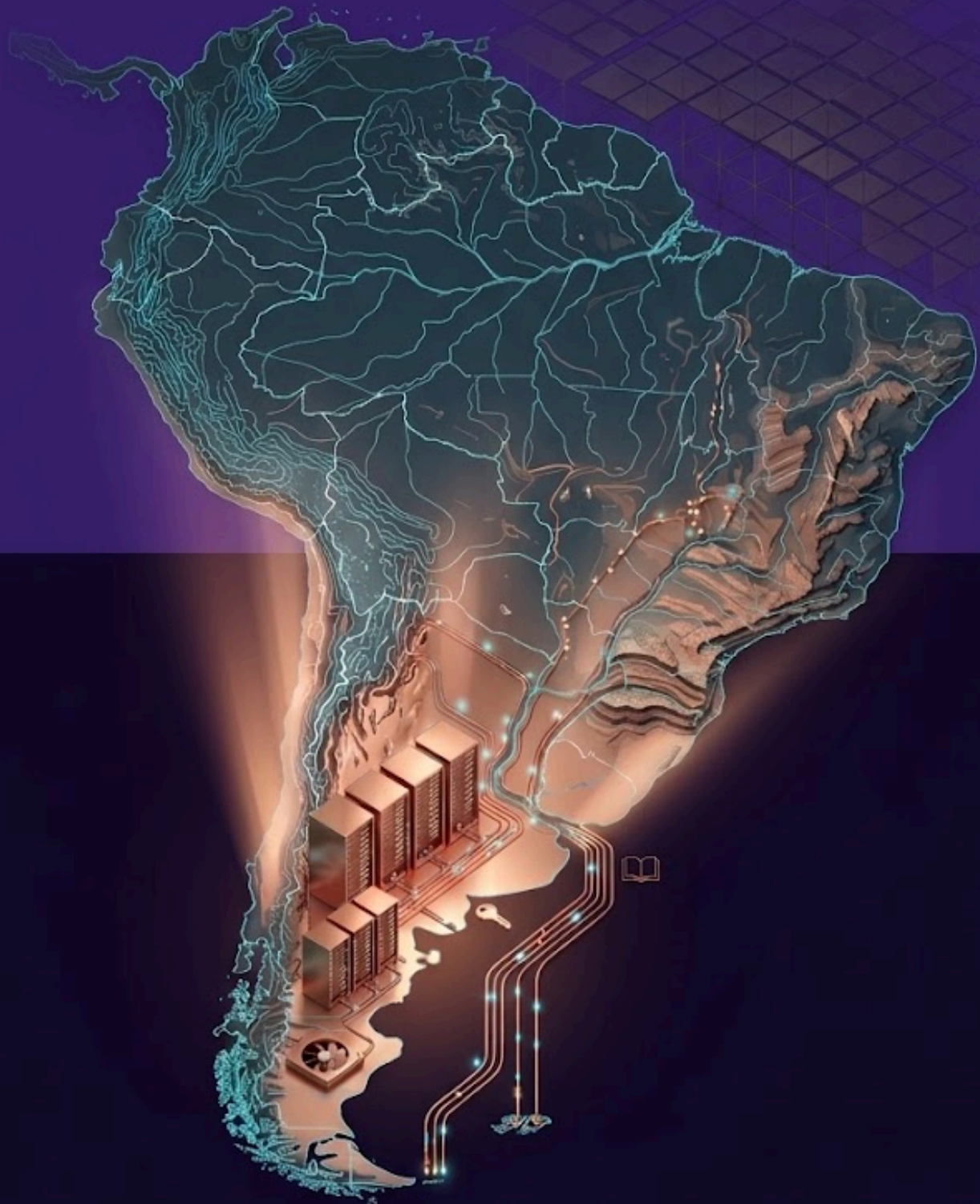


Cartographies of Technopolitical Resistance from the South



Recordings of the sessions “Technologies in Debate: A Toolkit for Understanding the Present”. Held on August 12, 13, 19, and 20, 2026, at the Buenos Aires Office of the Heinrich Böll Foundation.

These accounts are the result of the transcription of the presentations given by Beatriz Busaniche, Nicolás Wolovick, Enrique Chaparro, and Margarita Trovato.

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Prologue

In a present dazzled by the siren calls of artificial intelligence and technological fetishism, the publication of these accounts emerges not as a mere informational record, but as a cartography for understanding the present. The lecture series on technology, human rights, emancipation, and power, co-organized by the Vía Libre Foundation and the Heinrich Böll Foundation, traces an analytical coordinate: the need to demystify the supposed neutrality of technology, reclaim political agency over data, computing, and words, and assert the dignity of human rights against the material extractivism and pervasive surveillance that characterize capitalism in its current stage.

What weaves these four presentations together is the guiding philosophy of the Vía Libre Foundation: a blend of technical rigor without jargon, combined with a political, collective, and situated perspective rooted in the asymmetries of the Global South. This is not a passive contemplation of innovation, but rather a pedagogical commitment that seeks to dismantle the marketing of Big Tech's power and the complicity of national States. From this perspective, technology ceases to be an inexorable force of progress, revealing itself as what it has always been: a contested territory, a human construction permeated by power relations, domination, and the will for emancipation.

The Interweaving of the Four Perspectives

Beatriz Busaniche: The Geopolitical Map and the Mirage of Being an AI Powerhouse

The journey of this publication begins with the geopolitical framework proposed by Beatriz Busaniche, who dismantles the official discourse promising to position Argentina as the "fourth artificial intelligence powerhouse." Busaniche demonstrates that the deregulation and alignment policies proposed by Javier Milei's government do not lead to the scientific vanguard, but rather to the consolidation of a digital enclave economy. In this model, the country submissively inserts itself into the global periphery, relinquishing control over its digital public policies to integrate under the rules imposed by the dominant metropolis.

Through a detailed overview of the regulatory architecture of international trade, the report reveals how sovereignty is silently surrendered. True regulatory power does not reside in the "soft" consensus of the United Nations, but in the force of the World Trade Organization (WTO) and supranational trade tribunals.

Busaniche closely examines the Trade and Investment Agreement (ARTI), signed with the United States in February 2026. The document fully adopts the "wish list" of its counterpart, the United States. By shielding access to the technologies of U.S. companies, the treaty prevents the Argentine State from conducting software audits to

evaluate performance, biases, or discrimination, as well as from establishing rules for technological transfer. Furthermore, it degrades privacy standards by facilitating cross-border data flows to a country without a federal personal data protection law, such as the U.S.; it imposes an implicit veto against the supply of technology from China (or from whichever nation the United States considers its commercial adversary at the time) under the vague clause of "unreliable suppliers", as illustrated by the diplomatic pressure exerted on the Neuquén-based cooperative CALF; and it subordinates the customs framework by waiving the collection of tariffs on digital goods.

The culmination of this subordination is the adherence to Pax Silica, an initiative of the United States' State Department. Pax Silica is a strategy aimed at ensuring the supply of critical resources essential for the technological and military industries of the U.S. and its strategic allies in the highly developed world, reducing the Global South to the status of a mere provider of unprocessed raw materials. This external subordination is coupled internally with the budgetary strangulation of public universities and the hollowing out of the science and technology system, alongside the gradual destruction of the scientific capacity necessary to build local alternatives.

Enrique Chaparro: The Necessary Deconstruction of "Artificial Intelligence"

While Busaniche outlines the material borders of how a geopolitical enclave is constructed from the standpoint of international politics, Enrique Chaparro undertakes a conceptual and epistemological approach to the discourses sustaining the empire of Artificial Intelligence. Under the provocative title *Artificial Intelligence and Intellectual Indigence*, he deconstructs the taxonomies devised by Silicon Valley marketing, denouncing the harmful habit of anthropomorphizing the behavior of devices.

Chaparro reminds us that an algorithm is neither a mysterious nor an autonomous entity, but rather an unambiguous specification of how to solve a class of problems—expressible in a formal language and executable in finite space and time—something as old as manual division taught in schools. Along these lines, he dismantles terms like "hallucination": machines do not hallucinate—a neurobiological phenomenon typical of primates (and perhaps other higher animals)—they merely execute probabilistic processes that yield syntactically correct but semantically dubious outputs. Terms such as "regret," "learning," or "memory" are equally empty metaphors.

By delving into the architecture of large language models (LLMs) and decoding the acronym GPT (Generative Pre-trained Transformer), the author details how software engineering translates the polysemic richness of words into numerical units called tokens, mapped within multidimensional vector spaces. It is Wittgenstein's maxim turned into software: meaning defined by the geometric proximity of use. Yet herein lies the unbridgeable fracture: these systems lack semantic grounding in the physical world. Through the analogies formulated by linguist Emily Bender—the Stochastic Parrot, which repeats probabilistic patterns without any comprehension, and Bender's

Octopus, which processes Morse code without ever having experienced the empirical reality of what it describes—Chaparro demonstrates that current large-scale machine learning systems operate through "brute force" on an unprecedented scale.

This blind automation devours colossal amounts of energy and water, sustained largely by a speculative bubble scheme. Nevertheless, the greatest danger lies in cognitive delegation: surrendering social thought to closed, homogeneous corporate systems that saturate the internet with "algorithmic garbage," thereby precipitating the collapse of the model and the extinction of dissident ideas or disruptive critical thinking. Ultimately, this risks actualizing Frank Herbert's warning in *Dune*: **"Once men turned their thoughts over to machines in the hope that this would set them free. But that only permitted other men with machines to enslave them"**.

Nicolás Wolovick: Computing and Citizenship

Chaparro's epistemological dismantling finds its physical, territorial, and infrastructural anchoring in the voice of Nicolás Wolovick. The Director of Supercomputing at the National University of Córdoba (UNC) introduces a core premise: a person's digital citizenship today is directly determined by the computing capacity at their disposal. When a State mandatorily centralizes its bureaucracy and administrative procedures on platforms like Córdoba's CiDi (Digital Citizen) system, the lack of a mid-range smartphone is not a consumer issue, but an exclusion from essential civil rights (healthcare, social assistance, tax payments). Hence the relevance of groups like the *Cybercirujas*, who, by salvaging discarded hardware, carry out a genuine task of civic restitution at the social margins.

