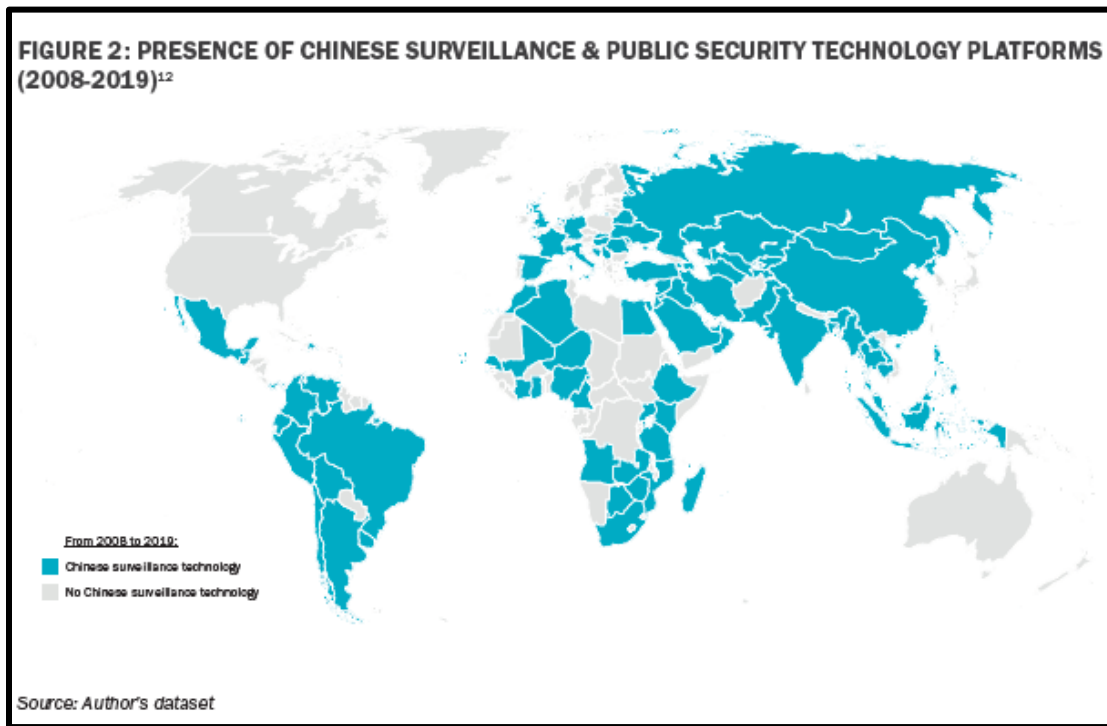


Figure 6. Chinese Surveillance and Public Security Technology Platforms¹⁸⁵

¹⁸³ Greitens, 4.

¹⁸⁴ Fan Feifei, “Transforming Public Security - Business - Chinadaily.Com.Cn,” *China Daily*, January 1, 2017, https://www.chinadaily.com.cn/business/2017-01/09/content_27896419.htm.

¹⁸⁵ Source: Greitens, “Dealing with Demand for China’s Global Surveillance Exports,” 4.



Figure 7. Chinese Surveillance Technology in Latin America.¹⁸⁶

G. CASE STUDY ON VENEZUELA

China has a history of investing in technology infrastructure in Latin America, including Venezuela.¹⁸⁷ Chinese supported Venezuela’s creation of digital identity cards, which allows the government to track individuals to suppress alternative views, and through which Maduro has maintained his power.¹⁸⁸ The Maduro regime with the help of the Chinese Company, ZTE, helped implement the ‘Fatherland Card’ (Carnet de la Patria) program, which recorded personal identifiable information along with social media

¹⁸⁶ Source: Greitens, 4.

¹⁸⁷ Dima Khatib, “Chavez’s ‘Historic’ China Strategy,” August 15, 2009, <https://www.aljazeera.com/economy/2009/8/15/chavezs-historic-china-strategy>.

¹⁸⁸ Berwick, “A New Venezuelan ID, Created with China’s ZTE, Tracks Citizen Behavior”; OAS, “OAS - Organization of American States: Democracy for Peace, Security, and Development,” Text, OAS - Organization of American States, August 1, 2009, 5, https://www.oas.org/en/media_center/press_release.asp?sCodigo=E-122/20; June Teufel Dreyer, “The Belt, the Road, and Latin America - Foreign Policy Research Institute,” January 16, 2019, <https://www.fpri.org/article/2019/01/the-belt-the-road-and-latin-america/>.

presence, and political memberships.¹⁸⁹ Beyond the card, ZTE helped build a mobile payment system, embedded a team to work with the state telecommunications company, and built the surveillance system.¹⁹⁰

1. Chinese Loans in Venezuela

The biggest aspect of Chinese engagement and support has been the loans to Venezuela, “which is 53 percent of all money lent by China to Latin America.”¹⁹¹ In 2018, China owned “\$23 billion worth of Venezuela’s foreign debt, making it the country’s biggest creditor.”¹⁹² The Chinese Development Bank and China Export Bank have given approximately \$62.2 billion since 2007 through 2016 to companies focused on energy, mining, and infrastructure, which can be seen in Figure 8.

¹⁸⁹ Cave et al., “Mapping China’s Tech Giants,” 12.

¹⁹⁰ Cave et al., 12.

¹⁹¹ Moises Rendon, “When Investment Hurts: Chinese Influence in Venezuela,” *Center for Strategic & International Studies (CSIS)*, April 3, 2018, <https://www.csis.org/analysis/when-investment-hurts-chinese-influence-venezuela>.

¹⁹² Francisco Monaldi, “China Can Help Save Venezuela. Here’s How.,” *Americas Quarterly* (blog), April 15, 2019, <https://americasquarterly.org/article/china-can-help-save-venezuela-heres-how/>; Rendon, “When Investment Hurts.”

