

AI, Structural Power and Governance Fragmentation: A Systematic Review and the Geopolitical AI Power Framework

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Systematic Review

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Abstract

Debates on artificial intelligence and international politics are dominated by the rivalry between the United States and China, which leaves out how other countries become dependent on infrastructures, models and rules they do not control. This article asks how AI reconfigures structural power in the global political economy and why it fragments its governance. It reports a systematic review following PRISMA 2020: 1,763 records from Scopus and the Web of Science Core Collection (2018–2026) were deduplicated to 1,199 and screened by two independent automated screeners (rule-based and zero-shot natural language inference; $\kappa = 0.457$), with adjudication of conflicts. Of these, 330 studies were mapped through keyword co-occurrence, and a core of 49 informed a qualitative synthesis. The literature forms five clusters, led by sovereignty and the Global South and by great-power regulatory competition, while work on data extraction remains dispersed. Building on Strange, Gilpin and Zuboff, the article proposes the Geopolitical AI Power Framework (GAPF), in which structural power asymmetry, techno-nationalist fragmentation and surveillance capitalism externalities reinforce one another and produce structural lock-in. Lock-in is a tendency, not a destiny: semi-peripheral countries can still shape their position through capabilities, negotiation and regional coordination.

1. Introduction

The dominant conversation reduces artificial intelligence to a race between two powers: who has the best chips, the largest models and the most talent (Weymouth, 2025; Zhang, 2026). That view explains competition at the top, but it leaves out what happens below and in between: how countries that do not compete for leadership become tied to infrastructures, models and rules they did not design. What remains unseen is structural power, the capacity to set the conditions under which others take part (Strange, 1988). In that logic, the relevant question is not only who wins, but who becomes dependent, and on what terms.

AI is no longer only a technology; it is industrial and security policy. Export controls on chips, the race for computing capacity and the entry into force of the EU AI Act are redrawing the rules in real time (Weymouth, 2025; Kollar and Stokols, 2026; Mügge, 2024). At the same time, governments, universities and firms in middle-income countries adopt foreign models at high speed, without the capacity to audit or replace them. Decisions taken in these years may fix dependencies that will be very hard to reverse.

This article is written from the semi-periphery. From Chile, and from professional experience in Hungary and in multinational firms, AI appears to arrive in semi-peripheral economies as a closed package: platform, model, terms of use and data flow in one direction. Subsidiaries adopt tools defined by headquarters, and ministries regulate technologies whose design they do not control. Scholarship from the core often treats these countries as passive recipients or as cases of a digital divide, when they are in fact where dependency is produced and becomes visible. Looking from the semi-periphery makes the mechanism visible, not only the outcome.

There is abundant empirical work on digital sovereignty, technological dependency, techno-nationalism and surveillance capitalism (Mügge, 2024; Roberts, 2024; Weymouth, 2025; Zuboff, 2022; Correa Lucero and Martens, 2026). Yet these literatures run on separate tracks: international political economy looks at states, critical studies look at data and regulatory studies look at rules. What is missing is a causal framework that explains how these pieces connect and reinforce one another to produce structural power. Without it, each phenomenon looks like an isolated problem, and so do the policy responses.

This article asks how AI reconfigures structural power in the global political economy and why it fragments its governance. Based on a systematic review of 330 studies, it proposes the Geopolitical AI Power Framework (GAPF), which integrates three mutually reinforcing mechanisms: structural power asymmetry (Strange, 1988), techno-nationalist fragmentation (Gilpin, 1987) and surveillance capitalism externalities (Zuboff, 2019).

2. Methods

2.1 Design

The study combines a systematic review, a bibliometric map of the retrieved literature and a theoretical synthesis. It follows the PRISMA 2020 reporting guideline (Page et al., 2021) and uses a two-tier design: all included records (tier 1, n = 330) feed the keyword co-occurrence map, and a purposive core (tier 2, n = 49) feeds the qualitative synthesis of the three GAPF mechanisms.

2.2 Search strategy

Scopus and the Web of Science Core Collection were searched on 5 October 2026 for records published between 2018 and 2026. Both queries combine three blocks: artificial intelligence; a structural or geopolitical dimension; and a power-related outcome.

Scopus: TITLE-ABS-KEY (("artificial intelligence" OR "AI") AND (geopolitic* OR "structural power" OR "digital sovereignty" OR "technological sovereignty" OR "techno-nationalism" OR "surveillance capitalism" OR "data colonialism" OR "AI governance") AND (power OR fragmentation OR asymmetr* OR dependen* OR hegemon*)) AND PUBYEAR > 2017 AND PUBYEAR < 2027 AND document type = article, review or book chapter AND language = English or Spanish

WoS: TS=((("artificial intelligence" OR "AI") AND (geopolitic* OR "structural power" OR "digital sovereignty" OR "technological sovereignty" OR "techno-nationalism" OR "surveillance capitalism" OR "data colonialism" OR "AI governance") AND (power OR fragmentation OR asymmetr* OR dependen* OR hegemon*)) AND PY=(2018–2026) AND DT=(Article OR Review OR "Book Chapter") AND LA=(English OR Spanish)

The WoS export returned records from several Clarivate databases; only records with a Core Collection identifier were kept, and year and document-type criteria were re-applied locally.