On a scientific scale, Wolovick exposes the problem of "scientific self-censorship": the retreat of local researchers who curtail the ambition of their hypotheses to match the capabilities of their personal computers. In response to this, public computing centers act as democratic catalysts, enabling everyday achievements like the development of Caracola—a local web service for speech-to-text transcription based on Whisper, which accelerates processing twentyfold without saturating researchers' resources.

The author warns us against the mirage of the "cloud" offered by foreign corporations like AWS, whose initial free credits operate under a logic that Argentine popular culture defines as: "the first one is free, the second one will cost you." Staking the viability of a PhD on the cloud means submitting to the risk that a sudden change in corporate policy could remotely erase years of effort. Sovereignty resides in the stubborn materiality of local infrastructure; "if they want to take our servers, they have to come with a warrant, rifles, and trucks."

Wolovick celebrates milestones in local engineering, such as the **Clementina XXI** entering the Top 500 ranking, the manual installation of the donated Swiss supercomputer **Helvetios** in just two weeks, and the third-place global finish of the student team **Los Carpinchos**. He reclaims the prestige of "*hacer fierros*" (getting your

hands dirty with hardware—laying cables, calculating thermal dissipation, soldering silicon) as opposed to the purely abstract tradition of academic computer science.

In parallel, he demystifies the false panacea of multi-million dollar investments in Big Tech megadacenters promoted in Patagonia. These infrastructures operate as extractive energy enclaves: they import hardware that yields no processing spillover to the local scientific system, and they consume national water and electrical resources without generating genuine employment. Faced with strict decarbonization targets that force Europe to discard still-viable machines, the Global South must appropriate this obsolescence to power its own research engine. "A supercomputer is like a pear: you either eat it now, or it rots," Wolovick quipped.

Margarita Trovato: The State Panopticon, Predictive Bias, and Biopolitics

The conversation converges from the macro to the micro, moving into biopolitics and the lived experience of the everyday citizen in Margarita Trovato's presentation. As a public policy lawyer at the Fundación Vía Libre, Trovato exposes the gap between the normative "ought to be" of the Personal Data Protection Law (No. 25,326) and the actual practices of mass surveillance and data cross-referencing by the Argentine State.

The speaker reviews the databases that citizens must mandatorily surrender in order to exist civilly: biometrics and identity in RENAPER, daily physical routes in the SUBE transit card, the financial X-ray in ARCA (formerly AFIP), and social security history in ANSES. Democratic principles demand the strict compartmentalization and separation of these databases: "the power or technical capacity to cross-reference databases does not imply legal authorization to do so." However, the laxity of the exceptions in the year-2000 law allows for abuses such as the one documented in the Supreme Court's *Torres Abad* ruling, where the State diverted social security information from ANSES for electoral political campaigning.

Trovato links this internal dismantling of privacy rights to the geopolitics of data. While the Court of Justice of the European Union invalidated its data transfers to the U.S., considering it a territory of mass surveillance without individual guarantees (the *Schrems II* ruling), Argentina signed bilateral agreements of "jurisdictional equivalence" with Washington, throwing its citizens' data flows wide open to the FISA and Cloud Act intelligence systems of U.S. security agencies.

This asymmetry opens the door to the incursion of global predictive espionage corporations like Palantir—a provider for U.S. ICE in the deportation of migrants, and the protagonist of an illegal health-data access scandal in the UK—facilitated by the RIGI regulatory framework. The corollary to this authoritarian drift is social disciplining: the *chilling effect* or self-censorship that citizens suffer when they know they are under diffuse monitoring, which conditions the right to protest and public dissent.

The lawyer also deconstructs state predictive technologies based on inferred data (algorithmically generated statistical categorizations that profile subjects without their

consent or the possibility of rectification). She exposes cases such as the application developed alongside Microsoft in Salta to "predict" teenage pregnancies in a geolocated manner based on class profiles—a methodologically useless but politically stigmatizing design. Finally, she unmasks the farce of the announced "Social Digital Twin" (*Gemelo Digital Social*) by the Ministry of Human Capital. In response to a freedom of information request by Vía Libre, the State replied that "there was no official program on record" ("it was just a tweet"), later attempting to defend the initiative under the fallacy that it used "anonymized" data. Trovato points out that in the era of Big Data, perfect anonymization is a technical myth: simply cross-referencing three or four variables is enough to unequivocally re-identify anyone in a database.

A Strategic Synthesis for Resistance

Upon concluding the overview of these four reports, it becomes evident that the axes proposed by Busaniche, Chaparro, Wolovick, and Trovato are not isolated compartments, but rather ramifications of the same root problem—an integrated architecture of domination and dependence that demands systemic responses.

The sovereignty and international treaties outlined by Busaniche inextricably require the local capabilities presented by Wolovick. Without locally owned servers on national territory, any declaration of digital independence is a dead letter, vulnerable to being shut down in the cloud of a foreign provider.

Nevertheless, the construction of this physical infrastructure and local supercomputing lose their emancipatory purpose if we do not simultaneously dismantle the discursive myths of Artificial Intelligence analyzed by Chaparro. Sovereign infrastructure (Wolovick) and the dismantling of algorithmic fetishism (Chaparro) are the indispensable tools for defending the last stronghold of our autonomy: the privacy of our bodies, informational self-determination, and the freedom to dissent and organize against an omnipresent state and corporate Panopticon, as articulated in Trovato's presentation.

An Invitation to the Reader

The following pages are not mere summaries of academic dissertations, nor are they records of a concluded debate cycle. They are, in the strictest sense of the term, cartographic tools for understanding critical dimensions of contemporary reality and for organizing resistance in the present.

Each report offers a map of the power networks that shape our daily lives, our civil rights, and our collective future. Delving into them is an exercise in methodological suspicion, but above all, an act of emancipatory affirmation.

We invite you to explore them not in the passive sense of merely accessing information, but as a call to reclaim the commons, defend fundamental rights, and build a dignified, free, and autonomous techno-political environment.

The Geopolitics of Digital Subordination

Speaker: Beatriz Busaniche

Organized by: Vía Libre Foundation and Heinrich Böll Foundation, Buenos Aires Office

Conference Date: August 12, 2026

Block I - The Mirage of the Fourth Powerhouse and the Fate of the Enclave

The Vía Libre Foundation, an institution with nearly 26 years of track record on the agenda of Human Rights and Technology, frames this first session with a sharp political and conceptual contrast. The promise made by President Javier Milei and his former chief advisor Demian Reidel to position Argentina as the "fourth artificial intelligence powerhouse" through a new digital policy package serves as an analytical trigger. However, the evidence gathered throughout the presentation anticipates a radically opposite outcome: Argentina is not marching toward the consolidation of a revolutionary AI pole, but rather toward a "digital enclave economy."

The speaker grounds her argument in a critical geopolitical reading of technological subordination. She argues that Argentina is heading toward a dependent economy that relinquishes control over its own digital public policies to subsume itself under rules imposed by the dominant "metropolis." In this sense, the lecture sets out to retrace the international diplomatic framework to trace how the country is ceding its sovereign agency.

Block II - The Dispute over Digital Sovereignty: From the Nation-State to Rule-Imposing Forums

The debate on digital sovereignty is not new; it drags more than three decades of discussions on the cross-border nature of the internet and the need to manage it as a transnational common good. The speaker introduces the tension between two regulatory visions: that of United Nations multilateral bodies—such as the International Telecommunication Union (ITU)—and *multi-stakeholder* forums, represented by entities like ICANN.

Nevertheless, she introduces a key concept based on the contributions of researchers like Luca Belli: true digital sovereignty today lies in the capacity of States to understand, develop, regulate, and control the triad composed of **infrastructure, data, and AI developments**.

To discern what level of real agency Argentina retains on the international stage, the lecture's roadmap focuses on three axes of sovereign conditioning:

- The **World Trade Organization (WTO)**.
- The **Trade and Investment Agreement (ARTI)** with the U.S.

- Unconditional adherence to the U.S. Department of State's **Pax Silica** initiative.

The speaker warns that high-level global discussion forums—such as the United Nations Global Dialogue on AI regulation (whose first session was held in July in Geneva and the next will occur in May 2027 in New York)—lack real political weight.

Argentina did not participate in the Geneva deliberations nor occupy its seat, and additionally withdrew from the *Pact for the Future*. Beyond Argentina's troubling absence in these spaces, the analyst clarifies that what is resolved in the Global Dialogue or the Pact for the Future has no direct impact on the local legal order because adherence is optional. **The entity that truly holds the silent power to condition and mandatorily shape a country's public policies, regulations, and legal framework is the World Trade Organization (WTO).**

Block III - The TRIPS Precedent: Intellectual Property on the Trade Agenda

To understand the global order implied by the WTO, the report loops back to the 1990s. Amid the height of the Washington Consensus and the mandate for economic liberalization, the WTO was born incorporating a Dispute Settlement Body that changed the global rules of the game. Previously, trade sanctions were purely unilateral in nature (such as the restrictive "Special 301 Report" of the U.S. Department of Commerce, a political pressure tool without direct international legal mandate). With the WTO, disputes came to be adjudicated in formal panels, endowing trade agreements with immediate normative power: if a country breaches minimum standards, it exposes itself to trade sanctions on its most competitive sectors.

Within this institutional architecture, another key emergent was the **TRIPS Agreement (Trade-Related Aspects of Intellectual Property Rights)**. Concentrated corporate sectors—so-called "*life sciences industries*" (pharmaceuticals, agrochemicals, seed companies), entertainment corporations (film, record, publishing), and the nascent software industry—lobbied to extract intellectual property from its natural forum, the World Intellectual Property Organization (WIPO).

WIPO was a "soft" forum: countries signed only what they wanted; there were no immediate trade sanctions in case of non-compliance.