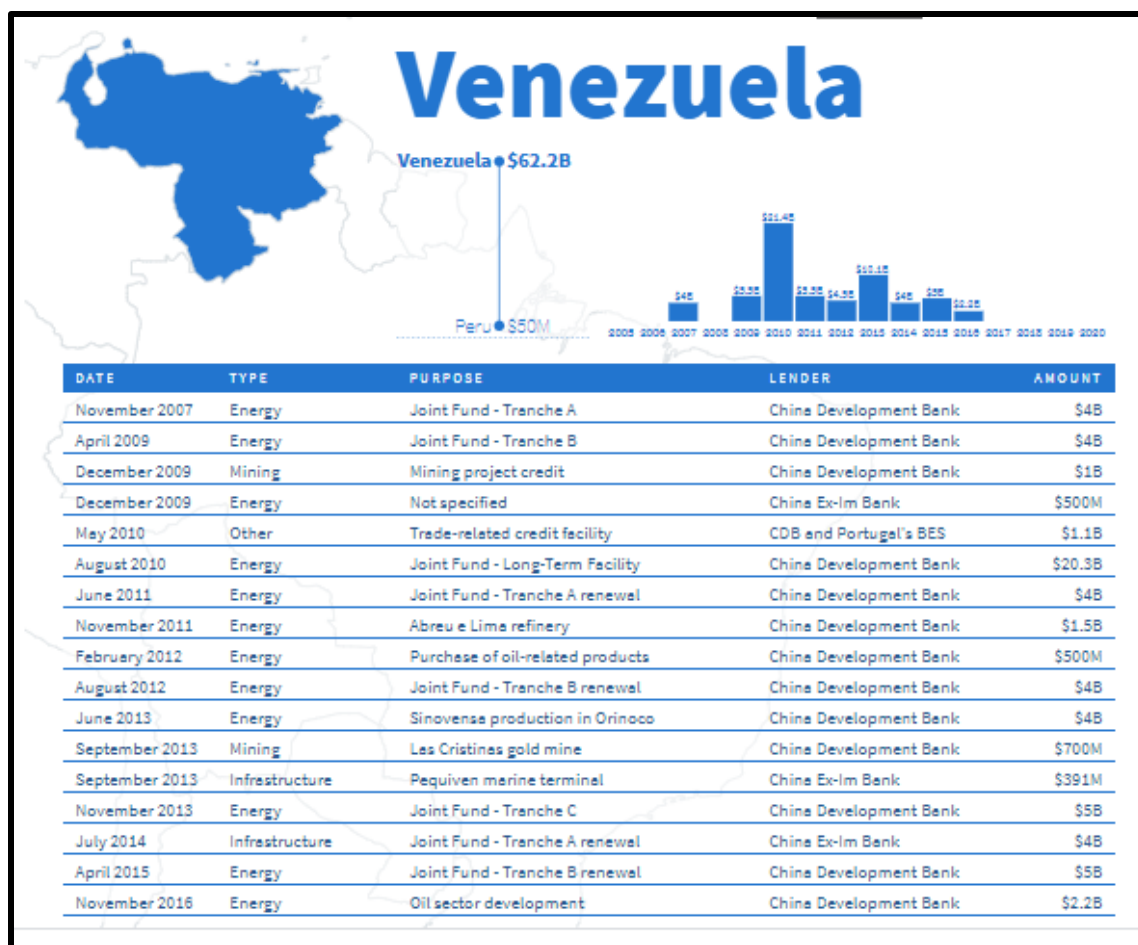


Figure 8. Chinese Loans in Venezuela.¹⁹³

Chinese money is difficult to track because they do not report or follow international community standards of for accountability.¹⁹⁴ This lack of transparency allows Maduro to use the money buy and maintain his power.¹⁹⁵ Additionally, the loan terms are longer than normal, which helps the regime since they do not have the increased pressure to pay back the loans.¹⁹⁶ While, since Maduro came to power, the Chinese have

¹⁹³ Source: Kevin P Gallagher and Margaret Myers, “China-Latin America Finance Database,” Inter-American Dialogue, 2021, https://www.thedialogue.org/map_list/.

¹⁹⁴ Rendon, “When Investment Hurts.”

¹⁹⁵ Rendon.

¹⁹⁶ Brandon M Rogers, “China’s Rise in South America: The Partner of Choice?” (Thesis, Monterey, CA, Naval Postgraduate School, 2018), 38, https://calhoun.nps.edu/bitstream/handle/10945/58357/18Mar_Rogers_Brandon.pdf?sequence=1&isAllowed=y.

not given new lines of credit, they have extended the preexisting ones.¹⁹⁷ In 2020, Maduro secured an additional grace period for Venezuela through at least 2020 to pay back the approximately \$19 billion in loans.¹⁹⁸

2. Other Chinese Activities in Venezuela

The Chinese have continued to be satisfied with the status quo while giving Maduro regime economic and political support despite the political and economic risks to China.¹⁹⁹ In 2018, Maduro traveled to China to seek additional support.²⁰⁰ Maduro gave a Chinese state corporation an additional 10% stake in a joint venture, but Beijing appeared not to give additional loans.²⁰¹ The Chinese have also invested in Venezuela projects, which were never completed and likely used to give money to Venezuelan officials.²⁰²

The Chinese opposed U.S. resolutions against Venezuela in the United Nations and supported the Venezuelans to win a seat on the United Nations Human Rights Council.²⁰³ The fact that Venezuela was allowed on the council seems absurd unlikely since they have been accused of a refugee crisis and human rights violations.²⁰⁴

¹⁹⁷ Monaldi, “China Can Help Save Venezuela. Here’s How.”