2.3 Eligibility criteria

Criterion	Inclusion	Exclusion
Object	AI is a central object of study (in the title, or mentioned at least twice in the abstract)	AI appears only as a method or in passing
Dimension	Structural, state, international or geopolitical analysis of power, sovereignty or governance	Organisational, sector-specific (health, education) or domestic-legal analysis without an international dimension
Type	Journal articles, reviews and book chapters	Proceedings, theses, editorials
Period and language	2018–2026; English or Spanish	Other periods or languages

2.4 Screening

Titles and abstracts were screened by two independent automated screeners. Screener 1 applied transparent, reproducible keyword rules that encode the criteria above and record the rule behind each decision. Screener 2 was a zero-shot natural language inference classifier, BART-large-MNLI (Lewis et al., 2020; Yin et al., 2019), which scored each record against short labels for artificial intelligence and for power (geopolitics, international relations, great power rivalry, sovereignty, global governance, national security, export controls); a record was included when the highest score in both groups reached 0.5. Before use, the classifier was validated on five sentences with known answers.

Agreement on the 1,060 records that screener 1 classified as included or excluded was 74.1% (Cohen's κ = 0.457, moderate agreement; Landis and Koch, 1977). The 414 conflicts and uncertain records were adjudicated against the same criteria with AI assistance, and the final decisions were approved by the author.

2.5 Bibliometric mapping

Author keywords of the 330 included records were normalised with a thesaurus that merges spelling variants and synonyms. Generic terms that would act as hubs (artificial intelligence, machine learning, generative AI, large language model) were removed. Keywords with at least three occurrences formed a co-occurrence network, clustered with the Louvain algorithm (Blondel et al., 2008) on weighted links with a fixed random seed (2026). Each document was assigned to the cluster that holds most of its keywords. Analyses were run in Python (pandas, networkx) as a reproducible alternative to VOSviewer.

2.6 Qualitative core

The core was selected from the included records by mechanism. Each record was matched to S, T or Z through mechanism-specific terms in its title and abstract and ranked by the number of matches plus citations per year. The top records per mechanism were taken without repetition and then reviewed for

fit; two were removed and two were reassigned, giving 49 studies (S 16, T 17, Z 16). Removed records were not replaced by lower-ranked ones. The claims drawn from the core were checked against the full texts of 45 studies; for four, only the abstract and publisher page were available (Hassib and Ayad, 2023; Nadibaidze, 2024; Houenou, 2026; Kianpour and Windekilde, 2026).

2.7 Reproducibility

The search exports, screening decisions, scripts and keyword data are deposited in Zenodo <https://doi.org/10.5281/zenodo.23248084>.

3. Results

3.1 Records per stage and corpus profile

Of 1,763 records retrieved, 1,199 were unique after deduplication and 330 met the eligibility criteria.

The corpus is recent: 276 of the 330 records (83.6%) were published in 2025 or 2026, against 54 in 2020–2024. It contains 219 journal articles (5 in early access), 91 book chapters and 20 reviews; 295 records come from Scopus and 35 only from Web of Science. The most frequent outlets are *AI and Society* (10), *Frontiers in Political Science* (7), *Contributions to International Relations* (7), *Global Policy* (5) and *Geopolitics* (4). Several edited volumes on digital sovereignty and the Global South appear repeatedly, which signals that a share of this debate is happening in books rather than in journals.

3.2 Thematic clusters

The literature organises into five clusters, two of which hold most of the field: sovereignty and the Global South, and great-power regulatory competition. Of the 330 records, 216 carry author keywords; 50 keywords pass the occurrence threshold and form 221 links, and 182 records are assigned to a cluster.

Cluster	Leading keywords	Records	Share of 2018–2024 records	Share of 2025–2026 records	Closest mechanism
1. Sovereignty, Global South and political economy	AI governance, digital sovereignty, geopolitics, Global South, political economy	84	18.5%	26.8%	S and Z
2. Great-power regulatory competition	China, EU, USA, technological sovereignty, AI Act, international relations	54	16.7%	16.3%	T
3. Security and strategic autonomy	global governance, national security, strategic autonomy, data sovereignty, Türkiye, diplomacy	26	11.1%	7.2%	S
4. Surveillance and democracy	democracy, surveillance capitalism, disinformation, internet governance	6	3.7%	1.4%	Z
5. Data and digital colonialism	data colonialism, digital colonialism	12	1.9%	4.0%	Z

Shares use all records of each period as the base (54 in 2018–2024; 276 in 2025–2026), including those not assigned to a cluster. Figure 2 shows the network of the 60 most frequent keywords.