Leading Global South countries, notably **India and Brazil, offered resistance**, arguing that intellectual property did not constitute a trade matter. Their defeat entailed the forcible universalization of software protection (under Article 10 of TRIPS), the extension of patent terms, the regulation of pharmacological test data, and *sui generis* seed protection. **TRIPS's great institutional lesson is that real regulatory power in the modern world is not built on scientific or humanitarian consensus, but through the coercion of trade agreements.**

Block IV - The E-Commerce Dispute and the Multilateral Landscape of 2026

With the experience of TRIPS, the e-commerce agenda has been on the WTO negotiating table since the 1998 Geneva Ministerial. Under this seemingly technical label, the debate is not merely about mercantile transactions, but aims to legislate digital signatures, personal data governance and localization, and the protection of corporate source codes.

For 28 years, the agenda remained in relative stagnation sustained by the **Moratorium on Customs Duties on Electronic Transmissions**, a precarious consensus systematically renewed to prevent countries from charging tariffs on intangible goods circulating across the network.

However, the 2026 scenario presents a true "quagmire" for multilateralism. The trade policies of Donald Trump's administration in the United States aim to erode the WTO to restore direct bilateral pressure schemes, thereby consolidating a permanent ban on digital tariffs while parallelly retaining total autonomy to protect its own local industry.

In this context of fragility, during the **Cameroon Ministerial (March 2026)**, the group of countries comprising **Brazil and Turkey blocked the automatic renewal of the 1998 moratorium**. As this historic consensus collapsed, the board fragmented:

- A group of **66 WTO members (including the European Union, China, Japan, and Argentina itself)** signed a basic plurilateral e-commerce agreement to temporarily sustain electronic signatures, contract recognition, and the tariff moratorium.
- Another portion of the BRICS (**Brazil, Turkey, India, and South Africa**) rejected the agreement, actively defending their sovereign right to apply tariffs and fees on informational goods as a way to finance and protect their local tech industries.

To contain the loss of global influence and customs fragmentation, the United States resorted to its preferred strategy: signing direct bilateral trade agreements with aligned governments to permanently secure tariff exemption and free data flow. **And that is where the Argentine Republic enters.**

Block V - The ARTI Agreement with the United States: A "Wish List" Signed Without Negotiating

In February 2026, the Argentine Republic signed the **Trade and Investment Agreement (ARTI)** with the U.S. Department of Commerce. Compared to dozens of such agreements signed by the U.S. with other countries worldwide, it is fair to state that **Argentina negotiated practically nothing** and assumed all the demands of the agreement.

While the Argentine Ministry of Foreign Affairs issued a press release celebrating the agreement under the argument that it would create a secure framework for startups, fintechs, and local talent through streamlining ("de-bureaucratization") and the adoption of "modern intellectual property standards," a detailed breakdown of the treaty's fine print reveals a systematic surrender of regulatory sovereignty in four critical areas:

1. Source Code Shielding and Blocking of Audits and Technology Transfer

The treaty establishes categorically that **Argentina may not require any natural or legal person from the U.S. to transfer technology, access source codes, or disclose proprietary production processes** as a prerequisite to operate, import, or distribute software in the local market.

Although the document tolerates abstract exceptions facing duly justified judicial investigations, the speaker provides a real test case: the *amparo* action supported by the *Fundación Vía Libre* against the fugitive facial recognition system in the City of Buenos Aires. In that legal proceeding, the court formally requested technical information regarding the development, training, databases, and source code of the algorithm to audit discriminatory biases, and the supplying corporations systematically refused to hand it over.

Under the validity of this bilateral agreement, an unbridgeable regulatory asymmetry is consolidated: the State ties its own hands and feet, losing the legal capacity to request source code to audit recommendation algorithms or evaluate discrimination in AI systems impacting the population, as well as to request technology transfer and joint development processes.

2. Cross-Border Data Flows and Degradation of Privacy Standards

The agreement obliges Argentina to **guarantee the free outbound flow of personal data of Argentine citizens to the United States**, which requires explicit recognition of the U.S. as a "jurisdiction providing an adequate level of data protection" under local law.

This requirement breaks the historical logic of privacy law. Current Argentine data protection law explicitly prohibits cross-border transfers of personal data to countries lacking adequate protection standards. The United States does not possess a federal personal data protection law. Its legal framework is sectoral and decentralized (with specific regulations like the California Consumer Privacy Act or HIPAA for medical information), making it far from a jurisdiction homologable to Argentina's or the European standard (which recognizes Argentina as an adequate country precisely for maintaining restrictions on safe transfers).

The alignment deepens upon observing that the Ministry of Deregulation, led by Federico Sturzenegger, is pushing a draft data protection law reform that dismantles

citizens' rights and explicitly enables companies to transfer databases to U.S. servers under pretexts of mere "technical infrastructure" convenience.

3. The Unreliable Suppliers Clause (The Anti-China Veto and the CALF Case)

Cataloged by the speaker as **the most problematic, damaging, and dangerous clause of the entire digital treaty**. Through this provision, Argentina formally commits to exclusively use telecommunications technologies, information infrastructure, 5G networks, satellite communications, and submarine cables provided by companies that "do not compromise security."

In geopolitical practice, this functions as a direct veto on telecommunications infrastructure providers of Chinese origin (such as Huawei). The agreement combines with Article 4.1 of the treaty, where **Argentina obligates itself to adopt "measures of equivalent effect" to trade or border sanctions taken by the United States to protect its own national and economic security**. If tomorrow the U.S. administration decides to ban the use of *open-source* language models developed in China, Argentina is bound to immediately replicate an identical policy within its territory.

To demonstrate that this is not a laboratory hypothesis, it is worth mentioning an extortion that recently occurred in the province of Neuquén: directors of the **CALF** Public Services Cooperative were threatened by U.S. diplomacy with the immediate **revocation of their U.S. entry visas** if they did not cancel a commercial agreement to purchase technological equipment from the Chinese firm Huawei. Far from protecting the autonomy of local actors, the U.S. ambassador (Lamelas) publicly defended the measure, ratifying that the exclusion of suppliers not considered "trusted partners" is a non-negotiable strategic priority.

4. Customs Submission and Extractivist Priority

Finally, the agreement strips Argentina of its sovereign autonomy within the WTO itself. The country immediately and unconditionally renounces its right to impose fees or customs duties on electronic transmissions, and commits to unconditionally second the U.S. agenda of transforming the moratorium into a permanent and definitive mandate at the WTO.

In exchange for this total regulatory subordination, the treaty promises "preferential market access" which, in practice, translates into **facilitating prioritized U.S. investment for the exploitation of critical natural resources (such as lithium and copper) and telecommunications infrastructure**, explicitly relegating any competitor categorized as a "market-manipulating economy" (in direct allusion to China).

Block VI - Pax Silica: The Technological and Military Supply Chain

Technological subjugation is complemented by Argentina's unconditional adherence to *Pax Silica*, a geopolitical initiative of the U.S. Department of State. Designed under the rhetoric of ensuring resilience in global AI and semiconductor supply chains, *Pax Silica*

pursues the objective of exclusively channeling critical mining inputs (lithium, copper, cobalt, rare earths) indispensable for both Silicon Valley's tech industry and the U.S. military-industrial complex. Argentina enters this scheme not as a scientific partner, but as a simple primary provider of unprocessed natural resources from its subsoil.

Block VII - Internal Dismantling: From Local Science to the Enclave

The surrender of external sovereignty couples perfectly with the dismantling of scientific and industrial capabilities inside Argentina. The speaker enumerates the systematic destruction of the national scientific and academic system as the factor that blocks any real possibility of autonomous development: **the hollowing out of CONICET (massive loss of fellows and researchers), the brain drain of university professors, and the budgetary strangulation of public universities.** "Without scientific and technical training there is no sovereignty in any field, much less in the digital one."

This destruction of installed capacity openly contrasts with the computing sovereignty policies implemented by the neighboring Federative Republic of Brazil. Brazil requires multinational data centers wishing to settle in its territory to provide local computing for its scientific community, submit to strict environmental audits (measuring server water and energy consumption), and preserve its data sovereignty. In contrast, Argentina in 2026—navigating an unprecedented diplomatic crisis with Brazil—resorts to legal tools like **RIGI and Super-RIGI**, which prohibit the State from imposing local-content or knowledge-transfer requirements on large foreign corporations. By dynamiting historical nuclear and space cooperation with Brazil and unconditionally aligning with the U.S., the country not only fragments Mercosur, but destroys the regional scale indispensable for negotiating on equal terms with tech giants.

Final Reflections

The conceptual summary of the conference is clear: **the promise of "Argentina as the fourth Artificial Intelligence powerhouse" is a fallacy designed to cover up the transition toward a digital enclave economy.** In this enclave model, the constant flow of data operates as a renewable extractive resource feeding the foundational models of the "metropolis," returning finished products and algorithmic services to the periphery that it cannot audit or understand.

By dynamiting historical regional alliances with Brazil (breaking the possibility of building a strategic computing block in Mercosur) and engaging in commercial confrontation with China, Argentina voluntarily renounces the tradition of active non-alignment foreign policy. The country abandons the table where the future of the digital era is decided and self-excludes from international science to be relegated to a strictly passive role: a territory from which lithium, copper, and personal data are extracted, and upon which the technologies, conditions, and geopolitical wars of major global powers are imposed.

What Is and What Is not Artificial Intelligence?

Artificial Intelligence and Intellectual Indigence... and a bit of Technopolitics

Speaker: Enrique Chaparro

Organized by: Vía Libre Foundation and Heinrich Böll Foundation, Buenos Aires Office

Conference Date: August 19, 2026

Block I - The Power of the Word

Enrique Chaparro, a mathematician by training and a specialist with decades of experience in information systems security, introduces the lecture with a dual title. The first, of a formal and institutional nature: What is and what is not artificial intelligence? The second, of a strictly personal and sharply critical stamp: Artificial Intelligence and Intellectual Indigence, and a bit of technopolitics.