¹⁹⁸ Mayela Armas and Corina Pons, “Exclusive: Venezuela Wins Grace Period on China Oil-for-Loan Deals, Sources Say,” *Reuters*, August 12, 2020, <https://www.reuters.com/article/us-venezuela-china-exclusive-idUSKCN2581UN>.

¹⁹⁹ Cristina Guevara, “China’s Support for the Maduro Regime: Enduring or Fleeting?,” *Atlantic Council* (blog), January 13, 2020, <https://www.atlanticcouncil.org/blogs/new-atlanticist/chinas-support-for-the-maduro-regime-enduring-or-fleeting/>.

²⁰⁰ Lanteigne, *Chinese Foreign Policy: An Introduction*, 214–15.

²⁰¹ Dreyer, “The Belt, the Road, and Latin America - Foreign Policy Research Institute”; Alexandra Ulmer and Ben Blanchard, “Venezuela Hands China More Oil Presence, but No Mention of New Funds,” *Reuters*, September 14, 2018, <https://www.reuters.com/article/us-china-venezuela-idUSKCN1LU1EV>.

²⁰² Angus Berwick, “How a Chinese Venture Made Millions While Venezuelans Grew Hungry,” *Reuters*, May 7, 2019, <https://www.reuters.com/investigates/special-report/venezuela-china-food/>.

²⁰³ Michael Schwartz, “Russia Blocks Venezuela Measure at U.N., Calling It a U.S. Ploy for Regime Change,” *The New York Times*, March 1, 2019, sec. World, <https://www.nytimes.com/2019/02/28/world/americas/russia-venezuela-veto-united-nations.html>; Guevara, “China’s Support for the Maduro Regime.”

²⁰⁴ Rachele Krygier, “Venezuela Wins a Seat on the U.N. Human Rights Council,” *Washington Post*, October 17, 2019, https://www.washingtonpost.com/world/the_americas/venezuela-wins-a-seat-on-the-un-human-rights-council/2019/10/17/e0beeb34-f050-11e9-bb7e-d2026ee0c199_story.html; OAS Working Group, *Preliminary Report on the Venezuelan Migrant and Refugee Crisis in the Region*, Venezuelan Migrant and Refugee Crisis in the Region (Washington, D.C.: Organization of American States (OAS), 2019), 5.

3. Chinese Impact on Venezuela

The Chinese have supported the Venezuelan regime economically and politically, specifically with loans, infrastructure investment, military, and technology support.²⁰⁵ The Chinese have been willing to accept delays in repayments in loans, and for a time, the Chinese were an outlet to avoid U.S. sanctions. The crisis in Venezuela has become worse, but there has been no changes with the Chinese since they do not want to interfere with Venezuela sovereignty.²⁰⁶ Because of the Chinese support, Maduro has stayed in power, even with low oil production, high inflation, and a coup attempt.²⁰⁷ This additional money also allowed Maduro to pay off power brokers and military leaders so he could maintain his control of the regime.²⁰⁸ In sum, the Chinese financial support and nonintervention policy with the regime have allowed Maduro to siphon money from the investments and the economy to help him stay afloat and avoid the full impacts of the sanctions.²⁰⁹

H. CASE STUDY ON ECUADOR

The Chinese activities in Ecuador are a good example of how the Chinese can market their domestic surveillance capabilities, which can lead to bandwagoning effects that “lead to market concentration and market power” in the long term if the United States does not compete against the Chinese companies.²¹⁰ The Chinese sold Ecuador a video surveillance system that was funded by Chinese state loans and the fact that they needed an update to their system.²¹¹ The Chinese gain placement and access to Ecuadorian networks, which can be used for economic, political, and industrial espionage all of which

²⁰⁵ Rendon, “When Investment Hurts.”

²⁰⁶ Matt Ferchen, “Venezuela and China: A Perfect Storm,” openDemocracy, February 6, 2019, <https://www.opendemocracy.net/en/democraciaabierta/venezuela-and-china-perfect-storm/>; Benedicte Bull and Antulio Rosales, “The Crisis in Venezuela: Drivers, Transitions, and Pathways,” *Crisis En Venezuela: Actores, Transiciones y Vías.*, no. 109 (January 2020): 11, <https://doi.org/10.32992/erlacs.10587>.

²⁰⁷ Rogers, “China’s Rise in South America: The Partner of Choice?,” 39.

²⁰⁸ Rogers, 39.

²⁰⁹ Rogers, 37–38; Moises Rendon and Max Price, “Are Sanctions Working in Venezuela?” (Center for Strategic and International Studies (CSIS), September 2019), 39.

²¹⁰ Rohlfs, *Bandwagon Effects in High Technology Industries | MIT Press EBooks | IEEE Xplore*, 4.

²¹¹ Rollet, “Ecuador’s All-Seeing Eye Is Made in China – Foreign Policy”; Dua Jr., “The Rise of Chinese Technology in Latin America.”

is a concern for Ecuador, the region, and the United States.²¹² These are all possible national security concerns for the United States.

In 2011, the technology originally provided to Ecuador called “ECU911,” was furnished by China National Electronics Import & Export Corporation (CEIEC), a subsidiary of China Electronics Corporations (CEC).²¹³ In 2017, the Chinese technology that Ecuador received was able to help them in during a massive earthquake.²¹⁴ The Chinese have used this a marketing tool to help sell the idea to other Latin American countries.²¹⁵

Reportedly, the China Electronics Corporations (CEC) is focused on marketing and selling products in Latin American along with Africa. The general manager of CEC, Lui Liehong, said, “As Latin American countries industrialize, a country’s governance capacity should be enhanced by improving its information infrastructure. We’ve lots of products and technologies that can help improve e-governance, public security and industry IT,” which include artificial intelligence and surveillance technology.²¹⁶

1. COVID-19 and Chinese Artificial Intelligence

Huawei helped Ecuador and the countries hospitals “deploy AI-assisted CT scans screening systems to expedite the diagnosis of potential COVID-19 patients.”²¹⁷ There was also new initiatives in Brazil which help during the pandemic.²¹⁸

I. CHINESE MILITARY ENGAGEMENTS IN LATIN AMERICA

Chinese will use military relationships in Latin America to influence key military and security figures to gain overall geopolitics influence to include marketing the artificial

²¹² Harsono, “China’s Surveillance Technology Is Keeping Tabs on Populations Around the World.”