To guide this conceptual trajectory, the speaker turns to the aphorism of the British statistician George E. P. Box: **"All models are wrong, but some are useful"**. This principle is not a mere rhetorical ornament; it constitutes the core of his scientific stance. Every model is a simplification of reality and, therefore, bears an intrinsic dose of error; the true challenge lies in discerning under what conditions that inaccuracy proves instrumental.

Before delving into the gears of software, Chaparro lays out a prologue composed of two fundamental historical and philosophical premises:

The centrality of the word: The written and spoken word is the foundational and irreplaceable element of civilization; without it, no social construction is possible. Therefore, even though the current technological revolution seems to center on images, analysis must primarily target the verbal universe, given that even the visual world is susceptible to being decoded and described through language.

The material determination of history: Passing a sideways glance at a "certain German gentleman" (in clear allusion to Karl Marx), he recalls that the history of humanity is ultimately determined by the development of its productive forces. Current technology, therefore, cannot be analyzed in an ethical or technical vacuum, but rather as the material expression of the state of contemporary capitalism.

Block II - Demystifying Language: The "Algorithm" and the Trap of Anthropomorphization

The presentation moves toward the need to reach a consensus on basic definitions to avoid the traps of corporate marketing. He dismantles the contemporary fetish of the

"algorithm," a term that public opinion assimilates as an absolute novelty. An algorithm, he clarifies, is nothing more than an unambiguous and formal specification for solving a class of problems through an effective method that operates in finite time and space, calculating a mathematical function. To illustrate its antiquity and structural simplicity, he turns to the example of manual multiplication: the procedure we learn in primary school is, strictly speaking, an algorithm (and in fact, multiple multiplication algorithms exist).

This analysis serves to address one of the harmful practices of current technopolitics: the systematic anthropomorphization of mechanical devices. With irony, Chaparro deconstructs the concept of "hallucination" applied to generative language models. Machines do not hallucinate; they simply execute processes that produce syntactically flawless but semantically erroneous outputs. Hallucination is a neurobiological phenomenon exclusive to humans and, perhaps, other higher mammals.

Similarly, he dismantles currently used terms like "regret" (regret, in the jargon of statisticians), which does not represent any emotional state of the machine, but rather an algorithmic reevaluation to check for error deviations. Even the sacrosanct term "memory" in computers is, essentially, a digital storage device endowed by the linguistic tradition of the past 75 years with a false biological quality.

Block III - Generative AI, GPT, and the Ambiguity of the Token

When addressing the concept of Artificial Intelligence, Chaparro paraphrases Andy Tanenbaum (who did the same regarding communication protocols) by pointing out that the great thing about AI is that "it has so many definitions that one can choose the one they like best." He opts for a synthesis drawn from the classic manual by Russell and Norvig: "AI is the study of intelligent agents," understanding an agent as any device capable of perceiving its environment and executing actions aimed at maximizing the probability of success of its objectives. However, he warns that the definition is circular and the concept extremely "slippery."

What current collective imagination and financial markets consecrate today under the rubric of Artificial Intelligence is, in reality, a minuscule fragment of the research field named by John McCarthy in the 1950s. Specifically, we refer to generative machine learning systems based on deep neural networks.

To understand how they work, he details the transformation of language into mathematical variables:

- **The deconstruction of text:** Human language is intrinsically ambiguous. To illustrate this, he uses a famous phrase from Argentine lunfardo (slang): "*boludo, no seas boludo, boludo*". In just five words, the term *boludo* is repeated three times with three radically different semantic meanings (an appeal, a derogatory qualification, and a conversational filler of familiarity).

- **Tokenization:** For a machine to process this polysemy, an algorithm must "massage" the text and convert terms into discrete units called tokens. These tokens are mapped into high-dimensional numerical representations that serve as input to the neural network.
- **Decoding the GPT acronym:**
 - **G (Generative):** The system's capacity to predict and generate the subsequent token (or set of words) based on the preceding sequence, using the statistical probability calculated during its training.
 - **P (Pre-trained):** Refers to self-supervised pre-training, a phase in which the system massively absorbs textual corpora to map the relationships between tokens using attention models.
 - **T (Transformer):** Far from the imagery of mutant robots, this is an algorithmic primitive (presented by Google researchers in the 2017 paper Attention is all you need) that performs backpropagation of what is received and manages context relationships simultaneously rather than sequentially.

Block IV - The Human Vocation to Predict in Historical Perspective

True to Donald Knuth's premise that "the best way for a human to communicate with another is through stories," Chaparro traces a chronology of humanity's obsession with anticipating the future. From 2,600 years ago, when the Etruscans carved stones shaped like sheep livers divided into celestial quadrants to interpret the divine will, or when the Romans pragmatically resorted to chicken entrails (reserving ox livers for momentous campaigns against the Gauls), humanity has sought predictive algorithms.

The path toward the automation of thought features unsuspected milestones:

- **Aristotle:** With the invention of the syllogism, he lays the logical foundations of formal deduction.
- **The Antikythera Mechanism:** Discovered in the 1970s in the Aegean Sea, it proves that ancient Greeks were already building mechanical calculators of astonishing complexity.
- **The School of Al-Andalus and Ramón Llull:** In the 9th century, thinkers like Jabir Ibn Hayyan theorized about alchemical mechanisms to engender intelligence. In the 13th century, the Mallorcan Ramón Llull designed a system of concentric disks to combine theological concepts, becoming a direct predecessor of symbolic AI.

- **Jonathan Swift:** In *Gulliver's Travels*, he conceives on the floating island of Laputa a mechanical machine to write books without intellectual intervention, drawing direct inspiration from Lull's wheels.
- **Mary Shelley:** In *Frankenstein*, she raises humanity's first major ethical dilemma in the face of general and autonomous artificial intelligence, structured as a harrowing bipolar dialogue between creator and creature.
- **Ada Lovelace and Joseph Jacquard:** Lovelace writes the first computer program intended for Babbage's analytical engine (though it could never be executed). This conceptual development is related to Jacquard's mechanical looms of the late 18th century, which used punched cards as a rudimentary physical programming system to guide needles.
- **Karel Čapek and Fritz Lang:** In the 1920s, Čapek coins the term "robot" in his play *R.U.R.*, while Lang projects its visual power in the famous film *Metropolis*.

Block V - The Genesis of the Name: The Dartmouth Seminar as a Marketing Strategy

The initial enthusiasm for any technology is usually excessive, only to give way to underestimation. The very term "Artificial Intelligence" was not the result of a scientific revelation, but rather a public relations strategy.

In the mid-1950s, scientists like John McCarthy, Claude Shannon, Marvin Minsky, and Nathaniel Rochester worked in the field of "automata." That term lacked appeal for applying for funds for a summer seminar, so they decided to coin a "catchy" expression to seduce the Rockefeller Foundation. This is how they obtained the current equivalent of one million dollars to finance the historic 1956 Dartmouth Seminar.

As a historical anecdote, Chaparro recounts that McCarthy—the event's organizer—lost the official attendee list. The details of who actively participated during those eight weeks are thanks to the personal notebook of mathematician Ray Solomonoff, who meticulously recorded the debates of figures like Oliver Selfridge, Marvin Minsky, Claude Shannon, and even mathematician John Nash.

Block VI - Probabilities and Vector Spaces

Shifting toward the mathematical architecture of modern models, he distinguishes between two major probabilistic approaches:

To endow tokens with meaning, computer sciences had to turn to the philosophy of language. In paragraph 43 of his *Philosophical Investigations*, Ludwig Wittgenstein stated: "The meaning of a word is its use in the language." Contemporary artificial intelligence is a technical materialization of this maxim through vector semantics. The

process of "distilling" the meaning of a word into a form manageable by an automated system consists of expressing it as a feature vector (an embedding) within a vector space with a huge number of dimensions.

Chaparro details this mechanism:

- **Context and Hyperspace:** Words are defined by their immediate environments. In the United Kingdom, the word "Elizabeth" will share a vector space extremely close to "Queen," whereas in the rest of the globe, "Freddy," "Mercury," or "Rhapsody" more frequently approach that term.
- **Temperature:** This is the parameter that regulates the level of randomness when selecting the next token. If the temperature is set to the minimum, the system operates deterministically, always selecting the token with the highest assigned probability and responding identically to the same stimulus. By raising the temperature, the model is granted a margin of variation that allows it to choose less obvious options, emulating the creativity and flexibility of human language.
- **Cosine similarity:** One of the classical mathematical tools used to determine the conceptual proximity between meanings is calculating the cosine of the angle between the vectors representing them in a hyperspace. The speaker illustrates the phenomenon by analyzing a simplified corpus of co-occurrences among terms like "digital," "computer," "information," and "data" on a two-dimensional plane, warning that in large language models (LLMs) this map unfolds in a vocabulary of hundreds of thousands of tokens, where each is represented in a hyperspace of thousands of dense dimensions impossible for the human brain to visualize.
- **Zhuangzi's metaphor:** Dating back 2,400 years, the Chinese philosopher anticipated this abstraction: "Traps are for fish; once you catch the fish, you can forget the trap. Words are for meaning; once you catch the meaning, you can forget the words."
- **The case of GloVe:** To demonstrate the power of these vector spaces, he mentions GloVe (Global Vectors for word representation), an unsupervised learning algorithm for obtaining vector representations of words that emerged as an open-source project from Stanford University's natural language processing group. When analyzing the statistically closest words to frog in its English model, the algorithm not only yielded its plural frogs, but also complex zoological species and families like Litoria, Leptodactylus, or Eleutherodactylus, alongside mundane Anglo-Saxon terms like toad or lizard—including the scientific genus Rana. This revealed semantic associations that a human would hardly structure consciously outside the scientific realm.

Block VII - The Mathematical Foundations of Learning: Derivatives, Leibniz, and Gradient Descent

Training a neural network to adjust "weights" (the numerical parameters regulating the connection strength between neurons) requires processing a staggering volume of data. To make this computationally viable, an old acquaintance of first-year university students is invoked: differential calculus. Thanks to the **chain rule** (whose symbolic roots trace back to the creators of calculus in the 17th and 18th centuries), computers can execute **partial derivatives** with high efficiency to compute **error backpropagation** across neural layers, allowing the gradient descent algorithm to optimize the model.

To explain how a model minimizes its errors, Chaparro exposes the concept of gradient descent:

Stochastic gradient descent: This optimization method was originally postulated by Augustin-Louis Cauchy in 1847 and developed deterministically by Jacques Hadamard in 1908. In 1951, mathematicians Herbert Robbins and Sutton Monro introduced the stochastic (random) variant. By calculating the gradient using only a sample or a small random group of data instead of the full set, they made the process computationally viable and efficient for massive volumes of information. In this light, the classical method of least squares developed by Gauss and Legendre is, mathematically, the equivalent of a basic single-layer neural network: a perfect example of "shallow learning."

Block VIII - The Hidden Family Tree of Computing and Artificial Intelligence

Chaparro pays homage to the true pioneers of the field, rescuing names unjustly buried by dominant commercial narratives and questioning the awarding of contemporary prizes (such as the Nobel Prize in Physics awarded to Geoffrey Hinton).

The foundational pantheon is structured around key figures:

- **Gödel, Church, and Turing:** Kurt Gödel (the ghost breathing down the neck of every mathematician by proving the existence of insoluble limits in formal systems), Alonzo Church (with his lambda calculus of the 1920s), and Alan Turing (with his theoretical machine of computability) define the logical limits of computation.
- **Ising and Lenz:** In the 1920s, physicists Ernst Ising and Wilhelm Lenz designed the first structure comparable to a recurrent neural network, though lacking learning capability (the Ising physical model).
- **McCulloch and Pitts:** In 1943, they propose the first mathematical modeling of the functioning of a biological neuron by applying logical calculus.

- **Frank Rosenblatt:** In the late 1950s, he expands these ideas to create the perceptron and theorize about multi-layer structures.
- **Shun'ichi Amari:** This Japanese engineer proposed in 1967 the first deep-learning artificial neural network using stochastic gradient descent; in 1972, together with Kaoru Nakano, he published the first papers on recurrent neural networks (RNNs), and that same year invented the first deep-learning RNN, which would be "reinvented" by John Hopfield ten years later (Hopfield would receive the Nobel Prize in Physics in 2024, shared with Geoffrey Hinton).
- **Vapnik and Chervonenkis:** Between 1968 and 1971, Soviet mathematicians Vladimir Vapnik and Alexei Chervonenkis developed the Fundamental Theory of Machine Learning (VC Theory). Years later, in the mid-1990s and alongside Corinna Cortes, Vapnik would develop support vector machines (SVMs).
- **Ray Solomonoff:** Formulated algorithmic probability and inductive inference induction. In 1968, he proved that algorithmic probability is "complete" (capable of discovering any regularity in data from tiny samples), but tragically "uncomputable," since evaluating certain algorithms would require infinite time.
- **Ivakhnenko and Lapa:** Between 1965 and 1970, Soviet mathematicians Alexei Ivakhnenko and Valentin Lapa described the first truly deep neural network, composed of eight layers. Curiously, Ivakhnenko and Lapa's network solves a problem that four years later (1969) Minsky and Papert would pose as unsolved in their book Perceptrons.
- **Seppo Linnainmaa:** In his master's thesis in Finland in 1970, he designed modern backpropagation algorithms by generalizing the gradient theory that Henry J. Kelley had formulated in 1960 to calculate optimal airplane flight trajectories. Paul Werbos, in 1982, would finally apply Linnainmaa's method to neural networks.
- **Kunihiko Fukushima:** Defined the architecture of convolutional neural networks (CNNs), alternating convolution and downsampling layers to mitigate error.
- **Wei Zhang (1988) and Yann LeCun (1989):** Almost in parallel, they developed the first practical application of a convolutional network trained by backpropagation for character recognition, an achievement history often attributes exclusively to LeCun despite having been published a year earlier in an era prior to open-access repositories like arXiv.
- **Jürgen Schmidhuber:** In 1991, he conceived the basis of what would later become Generative Adversarial Networks (GANs), where two neural networks compete and mutually optimize through continuous challenges; in 1997, along with Sepp Hochreiter, they developed LSTM (long short-term memory)

networks, a type of RNN that mitigates the vanishing gradient problem that occurs as the number of learning steps increases.

Block IX - The Historical Tension: Continuists (Logical) versus Connectionists (Neurons)

Chaparro explains that since the foundational Dartmouth seminar, an unbridgeable epistemological rift broke out between two factions:

- **The Continuists or Symbolics:** Maintained that intelligence must be constructed by encoding formal and universal logical rules. From this branch based on symbol manipulation were born the Expert Systems that dominated the industry in the 1970s and 1980s. An iconic antecedent of this formalist approach was the conversational software ELIZA, created by Joseph Weizenbaum in 1966. Weizenbaum developed the SLIP programming language to give life to this "Rogerian psychologist" who used clever syntactic substitution tricks to simulate empathy. The fact that such a superficial algorithmic trick emotionally deceived users led its creator to reflect on the ethical frivolity of technology and become one of the first dissidents of the AI community.
- **The Connectionists:** Argued that the correct path was to emulate brain biology: interconnecting networks of simple artificial neurons and allowing the system to learn autonomously from data, "letting them do."

For decades, the symbolics won the initial battles, plunging connectionism into successive "AI winters." Nonetheless, recent history witnesses "the revenge of the neurons." The massive availability of computing power and structured data crowned connectionism as the dominant paradigm of the 2010s and 2020s.

Even so, Chaparro warns that systems based on symbolic logic and decision-tree pruning heuristics (which discard entire low-probability branches to avoid temporal infinity) remain extremely useful. He exemplifies this with historical chess and checkers programs, IBM's Deep Blue supercomputer, or the hybrid architecture that challenged the complex game of Go. Likewise, he highlights that in 2011/2012, the DanNet model (by Dan Cireşan, Ueli Meier, and Jürgen Schmidhuber) succeeded in decoding handwritten Chinese characters using a deep recursive network without any of its creators knowing a single word of Chinese, marking a milestone in machine translation.

Block X - The Contemporary Scenario of the 2020s: "Stochastic Parrots", Octopuses, and Financial Bubbles

In evaluating the current landscape, Chaparro adopts the definition given by scientist Gene Spafford of Artificial Intelligence: **"Providing definitive answers based on approximations derived from unreliable data provided by incompetent and unbridled internet users."**

To dismantle the fantasy that LLMs possess actual comprehension, he turns to two celebrated analogies formulated by linguist Emily Bender:

- **The Stochastic Parrot** (Bender, Gebru, McMillan-Major, et al., 2021): Models repeat linguistic patterns that were taught to them, introducing random (stochastic) probabilistic variations: "The tendency of human interlocutors to attribute meaning where there is none can lead both NLP researchers and the general public to consider that synthetic text makes sense."
- **Bender's Octopus** (Bender and Koller, 2020): Imagine two humans, Arthur and Beatrice, stranded on desert islands separated by the ocean, who discover a submarine telegraph cable and begin communicating in Morse code. On the seabed lives a hyper-intelligent octopus that intercepts the electromagnetic signals. Through sheer statistical observation, the octopus deduces the interaction patterns and, one day, decides to cut the cable and inject its own responses pretending to be one of the interlocutors. The game flows perfectly until Beatrice encounters a bear on her island and telegraphs in desperation: "A bear is chasing me, can I defend myself with a stick?" The octopus, which has never seen a bear or a stick because it lives in the marine abyss, lacks semantic grounding in the real world and is incapable of providing a useful response to a survival situation that exceeds mere syntax.

This disconnection from empirical reality explains why when a press release from Google DeepMind proclaimed in November 2023 that it had "*discovered millions of new materials with deep learning*" a subsequent scientific analysis, published the following April in *Chemistry of Materials* 36(8), revealed that out of a random sample of 380,000 of the structures proposed by DeepMind, none satisfied the tripartite test of credibility, utility, and novelty. LLMs resemble the Chinese Room thought experiment proposed by philosopher John Searle in 1980 against the Turing test: an enclosed person processing Chinese ideograms using a formal instruction manual can convince an external observer that they understand the language, when in reality they are merely manipulating symbols devoid of meaning.

In geopolitical and ecological terms, the reality of AI is brutal:

- **Brute force and environmental destruction:** The human brain operates optimally with a power consumption of around 20 watts thanks to its evolutionary design. In contrast, a modern AI data center, equipped with 100,000 state-of-the-art processing boards, will require close to 110 megawatts of power. "So much theoretical physics in the end just to boil water," Chaparro ironizes, comparing the brutal thermal waste that GPUs dissipate into the ecosystem to the energy scale of a massive industrial infrastructure.
- **The Ponzi financial bubble:** Behind the technological veil hides a fierce oligopolistic concentration controlled by a handful of corporations with pockets deep enough to finance pharaonic infrastructures. The sector has turned into a

cesspool of speculative capital. Entire companies are losing astronomical fortunes under a Ponzi scheme that will burst sooner or later.

- **The "Butlerian Jihad":** Recalling Dune, Frank Herbert's masterpiece published in 1965, the speaker quotes: "Once men turned their thoughts over to machines in the hope that this would set them free. But that only permitted other men with machines to enslave them."