²¹³ Feifei, “Transforming Public Security - Business - Chinadaily.Com.Cn”; Rollet, “Ecuador’s All-Seeing Eye Is Made in China – Foreign Policy.”

²¹⁴ Feifei, “Transforming Public Security - Business - Chinadaily.Com.Cn.”

²¹⁵ Feifei.

²¹⁶ Feifei.

²¹⁷ Huawei, “Huawei Annual Report 2020,” 31, 163.

²¹⁸ Huawei, 24.

intelligence and domestic surveillance software. The Chinese are using all the tools of statecraft to ultimately to gain long term economic benefits, which will lead to military and political advantages over the United States. The military relationship can lead to investment or transfer of technology from China to those countries, for example, “China-based defense companies such as the NORINCO group have sold or given a broad array of equipment to the region’s security forces.”²¹⁹ This section highlights several Chinese military engagements in Latin America.

In general, the Chinese have regularly sent naval ships to “friendly port calls and military exercises.”²²⁰ Also, the Chinese conducted hosted Latin America officers in China and made various trips to the region.²²¹ The Chinese have used the military to build relationships in the region. First, the Peace Ark, the Chinese Hospital Ship, has been deployed in attempt to establish soft power in the region a few times although it was reportedly missing from the region during the beginning of the 2020 pandemic.²²² Second, between 2004 - 2012, the People’s Liberation Army (PLA) has sent about 143 members of military police to Haiti in support of an UN peacekeeping mission.²²³ Third, in 2015, the Chinese went to Brazil to receive jungle operations training.²²⁴ Fourth, the PLA have sent military members to the Lancero School in Columbia, and of note, the United States help

²¹⁹ R. Evan Ellis, “Why China’s Advance in Latin America Matters,” *National Defense* 105, no. 807 (February 2021): 18.

²²⁰ Ellis, 18.

²²¹ Ellis, 18.

²²² Ellis, 18; Clbyburn Saint John, “Chinese Navy Hospital Ship Docks in Venezuela amid Crisis,” *AP NEWS*, September 22, 2018, sec. Caribbean, <https://apnews.com/article/4b085e2ff0ce46e2bd9ee6bd482fc3c4>.

²²³ Ellis, “Why China’s Advance in Latin America Matters,” 18; Bates Gill and Chin-hao Huang, *China’s Expanding Peacekeeping Role: Its Significance and the Policy Implications*, SIPRI Policy Brief (Sweden: Stockholm International Peace Research Institute (SIPRI), 2009), 3, <https://www.sipri.org/sites/default/files/files/misc/SIPRIPB0902.pdf>.

²²⁴ Ellis, “Why China’s Advance in Latin America Matters,” 18; Tim Mahon, “Chinese Seek Brazilian Assistance With Jungle Training,” *Defense News*, August 8, 2017, <https://www.defensenews.com/training-sim/2015/08/09/chinese-seek-brazilian-assistance-with-jungle-training/>.

build the school when it was first established.²²⁵ Overall, the Chinese have been attempting to build their relationships in similar ways that the United States military conducts security cooperation and building relationships with foreign countries' military.

J. CHINESE FOREIGN POLICY LINKS TO ECONOMIC SUPPORT IN LATIN AMERICAN POLITICS

China has exploited wedges in the United States relationships with specific countries worldwide to further the Chinese foreign policy objectives. One of the critical foreign policy objectives of the Chinese is the reunification of Taiwan with mainland China. As of 2019, “only seventeen governments recognized Taipei.”²²⁶ In 2021, there are only fifteen countries that support the sovereignty of Taiwan.²²⁷ Since 2017, there were three countries in Latin America that have switched their alliance to China including Panama, Dominican Republic, and El Salvador, and at the same time there was economic agreements along with Chinese companies gaining access to country.²²⁸ The shift from supporting Taiwan's sovereignty to support the Chinese is evidence that Chinese economic incentives can be tied into their strategic objective, and it can be argued there is a form of bandwagoning that is showing up in this case. Latin American countries are susceptible to economic incentives; therefore, the Chinese technology would easily be accepted by other countries.

K. CHINESE ECONOMIC GOALS IN LATIN AMERICA

Arguably, the Chinese strategic approach has focused on the economy, and businesses to build assets, capabilities, and economic influence with the support and coordination from the CCP and commercial businesses.²²⁹ The Chinese have a predatory

²²⁵ Ellis, “Why China's Advance in Latin America Matters,” 18; Nicholas Naquin, “Learning the Lancero Way: U.S. Helped Develop Elite Colombian Training,” AUSA, March 2, 2020, <https://www.ausa.org/articles/learning-lancero-way-us-helped-develop-elite-colombian-training>.

²²⁶ Lanteigne, *Chinese Foreign Policy: An Introduction*, 6.

²²⁷ BBC News, “What's behind the China-Taiwan Divide?,” *BBC News*, April 14, 2021, sec. Asia, <https://www.bbc.com/news/world-asia-34729538>.

²²⁸ Ellis, “Why China's Advance in Latin America Matters,” 1.

²²⁹ Ellis, 18.

approach in Latin America, which is a national security concern for the region and for the United States.

1. Economics – Strategic minerals²³⁰

China has sought to gain majority share of a Brazilian company to get access to niobium, which is used in alloys for stainless steel, jet engines, rockets, and oil infrastructure.²³¹ Of note, the United States government considers Niobium a strategic metal and the vast majority of the supply comes from mostly one mine in Brazil.²³² China also owns lithium mines in has ownership in lithium mines in Chinese, Argentina, Bolivia, and Mexico.²³³ The United States considers Lithium a strategic metal, which is used for batteries to include electric vehicles.²³⁴

2. Economics – Strategic Acquisitions²³⁵

The PRC investment has primarily been through mergers and acquisitions in Latin America, and the PRC may look to exploit opportunities due to the 2020–2021 pandemic.²³⁶ The Chinese have been “exploiting the mutually reinforcing relationships between its leverage as a source of demand for Latin America exports control over sources of supply – especially commodities.”²³⁷ China can be described as predatory and looking for the gaps of the United States relationships in Latin America. Ultimately, although the

²³⁰ Ellis, 18.

²³¹ Ellis, 18; Royal Society of Chemistry, “Niobium - Element Information, Properties and Uses | Periodic Table,” accessed May 1, 2021, <https://www.rsc.org/periodic-table/element/41/niobium>.

²³² Dustin Moore, “Niobium: The Critical Strategic Metal That’s Only Mined Two Places On Earth,” Business Insider, accessed May 1, 2021, <https://www.businessinsider.com/niobium-the-critical-strategic-metal-thats-only-mined-two-places-on-earth-2010-12>.

²³³ Ellis, “Why China’s Advance in Latin America Matters,” 18.

²³⁴ U.S. Department of the Interior, *Interior Seeks Public Comment on Draft List of 35 Minerals Deemed Critical to U.S. National Security and the Economy* (Washington, DC: United States Department of the Interior, 2018), <https://www.doi.gov/pressreleases/interior-seeks-public-comment-draft-list-35-minerals-deemed-critical-us-national>.

²³⁵ Ellis, “Why China’s Advance in Latin America Matters,” 18.

²³⁶ R Evan Ellis, *Chinese Engagement in Latin America in the Context of Strategic Competition with the United States*, Testimony before the US-China Economic and Security Review Commission (Washington, DC: U.S.-China Economic and Security Review Commission, 2020), 6, 10.

²³⁷ Ellis, “Why China’s Advance in Latin America Matters,” 18–19.

thesis is focused on artificial intelligence, the research shows that it is important to understand the other aspects of the Chinese moves since they could be adopted for technology infrastructure which will affect and threaten United States national security.

Ports, canals, and waterways represent an area of national security due the placement and access that the Chinese could have to the areas. From a very realist perspective, hypothetically, the Chinese due to the placement and assess conduct a cyber-attack to shut down or disrupt something like the Panama Canal, which in a conventional wartime scenario would add additional time for the United States Atlantic Fleet to transit to the Pacific Ocean.²³⁸

For example, in Jamaica, the China Harbor Engineering Company Ltd. (CHEC) is a subsidiary of China Communications Construction Company Ltd (CCCC) and used “used leverage from self-financing the North-South highway to obtain undervalued terrain for building lucrative tourism-related properties along the route.”²³⁹

In Brazil, in 2017, China’s Merchant Port Holdings Co. Ltd. bought the share of Brazil’s most profitable portion terminal.²⁴⁰ The Chinese have exploited a Brazilian company, CRVD, by using the leverage gain by the purchase of the port.²⁴¹ The China Communications Construction Company Ltd (CCCC) company offered to acquire the Paraná–Paraguay waterway, which connects Brazil, Bolivia, Paraguay, Argentina, and Uruguay. The water is “the gateway to most of the agro-industrial exports in South American trade bloc Mercosur, a very relevant factor for many companies.”²⁴² If the

²³⁸ Mat Youkee, “The Panama Canal Could Become the Center of the U.S.-China Trade War,” *Foreign Policy* (blog), May 7, 2019, <https://foreignpolicy.com/2019/05/07/the-panama-canal-could-become-the-center-of-the-u-s-china-trade-war/>.

²³⁹ Ellis, “Why China’s Advance in Latin America Matters,” 19; DEVEX, “China Harbor Engineering Company Ltd. | Devex,” accessed May 1, 2021, <https://www.devex.com/organizations/china-harbor-engineering-company-ltd-96518>.

²⁴⁰ Donny Kwok Parra-Bernal Guillermo, “China Merchants Buys Control of Brazil’s Most Profitable Port,” *Reuters*, September 4, 2017, <https://www.reuters.com/article/us-china-mer-port-tcp-idUSKCN1BF03C>.

²⁴¹ Ellis, “Why China’s Advance in Latin America Matters,” 19.

²⁴² Damian Profeta, “Paraná–Paraguay Waterway: Chinese Company Could Run Vital Trade Route,” *Dialogo Chino* (blog), August 28, 2020, <https://dialogochino.net/en/infrastructure/37072-chinese-company-could-run-crucial-argentine-shipping-route/>.

Chinese were able to control access to the waterway, this control and influence could also be a factor in economic bandwagoning since countries would be incentivized to work more closely with Chinese companies.

L. CONCLUSION

Overall, the Chinese appear to have an advantage in the number of countries that have Chinese artificial intelligence technology. Technology competition will be used by the Chinese and the United States as tools in the competition within Latin America. It appears that the Chinese based on the current data that they may be benefiting from some economic bandwagoning with their artificial intelligence technology.