Digital Citizenship and Local Computing Power

Speaker: Nicolás Wolovick

Organized by: Vía Libre Foundation and Heinrich Böll Foundation, Buenos Aires Office

Conference Date: August 13, 2026

Block I - Silent Infrastructure and Citizenship Measured in Computing

The conference opened with a deep reflection on the nature of digital infrastructure. What sustains the information flows of the modern world is, paradoxically, what takes the longest to build and demands the highest budget and effort to maintain. Within that framework, the panel raised an uncomfortable yet fundamental premise: **a person's citizenship today is directly determined by their available computing capacity.**

To illustrate this postulate materially, the speaker turned to an everyday analogy. Someone carrying a high-end smartphone in their pocket has massive processing capacity that opens doors to multiple resources and applications indispensable for civil life. By contrast, in territories like the province of Córdoba, where centralized state platforms like the **CiDi (*Ciudadano Digital*)** system are mandatory for carrying out virtually any administrative procedure, the lack of a mid-range smartphone fulminantly excludes the individual from institutional life. Those lacking processing power cannot apply for assistance plans, pay fines, or schedule doctor's appointments. Thus, computing ceases to be a luxury consumable and establishes itself as a basic civil right.

It is in this material gap that **Cybercirujas** intervene, recovering discarded hardware to restore citizenship to those left out. However, the speaker warned that the demand for computing is a continuum that does not stop at daily life needs: it scales exponentially toward scientific and technological development.

Block II - From the Desktop to Centralized Supercomputing: Mitigating Scientific Self-Censorship

The transition between the common desktop computer—typically equipped with 16 GB of RAM and a 1 TB solid-state drive—and large-scale scientific infrastructures defines the role of public computing centers. The operational rule of the UNC center is clear: **"Anything you cannot do on your laptop, we want you to do with us".**

The speaker described a recurring problem in the research field: **scientific self-censorship**. When an Argentine fellow or researcher realizes their personal computer lacks the processing capacity to run a certain calculation or algorithm, they usually abandon the most interesting and bold research line to limit themselves to what

their modest resources allow. At best, they "put the fridge on top of the computer for days on end computing," suffering the heat, noise, and energy wear of hardware not built for high performance.

Centralizing infrastructure not only optimizes public budgets by unifying costly investments; it also solves computing's severe thermodynamic challenges. **"There is no difference between a computer and a space heater, except that producing computation is a side effect,"** the speaker stated, explaining that 100% of the electrical energy consumed by a processor inevitably transforms into thermal energy. Maintaining a supercomputing system therefore requires costly engineering capable of injecting large amounts of electricity, continuously extracting that heat, ensuring high network connectivity, and guaranteeing absolute 24/7 availability.

Block III - The Democratization of AI and the Daily Use of "Caracola"

To make the concept of intensive computing tangible, a local case study was presented that facilitated the work of social sciences researchers in Córdoba: the creation of the *Caracola* service. The idea was born of pure serendipity and collaboration with the *Cybercirujas*. A developer created a pipeline coupling OpenAI's Whisper transcription model with WhisperX and a diarization system (to identify who is speaking at any given moment) to solve a domestic problem for his anthropologist partner, who had to manually transcribe a massive amount of field interviews.

The speaker detailed the material difference of running this task in different environments. If one tries to run Whisper locally on a conventional laptop with 16 GB of RAM, processing a single hour of audio demands roughly three hours of continuous computing. The machine "gets smoking hot" because the deep neural network machine learning program swallows over 10 GB of RAM constantly, rendering the device useless for any other task.

By shifting this pipeline to the shared infrastructure of the UNC supercomputer, equipped with graphics processing units (GPUs) featuring high-speed HBM2 memory, processing speed increases by a factor of 20x (transcribing 20 hours of audio in just one physical hour). Astonishingly, this massive transcription process, which would paralyze any home computer, "doesn't scratch" the central machine, demonstrating the enormous efficiency of shared computing.

Block IV - Traditional HPC and the Dilemma of Scientific Sovereignty

The talk delved into the origins of HPC (High Performance Computing). Drawing on Seymour Cray's history captured in *The Supermen: The Story of Seymour Cray and the Technical Wizards Behind the Supercomputer*, the speaker recalled that supercomputers were not born for civil or commercial purposes, but to simulate atomic bomb explosions at a time when physical experiments became ecologically and

financially prohibitive. This classic HPC still dominates academia through massive physical, quantum-chemical, and astronomical simulations. While a query in *Caracola* uses a GPU for about 15 seconds, a classic molecular simulation—where the force on each atom is calculated step by step to model nanoseconds of matter evolution—demands 8 GPUs running at 100% capacity for four straight days.

This level of computing is unreachable for individual labs, pushing Global South scientists to seek compute time on foreign supercomputers a thousand times more powerful, such as Leonardo in Europe or Frontier in the United States. However, the speaker warned about the loss of sovereignty and scientific independence hidden behind this model. To access those foreign machines, Argentine researchers must obligatorily integrate into projects designed and led by the hardware-owning countries, researching what interests them rather than what local development demands.

Added to this is geopolitical and legal control: upon logging into a U.S. supercomputer, the system displays explicit warnings about total data monitoring under its legal jurisdiction. The result is that the Argentine State pays the salaries of researchers who end up generating scientific and intellectual value exclusively for foreign interests.

Block V - The AWS Cloud Trap and Materiality "One Bit Away"

Confronted with the false solution proposing to abandon local physical infrastructure to migrate to big-corporation clouds like Amazon Web Services (AWS) via free credits, the speaker was blunt, using a relentless analogy: "It's like the Pipo Cipolatti song: the first one's a gift, the second one's for sale."

Scientific research, particularly training a doctoral fellow in Argentina, requires a four- to five-year planning horizon. If a doctoral project anchors its entire viability in free AWS credits, it exposes itself to a sudden third-year shift in corporate policy or a currency devaluation that liquidates resources and destroys the research.

Local infrastructure, even if old, grants material predictability. To explain the firmness of the tangible, he compared cloud storage to the electronic voting debate. In traditional paper voting, violently altering an election result requires physical, material effort that generates heat and civil resistance. Digital fraud, by contrast, happens "one bit away," invisibly and silently.

Likewise, suspending access to an AWS account or wiping years of scientific data is executed with a simple software bit. Conversely, "if they want to remove the infrastructure where it stands right now, they have to come with a court order, rifles, carts, trucks, and plenty of enthusiasm to spend 4 or 5 days pulling out AC units." Sovereignty resides in that stubborn physical materiality of the local server.

Block VI - The Milestone of Clementina XXI and the Arrival of Helvetios

Argentina's supercomputing landscape was historically lagging relative to its economic scale. Being a country with a GDP similar to Poland's, Argentina was the only G20 member that had never featured in the TOP500 list of the planet's fastest machines. This changed with the arrival of Clementina XXI at the National Meteorological Service. Its power was such that a single node of Clementina outperformed the entire 64-node Serafín cluster at UNC.

Despite initial fears that centralization in Buenos Aires would render provincial efforts obsolete, Clementina XXI saturated immediately. This proved the existence of massive latent, contained demand for scientific computing in the country.

To alleviate this scarcity in Córdoba, and facing the impossibility of buying new equipment following the devaluation and price surge of late 2023—where RAM costs tripled month-over-month—the team managed the arrival of Helvetios. This is a supercomputer decommissioned for energy obsolescence at EPFL in Switzerland. Thanks to the technical legacy of engineer Antonio Russo (former supercomputing lead at France's EDF) and the work of local technicians, the 3,750-kg machine distributed across 8 massive cabinets was wired up and operational in just two weeks. This showed that a nation's true capacity doesn't lie in the checkbook to buy turnkey systems, but in minds capable of assembling and maintaining systems.

Block VII - "Los Carpinchos" and the Shift in the Academic Axis

One of the highlights of the presentation was the story of *Los Carpinchos*, the student team that—driven by Marcos Mazzini—competed in the HPC Olympics at the global Supercomputing conference, reaching third place globally in their debut.

This milestone represents a deep cultural transformation. Traditionally, computer science in Argentina (especially tied to UBA and *Exactas*) was imbued with a heavily abstract, theoretical, and mathematical imprint, relegating practical systems engineering. *Los Carpinchos* restored prestige to the act of "wrenching on hardware" (*hacer fierros*: racking servers, laying cables, calculating power draws, updating complex firmwares, and optimizing software to reduce heat and squeeze gear). Training professionals with this practical skill set is what allows the country today to assimilate heavy international donations like Helvetios.

Block VIII - The Mirage of Big Tech Megadatacenters

The panel addressed recurring announcements of multi-million-dollar investments to site tech giant datacenters in the country, pushed by Javier Milei's administration (such as the \$25-billion, 100-to-500-megawatt project in Patagonia alongside Sur Energy). The speaker minutely dismantled the myth of the "trickle-down economic spillover" of these initiatives.

A datacenter of this magnitude operates at a scale completely alien to national reality; the UNC scientific computing center, with all its complexity, consumes barely 200

kilowatts (three orders of magnitude less). Disaggregating the budget numbers of these mega-installations for AI computing shows that 80% of investment goes exclusively to acquiring cutting-edge video cards (like Nvidia B200s), which are imported closed-box.

Local civil works are a minor detail in the equation and genuine job creation is practically nil, requiring barely a dozen technicians and electrical engineers for basic maintenance. These facilities act as extractive energy enclaves that do not contribute a single processing token to the local scientific system or civil society needs. While the country debates unreachable-scale projects, its scientists fight daily battles to fund a single 96-GB graphics card.

Block IX - Thermodynamics and Hardware Disposal

The closing of the debate segment brought a lesson in global energy economics. The speaker detailed how supercomputers in Europe and the U.S. are discarded not because they stop working, but because their thermodynamic efficiency drops compared to new-generation chips. For example, Europe's *Leonardo* supercomputer increased its energy efficiency by 50% in just two years. In countries where kilowatt costs are prohibitive and strict decarbonization targets apply, keeping old machines with low Teraflops-per-Watt rates is unacceptable.

For Argentina's reality, however, the analysis is radically inverted: **"When you don't have a new car, a gas-guzzling old car from the 1960s is pretty great... worse is not moving at all"**. Helvetios consumes 100 kilowatts that UNC's rectorate consciously funds, transforming into an indispensable engine for local research that otherwise would never see the light of day.

Final Reflections

- **Technology is inherently political:** System design decisions, physical server localization, and access policies are not neutral; they prefigure a community's freedom of thought and sovereignty. Free software and local computing are indispensable pillars for building independent democratic societies.
- **The urgency of constant funding:** Latin America's scientific investment model—characterized by peaks of luxury spending (massive turnkey supercomputer purchases) followed by long periods of abandonment where machines rot in customs for lack of electrical infrastructure—is inefficient. Transitioning toward sustainable public funding policies, where safeguarding import tools like the **ROECyT registry** (*Registro de Organismos y Entidades Científicas y Tecnológicas*) remains vital for system survival, is imperative.
- **The supercomputer is a perishable fruit:** A public technology manager's greatest ethical sin is restricting access to resources via bureaucratic red tape. Computing power depreciates second by second due to microelectronics' relentless march. Keeping a machine turned off or underutilized is directly burning the state budget.

Digital Privacy, Personal Data, and State Surveillance

Speaker: Margarita Trovato

Organized by: Fundación Vía Libre and Heinrich Böll Foundation, Buenos Aires Office

Conference Date: August 20, 2026

Block I - Opening, Roadmap, and the Rights-Based Perspective

Margarita Trovato, public policy attorney at Fundación Vía Libre, welcomes both in-person and virtual attendees, highlighting that this gathering marks the fourth and final session of the "*Technologies in Debate*" cycle co-organized with the Heinrich Böll Foundation. The cycle's purpose has been to demystify and debate complex concepts that have migrated from specialized niches into everyday public discourse: privacy, sovereignty, and artificial intelligence. Trovato notes that her presentation focuses on personal data, picking up conceptual threads laid out by Beatriz Busaniche in the cycle's opening session.

Rooting her perspective in human rights in digital environments, the speaker outlines a roadmap that bypasses arid legal technicalities to probe the political and social implications of technology. She promises an agile, dynamic theoretical opening aimed at conceptualizing privacy, personal data, Big Data, and artificial intelligence.

The presentation shifts toward an empirical, concrete deep dive: **state uses of these technologies, with a deeply critical focus on Argentina's current landscape**. Here, she contrasts the normative "should-be" (*deber ser*) with the practical reality of state databases. Closing the arc, she analyzes two milestones dominating recent media agendas: the landing of surveillance corporation Palantir and the controversial official announcement of the Social Digital Twin.

Block II - The Normative "Should-Be" and the Personal Data Protection Framework

To ground the debate, Trovato breaks down **Argentina's Personal Data Protection Law (Law No. 25.326)**. The statute defines personal data as any information concerning physical persons or ideal (legal) entities, with the lecture concentrating on **determined or determinable physical persons**. The core of this definition is its breadth: it is not limited to information voluntarily provided by the individual, but encompasses **any data that, directly or indirectly, allows for a person's identification**.

Within this universe of data, the speaker highlights the category of **sensitive data**. This information receives aggravated legal protection because its disclosure impacts the most intimate, core sphere of individuals, potentially triggering severe discrimination

dynamics. These include political opinions, ethnic origin, health status, intimate matters, and—centrally in contemporary tech debates—**biometric and bodily data**.

The legal scaffolding grants citizens fundamental rights to maintain mastery over their personal information, known legally as the rights of access, rectification, and deletion (*habeas data* cluster):

- **Right of access and awareness:** The data subject's ability to know with precision who holds their data, what specific information is held, in what formats, and where it is physically stored.
- **Right of rectification or amendment:** Allows demanding the immediate correction of erroneous or outdated data. The speaker illustrates this with a civil life example: if a person's educational attainment record is wrong and blocks a job application, the subject holds the legal power to demand rectification.
- **Right of deletion or erasure:** The power to demand the total elimination of information from databases when the data subject withdraws consent or the data is no longer necessary for the purpose that justified its collection.

The speaker emphasizes that losing control over personal data is not a purely abstract concern; it directly impacts the exercise of other fundamental rights. Data processing must be governed by international human rights principles, notably:

- **Minimization:** Collecting and storing solely the minimum amount of data strictly necessary to fulfill a concrete purpose. Keeping information stored indefinitely or in excessive volumes erodes citizen control and multiplies security risks against database leaks.
- **Consent:** The central pillar of the system. Data cannot be collected, processed, or transferred without the subject's express, free, and informed authorization.
- **Purpose limitation:** Data is handed over for a specific purpose and dies with it. If a citizen provides an email for a social security procedure at ANSES (Administration of Social Security), the State is prohibited from using that same email for political communication or marketing.
- **Security and confidentiality:** Technical and legal obligation to ensure information is not accessible to unauthorized third parties.
- **Lawfulness:** Requirement of a legal, justified habilitation for every data processing operation. The speaker exemplifies with the public transport system: the Argentine State collects travel data, schedules, and fares via the SUBE card. This is lawful for managing public transport, but lacks lawfulness if unjustifiably transferred to a private bank, the citizen's employer, or a foreign government.
- **Control and institutional mechanisms:** The existence of enforcement authorities and supervisory figures capable of auditing database controllers and demanding deep accountability. Trovato warns that institutional architecture in Argentina suffers severe flaws here, hindering ordinary citizens from effectively reporting and claiming redress when rights are violated.

Block III - Privacy, Informational Self-Determination, and Self-Censorship

Trovato delves into the philosophical and legal dimensions of privacy. She defines it as the right to intimacy—the **capacity to trace and execute one's own private, intimate life project without external interference**. At the core of this notion lies the **legitimate expectation of privacy**: the presumption that one's personal sphere should not be probed by corporations or government agencies. When data privacy is breached, this sphere of intimacy cracks, enabling the construction of invisible behavioral profiles.

From this conceptual root derives the principle of **informational self-determination**. Coined in German constitutional jurisprudence, this concept enshrines the sovereign right of the individual to decide with autonomy who holds their information, where it is stored, and for what specific purposes. In an era where government infrastructure and the global market are entirely dominated by massive database exploitation, this principle becomes critically relevant.

Privacy, the attorney argues, is not an isolated right, but a prerequisite for exercising other constitutional rights. If a citizen feels privacy is compromised or that they face diffuse monitoring, their daily behavior shifts: they express opinions less freely on social networks, avoid associating with certain causes, and abstain from participating in public protests or dissident demonstrations.

This phenomenon is technically termed the "**chilling effect**". To illustrate it, Trovato cites a recent report by the UN Special Rapporteur on the rights to freedom of peaceful assembly and of association, analyzing how omnipresent state surveillance and systematic threats to privacy paralyze and deactivate the exercise of social protest and democratic freedom of expression.

Block IV - The Big Data Era and the Business of Inferred Data

The analysis moves to the political economy of technology. The dominant business model and modern state infrastructure are built on continuous data harvesting, concentrated today in a handful of transnational corporations selling mass-processing software.

Trovato draws a foundational epistemological distinction: **making state decisions based on scientific evidence (which optimizes public policy) is one thing; subjecting state decisions to automated, algorithmic outputs derived from massive datasets (Big Data) is quite another**.

In this second scenario, governed by AI, the principles of purpose, minimization, consent, and security dissolve entirely into a black hole of corporate opacity.

To explain this paradigm, the speaker recounts an emblematic 2012 **U.S. retail anecdote involving Target**:

*A furious man entered a **Target** store demanding to speak with the manager, outraged that the company mailed promotional coupons for baby clothes, cribs, and maternity gear to his teenage daughter, accusing **Target** of encouraging teen pregnancy. Days later, after a phone call with the manager, the father apologized upon discovering his daughter was indeed pregnant. How did Target know before her father? She had never told the store. The company deduced it via a statistical prediction model fed with her purchase history. The algorithm detected hyper-specific consumption patterns: pregnant women shift purchasing habits to unscented lotions around week 16 and specific vitamins within the first 20 weeks. Cross-referencing these commercial patterns, the corporation inferred high-probability pregnancy.*

This historical case breaks down **inferred data**. Inferred data is neither active information (what a user fills in a form) nor passive (cookies or GPS pings while using an app). They are purely statistical, probabilistic constructions crafted by automated AI processes associating prior behaviors to assign characteristics an individual never disclosed.

This mechanism gives way to **profiling** and **scoring**. Through profiling, people are invisibly dragged into fixed-trait categories (e.g., "pregnant" or a specific "political ideology"), stripping away individual nuance. Through scoring (classic example: credit scores), numerical values are assigned to human conduct to predict future behavior. While benign in e-commerce (Mercado Libre suggesting a book or Instagram targeting ads), it turns sinister and shifts to the public sphere.

What happens when scoring measures criminal risk, police profiling, or crime propensity in specific neighborhoods?

The attorney synthesizes the grave problems of unregulated inferred data use in Argentina:

- **Total lack of consent and awareness:** Citizens do not know predictive profiles are built on them, neutralizing rights of rectification or deletion.
- **Lack of human oversight:** Inferences are abstract math fed by biased data, automating class, gender, or ethnic biases and perpetuating structural discrimination.
- **Data persistence:** Once tagged into a profile, disputing that label or exiting the database is virtually impossible.
- **The trade/industrial secret shield:** When affected individuals try to audit a rights-denying conclusion, corporations and states hide behind algorithmic intellectual property as an "*inscrutable black box*". Trovato clarifies that auditing requires transparency on dataset intersections, criteria, and human-in-the-loop review levels, not exposing secret math formulas.
- **Legal evasion by firms:** Interpellated platforms argue inferred data isn't "personal data" protected by law, but "*self-produced info*"—a regulatory limbo

Fundación Vía Libre fights, arguing that tying data to an identifiable person determining life outcomes makes it strictly personal data.