IV. CONCLUSION AND RECOMMENDATIONS

A. WHAT ARE THE NATIONAL SECURITY CONCERNS?

The Chinese and the United States are racing and competing to “develop and deploy” artificial intelligence which will reshape “everything from the economic and military balance among states to the future of work, wealth, and inequality within them.”²⁴³ If the United States fails to win in the artificial intelligence competition the American long term “prosperity, security and welfare” will be in jeopardy since the Chinese goals are to become the world’s leader in artificial intelligence.²⁴⁴ Latin America provides a good case study of how Chinese artificial intelligence technology can be counter to the United States values of individual liberty when countries like Venezuela and Ecuador have used the tools for repression and surveillance.²⁴⁵ If the United States does not compete in Latin America and the rest of the world, then the U.S. will cede the right and the ability to negotiate about artificial intelligence values and mitigate some of the other national security concerns regarding artificial intelligence.²⁴⁶

B. INTRODUCTION AND OVERVIEW OF RECOMMENDATIONS

The thesis has looked at the national security concerns and quantified the amount of Chinese artificial intelligence presence in Latin America. The United States can use security sector assistance (SSA) to positively influence or shape our relationships with regionally significant countries that maintain strong bilateral economic or security ties to compete against Chinese influence.

If Latin American and Caribbean countries choose American companies for their artificial intelligence capabilities, then investment in artificial intelligence via SSA has several benefits to the United States. First, the choice will help grow U.S. industry and

²⁴³ White House, *Interim National Security Strategic Guidance*, 8; Schmidt et al., *Final Report: National Security Commission on Artificial Intelligence*, 1.

²⁴⁴ Schmidt et al., *Final Report: National Security Commission on Artificial Intelligence*, 1–2.

²⁴⁵ Schmidt et al., 1–2.

²⁴⁶ Schmidt et al., 1–2.

competitiveness. Second, U.S. values will influence the decisions to make when developing the technology and possible security implications to societal impact. Third, the United States's government can use SSA to block "strategic and economic political advances of external state actors into the region."²⁴⁷

The final point about blocking specifically Chinese advances in the region is the most important aspect if one looks at the problem from a realist perspective. China has already made advances in some countries within the artificial intelligence space. Specifically, Ecuador purchased domestic surveillance software from the Chinese.²⁴⁸ From a realist perspective, the United States is concerned about the Chinese increased ability to conduct cyber operations and surveillance. Additionally, in Latin America, the use of domestic surveillance could be abused if the correct values and ethics are included in the technology.

C. LATIN AMERICAN SECURITY/INTELLIGENCE/CYBER

Latin America has large gaps in capabilities in cyber operations, and the increased effectiveness of AI-driven cyber will only exacerbate the capabilities gap. The United States must help mitigate the risk and decrease Chinese influence. If the Chinese can sell more of their software and artificial intelligence technology, the Chinese will gain a digital foothold. Therefore, security sector assistance can improve Latin America's militaries and intelligence agencies to understand better how artificial intelligence-enabled cyber operations will potentially affect the military and government institutions to avoid the risk. USSOUTHCOM must continue to reinforce the cyber capabilities via SSA with Chile, Argentina, and Brazil.²⁴⁹

²⁴⁷ R Evan Ellis, "The U.S. Military in Support of Strategic Objectives in Latin America and the Caribbean," *Prism: A Journal of the Center for Complex Operations* 8, no. 1 (March 2019): 30.

²⁴⁸ Rollet, "Ecuador's All-Seeing Eye Is Made in China – Foreign Policy."

²⁴⁹ Admiral Craig S. Faller, *United States Senate, Committee on Armed Services, "Posture Statement of, Commander, United States Southern Command"* (United States Southern Command (USSOUTHCOM), 2020), 9.

D. LATIN AMERICAN AND CARIBBEAN A.I. CAPABILITIES

To compete in the global competition in artificial intelligence development, the countries in Latin America will have to increase the talent pool, change the business culture, and make or get investments in the technology.²⁵⁰ However, Latin America does not have a lot of artificial intelligence investment.²⁵¹ Therefore, SOUTHCOM must use SSA to help our partners and to allow the U.S. military and commercial entities to compete in the long term.

E. SECURITY SECTOR ASSISTANCE AND ARTIFICIAL INTELLIGENCE

Presidential Policy Directive-23 (PPD-23) explains the goals of security sector assistance.²⁵² PPD-23 states that the United States must “help partner nations build sustainable capacity to address common security challenges” and also “promote universal value, such as good governance.”²⁵³ SSA aims to shape foreign partners’ policies, “build and sustain the capacity and effectiveness of legitimate institutions to provide safety and justice for their people,” and support their security challenges.²⁵⁴ Artificial intelligence is an area that needs to be addressed with security sector assistance in conjunction with a whole of government approach within a long-term strategy to this problem set that will touch upon politics, economics, and security issues.

Investing in foreign countries’ militaries does not matter if the United States does not improve the other countries’ institutions.²⁵⁵ From the tactical-level units to the strategic level, the United States needs to show countries have a long-term commitment to support states through “economic development and state-building,” and the long-term

²⁵⁰ Murillo, “Forbes Insights.”

²⁵¹ Alsop, “Global AI Investment & Funding Share 2013–2018.”

²⁵² Defense Institute of Security Cooperation Studies (DISCS), *Chap 19, “Whole of Government Security Cooperation Planning,” from The Management of Security Cooperation*, 2020, 19–2, https://www.dscu.mil/documents/publications/greenbook/24_Greenbook_40_0_Complete.pdf?id=1.

²⁵³ The White House, “Fact Sheet: U.S. Security Sector Assistance Policy (PPD-23),” *Office of the Press Secretary*, 2013, 2.

²⁵⁴ The White House, 2.

²⁵⁵ Patrick H. O’Neil and Ronald Rogowski, *Essential Readings in Comparative Politics*, 5th ed., 2018, 55–56.

committed links to a long term strategic to build strategic alliance and partnerships in technology.²⁵⁶ USSOUTHCOM should not be the only COCOM with AI investment via SSA, but it should be part of every COCOM and government institutions and agencies' strategy. Therefore, the chapters frame the issues regional within SOUTHCOM as a case study that applies to the global situation. The investment in artificial intelligence development will help develop long term payoffs.

Ultimately, artificial intelligence will significantly affect the world and Latin America. Artificial Intelligence has already had a profound effect on the world, but there are many unknowns about how technology will influence jobs and domestic security, likely to have an effect in Latin America. Again, the United States wants to ensure that our government, citizens, and corporations influence the development of the algorithms and technology to ensure that our values and rules are built into the technology. USSOUTHCOM can use SSA to influence countries in Latin America to understand the importance of the technology, the benefits to improved governance in the region, and the threats of increased domestic surveillance in a region where this has been an issue even in the recent past during Operation Condor.

F. SECURITY SECTOR ASSISTANCE PROGRAMS

Various programs could support the development of indigenous artificial intelligence capabilities or economic relationships with United States' industries. The recommendation is to augment and add the focus of artificial intelligence education, development, and sales within Latin American countries.

First, the Economic Support Fund can be used to allow the purchase of non-military capabilities. For example, Latin American countries can buy artificial intelligence capabilities to improve their economic efficiency or infrastructure; Chilean and Peruvian mining companies use autonomous machines.²⁵⁷ Automation is saving these companies

²⁵⁶ Jahara Matisek, "The Crisis of American Military Assistance: Strategic Dithering and Fabergé Egg Armies: Defense & Security Analysis: Vol 34, No 3," *Defense & Security Analysis* 34, no. 3 (2018): 282, <https://doi.org/10.1080/14751798.2018.1500757>; Hill, "Establishing a Standard," 12.

²⁵⁷ Ovanessooff and Plastino, "How Artificial Intelligence Can Drive South America's Growth," 3; Murillo, "Forbes Insights"; Imran, "Mining Companies Using AI, Machine Learning And Robots."

money and increasing efficiency.²⁵⁸ Another example is Argentina, which uses “machine-learning-based tools that let citizens in Argentina report problems like potholes and uncollected garbage.”²⁵⁹

Second, the program of “311, Exchange of Defense Personnel Between United States and Friendly Countries: Authority” allows specifically for the “mutual exchange of military or civilian engineers and scientists with friendly countries.”²⁶⁰ One issue that could limit exchanges is Department of Defense Directive 5230.11, which gives information on “Disclosure of Classified Military Information to Foreign Governments and International Organizations.”²⁶¹

Third, the program “332, Friendly foreign countries; international and regional organizations: defense institution capacity building” would allow subject matter experts and civilian advisors to help advise foreign militaries and security agencies.²⁶² United States’s advisors will be essential to address the ethics and values during the development of algorithms to avoid biases or other problems that artificial intelligence algorithms can have.

Fourth, the Information Exchange Program allows for the “exchange of technical data” for weapons development.²⁶³ Although this program might not be ideal within Latin America, the program could be significant in developing various robotics or autonomous vehicles, submersibles, or remotely piloted aircraft. For example, the U.S. military recently established the Joint Artificial Intelligence Center (JIAC). USSOUTHCOM should follow the example and start their own cell to start working on the problem set.

²⁵⁸ Imran, “Mining Companies Using AI, Machine Learning And Robots.”

²⁵⁹ Murillo, “Forbes Insights.”

²⁶⁰ Defense Institute of Security Cooperation Studies (DISCS), *Security Cooperation Programs*, Revision 19.1 (The Defense Institute for Security Cooperation Management, 2019), 23.

²⁶¹ Defense Institute of Security Cooperation Studies (DISCS), 23.

²⁶² Defense Institute of Security Cooperation Studies (DISCS), *Chap 19, “Whole of Government Security Cooperation Planning,” from The Management of Security Cooperation*, 28.

²⁶³ Defense Institute of Security Cooperation Studies (DISCS), *Security Cooperation Programs*, 88.

Fifth, International Military Education and Training (IMET) is a very important program to help develop capabilities and understanding of artificial intelligence within Latin America since they do not have the inherent capabilities.²⁶⁴ An increase in the exchange could be beneficial to enable a growing understanding. Perhaps, expanding the authority of the program and to allow foreign students to attend more elite civilian schools will build a more capable, long-term strategic partner. In working with USNORTHCOM, Mexico could be an excellent candidate if the program had to start small since Mexico has shown initiative in developing the technology. For example, in 2018, Mexico became “one of the first ten countries in the world to deliver a National Strategy for AI.”²⁶⁵

Finally, another critical program to support is the International Air and Trade Shows since the programs enable the defense industry to sell equipment.²⁶⁶ USSOUTHCOM should promote artificial intelligence, robotics, and automated equipment to sell in Latin America. Of note, the restrictions on selling equipment would be the foreign disclosure issues and safeguarding important technology.²⁶⁷

Overall, some programs can help promote artificial intelligence in Latin America. There are potential minor adjustments in authorities, and the programs would have to work around classified information or technology. The changes in the programs do not necessarily need a change in funding, but just a change in focus that is in line with a whole-of-government approach and long-term strategy.

G. SUSTAINABILITY

One consistent issue is foreign aid and assistance sustainability, but investment in artificial intelligence should not be a concern since it needs to have a long-term strategic strategy. It should be funded in conjunction with a whole-of-government approach. The U.S. National Security Strategy expresses the need to be a leader in various technologies

²⁶⁴ Defense Institute of Security Cooperation Studies (DISCS), 91.