Block V - Case Studies of Algorithmic Abuse and Global Surveillance

To illustrate the severity of the problem, Trovato sets out a catalogue of documented real-world cases globally and locally where predictive data processing led to direct human rights violations:

- **The case of David and Facebook (United Kingdom):** Through automated analysis of his interactions and browsing behavior, Facebook's algorithm inferred the sexual orientation of a minor named David, cataloging him as homosexual. David had explicitly chosen not to fill out that field in his profile to safeguard his privacy. The algorithm began targeting him with hyper-specific ads based on this inference. David left his session open on his home computer, his parents saw the ads, and they learned of his sexual orientation against his will. The speaker invites us to reflect on the extreme gravity of this incident: if this happened in the United Kingdom with a complex family outcome, ***what would have been the fate of that minor had the algorithm revealed his identity in a country where homosexuality is punished by death?***
- **The teenage pregnancy prevention app in Salta (Argentina, 2022):** The government of the province of Salta announced an agreement with Microsoft to develop an artificial intelligence system aimed at combating teenage pregnancy. The app intended to identify, by full name, surname, and geolocalized address, girls and adolescents with the highest statistical probability of becoming pregnant in the future. The project presented two catastrophic flaws: first, it suffered from severe statistical design/methodological errors yielding constant false positives. Second, and even worse: ***had the application worked with absolute mathematical precision, the result would have been a dystopia of social stigmatization.*** In a conservative community, these girls would have been branded from puberty onward, irreversibly conditioning their schooling, job insertion, social life, and freedom to choose their own life path.
- **Cambridge Analytica:** A global milestone in the manipulation of democratic processes, where psychometric and political profiles of millions of social media users were built without their consent. This inferred information was used to target disinformation micro-campaigns ("fake news") and personalized political propaganda to directly interfere in key presidential elections and referendums worldwide.

- **Racial discrimination in Google Images:** It was documented that the image search engine's algorithm was trained with bias, systematically associating proper names with certain characteristics to particular ethnic groups. When searching for specific names of Afro-descendant or Hispanic origin, the system returned almost exclusively portraits of people with a specific skin tone, perpetuating racial stereotypes in an automated fashion.
- **Health and auto insurers:** Insurance sector companies unilaterally and opaquely modify premium pricing based on risk data inferred from mobile apps users install on their phones. The system gathers sleep patterns, menstrual cycle fluctuations in women, driving rhythms via geolocalization, and dietary habits, algorithmically determining who possesses a higher propensity to fall ill or suffer an accident.
- **Preventive layoffs at Meta (USA):** Amid recent mass layoffs at Facebook's parent company, a group of dismissed workers initiated legal action upon discovering an alarming pattern: those laid off coincided with employees who had taken the highest number of medical leaves. There is strong suspicion that the company used predictive algorithms to identify workers with a propensity to develop serious, high-cost corporate illnesses (especially oncological ones) in subsequent years, executing preventive layoffs disguised as corporate restructurings.
- **The SyRI system (Netherlands):** A state social assistance fraud-detection algorithm (*System Risk Indicator*) implemented by the Dutch government to automatically identify potential abusers of public subsidies. Operating with a deep discriminatory bias focused almost exclusively on low-income or migrant-origin families, the system automatically suspended vital benefits and imposed astronomical, unpayable fines on thousands of households under mere algorithmic suspicion of fraud, plunging entire communities into bankruptcy before courts managed to declare the system illegal and dismantle the methodological farce.

Block VI - The Argentine State under Scrutiny and the Breakdown of "Database Segregation"

Trovato critiques state data management, inventorying compulsory state databases:

- Biometric/identity data in **RENAPER**.
- Physical movement, schedules, origins/destinations, fares via **SUBE**.
- Wealth/financial transaction profiles in **ARCA** (ex-AFIP).
- Labor, social security, pension contributions, family allowances in **ANSES**.
- Medical data in public hospitals and schooling records in education ministries.

Democratic "should-be" principles demand **strict database segregation and silos**. Being a single state does not grant a general license to unify citizen knowledge. Data must stay in organic compartments justifying collection. ARCA cannot cross public hospital health data; school admin cannot audit tax wealth records. *"Technical capability to cross databases does not imply a legal habilitation,"* Trovato asserts firmly.

However, Argentina's framework is dangerously fragile. Law No. 25.326 dates to 2000 (obsolete). Vague exceptions allow free confidential info exchange between state agencies "in the exercise of functions."

The Torres Abad Supreme Court Ruling:

A retired citizen, Torres Abad, sued the national state after giving her email/address exclusively to ANSES for pension files, only to receive campaign emails/flyers from the Secretariat of Public Communication for political marketing. Lower courts ruled bad faith/purpose diversion. The Supreme Court ruled the State did violate no law because Law 25.326's exceptions were that lax; instead, the Court declared unconstitutional three specific subsections allowing indiscriminate intergovernmental data exchange. Procedural nuance: unconstitutionality applies only to the concrete litigated case (benefits Torres Abad; text remains formally in law), building a high-value precedent to challenge state opacity and force legislative reform.

Block VII - Geopolitics of Data Exchange and the U.S. Agreement

Digital sovereignty hinges on cross-border data transfers. Legal standards permit transfers *only* to countries with "equivalent jurisdictions" (equal/higher protection to Argentina), formally recognized by **AAIP** (Agency for Access to Public Information)—the framework governing EU trust.

National law has vague exceptions for organized crime/terrorism cooperation. Trovato denounces that under these, Argentina signed a security/trade agreement with the U.S. (**ARTI**) explicitly recognizing the U.S. as an equivalent jurisdiction, bypassing AAIP audit.

Contrast with EU standards:

- U.S. federal laws (FISA, Cloud Act) grant intrusive national security surveillance/bulk interception of foreign citizen data on U.S. servers.
- EU Court of Justice struck down U.S. data transfers in **Schrems II**.
- *Asymmetry*: Europe blocks U.S. bulk surveillance flow; Argentina opens the door via bilateral equivalence.

Inter-American Court jurisprudence (*Cajar vs. Colombia*, *AMIA vs. Argentina*): higher state intrusiveness = stricter accountability/transparency duty; national security or intelligence secrecy can *never* justify absolute impunity or opacity.

Block VIII - Palantir and the Threat of the Corporate "Black Box"

The conference addresses the arrival in the country of global corporations dedicated to espionage and predictive surveillance. The main focus lands on **Palantir Technologies**, the company founded by magnate *Peter Thiel*.

Trovato describes Palantir as a technology solutions and data analytics firm. Its model consists of integrating government and private databases from completely disparate sources, processing them through closed algorithms, and proposing automated courses of action in military defense, civil security, and government infrastructure.

Palantir's international track record is a flashing warning sign:

- It is the provider of the tracking and geolocation software used by **ICE (U.S. Immigration and Customs Enforcement)** to hunt and deport undocumented migrants by cross-referencing family records, employment histories, and travel logs.
- In the United Kingdom, Palantir managed the **National Health Service (NHS)** health database, triggering a public scandal when it was confirmed that the company had accessed a volume of confidential medical data far exceeding what was authorized, forcing the revocation of several operating contracts.

Beyond human rights risks, the speaker warns about the technical phenomenon of **vendor lock-in (absolute vendor dependence)**. By handing over critical state infrastructure to Palantir, governments become technically hijacked: source code cannot be audited, maintenance costs skyrocket unilaterally, and migrating data to free or national systems becomes impossible, forfeiting all technological sovereignty.

Trovato directly links Peter Thiel's recent visits to Argentina with **an explicit geopolitical alignment of the current national administration toward a paradigm of authoritarian security, espionage, and social dissent control**. The deregulated framework promoted by the Large Investment Incentive Regime (RIGI) and regressive reforms to intelligence and security laws facilitate the establishment and operation of this class of corporation on national territory without any democratic counterweight.

Block IX - The "Social Digital Twin"

Almost simultaneously with Thiel's visits to the *Casa Rosada*, the Ministry of Human Capital, headed by *Sandra Pettovello*, announced via Twitter—with the subsequent validation of President Javier Milei—the creation of a program named the **"Social Digital Twin"**.

The announcement, characterized by Trovato as demagogic rhetoric saturated with trending artificial intelligence jargon, promised to create a sort of virtual simulation of the Argentine population. By cross-referencing all of residents' social assistance, income, health, and education databases, the State intended to predict behaviors and automatically optimize public policy allocation.

In response to the announcement, **Fundación Vía Libre** immediately filed formal public information access requests to inspect the technical specifications, constitutional safeguards, software to be used, and citizen control mechanisms for the program.

The official response bordered on the absurd. Through a stark two-line document, the government formally replied: **"No official program exists under these terms"**. In plain terms, the state's response boiled down to: **"It was just a tweet; don't believe everything you see on social media"**. The speaker warns of the procedural trap deployed by the State to evade the Law on Access to Public Information: leaning on a recent restrictive regulatory decree to classify these critical initiatives as mere "working papers" or informal projections, thereby blocking prior citizen audits ahead of *de facto* implementation.

Faced with the wave of criticism, Minister Pettovello attempted a public defense, assuring citizens they could rest "easy" because the system did not involve personal data, given that all information used was strictly **"anonymized."** **The minister's statement is a self-contradiction: for an anonymization process to take place, there must necessarily have first existed a database of fully identified personal data.**

Moreover, contemporary data science has empirically demonstrated that "perfect anonymization" across massive volumes of cross-referenced data is a technical fantasy: it suffices to reintroduce and cross-reference three or four behavioral variables to reverse the anonymization and re-identify any citizen or collective within the database.

Final Reflections

- **The end of the fantasy of technical neutrality:** This conversation cycle dismantles the narrative that computing solutions are objective or aseptic. Technology is a social and human construction and, as such, reproduces and amplifies the structural inequalities, stereotypes, and biases of the societies in which it develops.
- **The strategy of the law against the regressive offensive:** Although Law No. 25.326 may be considered anachronistic and contains loopholes that the State exploits to evade oversight, **"the old still works"**. Facing regressive reform projects pushed by the Executive Branch—which prioritize the freedom of fintechs and commercial activities over safeguarding citizen rights—the historical principles of express consent, confidentiality, minimization, and purpose remain the most solid legal tools available to organized civil society to resist the advance of the digital panopticon. Sovereignty over bodies and

personal data in the 21st century is not defended with aesthetic discourses on innovation, but with **transparency, accountability, public audits, and collective organization.**