²⁶⁵ Martinho-Truswel et al., “Towards an AI Strategy in Mexico: Harnessing the AI Revolution,” 6; Caversan and Marco, *Chapter 2. Latin America: The Next Big AI Talent Pool in the Global Talent Competitiveness Index 2020: Global Talent in the Age of Artificial Intelligence*.

²⁶⁶ Defense Institute of Security Cooperation Studies (DISCS), *Security Cooperation Programs*, 89.

²⁶⁷ Defense Institute of Security Cooperation Studies (DISCS), 89.

to include artificial intelligence.²⁶⁸ Therefore, the United States must promote the business and products in Latin America and partner with countries to have mutual benefit.²⁶⁹ We must balance partnership and the United States's intellectual property.²⁷⁰ Security Sector Assistance can avoid areas that would compromise our intellectual property, but SSA can still use artificial intelligence to focus on areas like good governances and institution building, which Latin America requires, or enabling collection to target drug cartels.²⁷¹

H. TECHNOLOGY TRANSFER/SAFEGUARDING OF INFORMATION

Although there are restrictions on information, it can be difficult for the United States to transfer the technology, and some of the technology is in the civilian sector. The U.S. government and companies want to safeguard their intellectual property. Ultimately, the United States must abide by these rules. The national military strategy reflects the importance of artificial intelligence and the development of the technology.²⁷² The strategy also reflects the importance of sustaining advantage in the western hemisphere.²⁷³ The thesis argues an important part of maintain the advantages in the western hemisphere is to ensure the U.S. is the partner of choice for artificial intelligence.

I. FUTURE MILITARY TRAINING

The military must adapt to the changing landscape of warfare. Most military members are trained to use an M4/M16 assault rifle, but why are they not trained to use an

²⁶⁸ The White House, *National Security Strategy of the United States of America* (Washington, DC: The White House, 2017), 20, <https://www.whitehouse.gov/wp-content/uploads/2017/12/NSS-Final-12-18-2017-0905.pdf>.

²⁶⁹ The White House, 21.

²⁷⁰ The White House, 22–23.

²⁷¹ Ellis, “The U.S. Military in Support of Strategic Objectives in Latin America and the Caribbean,” 35; Rodrigo Nieto-Gomez, “Stigmergy at the Edge: Adversarial Stigmergy in the War on Drugs,” *Cognitive Systems Research*, Special Issue of Cognitive Systems Research – Human-Human Stigmergy, 38 (June 1, 2016): 14, <https://doi.org/10.1016/j.cogsys.2015.12.005>.

²⁷² Jim Mattis, “Summary of the 2018 National Defense Strategy,” *Department of Defense*, 2018, 8–10.

²⁷³ Mattis, 8–10.

autonomous drone, social media accounts, and artificial intelligence impacts?²⁷⁴ Artificial Intelligence, machine learning, and automation will have a revolutionary and evolutionary effect on military operations. The military must train and force junior personnel to test and understand the various systems. Additionally, the military must drive the discussion of ethics, rules of engagement and potentially initiate changes to the ‘Laws of War’ to fit into a new battlefield with artificial intelligence and automated cyberspace.

J. FURTHER RESEARCH

The thesis recommendations focused on Department of Defense and Department of State programs with security sector assistance. Future research could focus on the private sector or civilian area solutions since artificial intelligence technology has been developed mostly in the private sector. Additionally, artificial intelligence will have broad impacts throughout society, therefore, future research would aid in understanding where the United States can help countries in Latin America and Caribbean regarding artificial intelligence.²⁷⁵ The recent United States Commission on Artificial Intelligence has various ideas that can be explored in future research including dialogue and collaboration with the Chinese.²⁷⁶ Overall, the Chinese and the United States are going to lead the world in artificial intelligence development and the competition could quickly spiral out of control if both countries do not look for areas of compromise and negotiations.²⁷⁷ The United States must compete in AI with a whole-of-nation or whole-of-society approach.²⁷⁸

K. CONCLUSION

Although the SSA investment in AI will not have short term gains, it will have long term strategic consequences, which is why the U.S. government must act in concert and with the private sector. As noted in the previous sections, Latin America does have some

²⁷⁴ Nick Lopez et al., “The Future of Irregular Warfare,” accessed September 13, 2020, <https://mwi.usma.edu/the-future-of-irregular-warfare/>.

²⁷⁵ Schmidt et al., *Final Report: National Security Commission on Artificial Intelligence*, 158.

²⁷⁶ Schmidt et al., 161.

²⁷⁷ Lee, *AI Super-Powers: China, Silicon Valley, and the New World Order*, 229–31.

²⁷⁸ Schmidt et al., *Final Report: National Security Commission on Artificial Intelligence*, 1.

indigenous capabilities, but in general, the region needs support, therefore, they will likely get it from Chinese or American companies and governments. If that happens, then it is likely that Latin America will improve economically, politically, and militarily.

USSOUTHCOM wants to be a partner of choice.²⁷⁹ Not only does the United States need to be the partner of choice in Latin America for artificial intelligence, but SSA can also be used to influence the values of individuals and governments as they are learning about artificial intelligence technology. SSA investment in AI is a small tool with complications due to technology transfer issues, but if the U.S. government or industries can be the choice for AI in Latin America, then China will have less influence. Additionally, Latin American, and Caribbean countries need improved governance, which is one area that SSA can help influence.²⁸⁰ In conjunction with that, AI can help improve governments and economies' efficiency and effectiveness, leading to a more effective partnership between Latin America and the United States.

²⁷⁹ Faller, *United States Senate, Committee on Armed Services, "Posture Statement of, Commander, United States Southern Command."*

²⁸⁰ Ellis, "The U.S. Military in Support of Strategic Objectives in Latin America and the Caribbean," 32.

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