Three patterns stand out. First, the cluster on sovereignty, the Global South and political economy gains weight, from 18.5% to 26.8% of the records; the early period is small (54 records) and 2026 is incomplete, so the shift is indicative rather than conclusive. Second, great-power regulatory competition keeps a stable share of about one sixth of the literature. Third, the themes closest to mechanism Z are split across three clusters (1, 4 and 5) and two of them are small, which suggests that work on data extraction and surveillance remains fragmented and weakly connected to the rest of the field.

The correspondence between clusters and mechanisms is interpretive. The clusters emerge from keyword co-occurrence and do not test the GAPF; they show where the existing literature already concentrates and where the framework connects debates that are currently treated apart.

3.3 Qualitative core

The core holds 49 studies, balanced across mechanisms, but the literature behind mechanism Z is younger and less cited than that behind S and T.

Mechanism	Studies	Median citations (Scopus)	Open access	Most cited studies
S: structural power asymmetry	16	10.5	62%	Rasheed et al. (2025) on how semiconductors, AI and geopolitical risk shape renewable energy production; Mügge (2023) on the securitisation of EU digital regulation
T: techno-nationalist fragmentation	17	15.0	88%	Feijóo et al. (2020) on technology diplomacy; Mügge (2024) on EU AI sovereignty; Cihon et al. (2020) on the fragmentation of international AI governance
Z: surveillance capitalism externalities	16	2.0	44%	Zuboff (2022) on surveillance capitalism and democracy; Ferrari (2024) on states in platform governance; Correa Lucero and Martens (2026) on colonial structures in AI

Thirty-one of the 49 studies were published in 2025 or 2026, and 32 are open access. The low citation count for Z reflects recency rather than weak quality: most of its studies appeared in 2026. The synthesis of each mechanism in Section 4 draws on these studies, read in full.

4. The Geopolitical AI Power Framework

4.1 Architecture

The GAPF explains AI-driven change in the distribution of power through three mechanisms that reinforce one another: structural power asymmetry (S), techno-nationalist fragmentation (T) and surveillance capitalism externalities (Z). The notation P(S, T, Z) is a shorthand for that interaction, not a formal model.

Each mechanism comes from one tradition of international political economy. Strange (1988) locates power in the capacity to shape the structures within which others must act: security, production, finance and knowledge. Gilpin (1987) treats the relation between economic interdependence and political sovereignty as a permanent tension that states resolve differently as conditions change. Zuboff (2019) describes how platform firms turn behavioural data into a source of economic and political power. The framework applies the first to who controls AI-relevant structures, the second to how states respond by fragmenting technology value chains, and the third to how data flows sustain the resulting hierarchy.

The review in Section 3 shows that these three lines of work already exist in the literature but rarely meet: great-power regulatory competition, sovereignty and Global South dependency, and surveillance and data colonialism form separate clusters. The GAPF's contribution is to connect them in a single causal account.

4.2 Mechanism S: structural power asymmetry

AI power is structural because it rests on control of infrastructure, inputs and rules that others cannot easily replace. The core studies document this in three of Strange's four structures.

Production. Control over chips and computing power is now framed as a matter of national power. The chip industry sits at the centre of the US–China–Taiwan triangle, and US policy seeks to limit China's access to it (Kochumon and C.A, 2026). Both the incumbent hegemon and the rising power use industrial policy to secure technological leadership (Zhang, 2026). Cloud infrastructure is treated as critical to national security and sovereignty, which reshapes domestic territory as well as foreign policy (Kollar and Stokols, 2026).

Security. AI is constructed as a key domain of great-power competition by defence planners (Watts, 2026), as a geopolitical signifier in Chinese and US military discourse (Bächle and Bareis, 2022) and as a driver of arms races that also involve supply chains and alliances (Eslami et al., 2026). Smaller and regional actors respond by importing or building military AI capabilities (Hassib and Ayad, 2023), while status-seeking can outrun real capacity, as in Russia's AI narrative (Nadibaidze, 2024).

Knowledge and rules. The capacity to set rules is itself a form of structural power. The EU has extended security logic into its digital regulation (Mügge, 2023), and its stance on military AI shapes its standing as a power (Lingevicius, 2023).

A fourth feature recurs across these studies: private firms hold structural power of their own. States struggle to keep control over military innovation driven by corporate experts (Johansen and Kruck, 2025), and public institutions depend on a few transnational providers that extract rents through access restrictions and proprietary formats (Kianpour and Windekilde, 2026). This is why the GAPF treats platform firms, and not only states, as holders of structural power.

4.3 Mechanism T: techno-nationalist fragmentation

States respond to structural asymmetry by asserting sovereignty over AI, and the sum of those responses fragments global governance. The core studies show this through four channels.

Sovereignty claims. Digital sovereignty has become the language of state control over AI, but it is contested: it can pit the EU against other powers or citizens against large firms (Mügge, 2024), it frames AI as a strategic industry despite the EU's limited foreign-policy capacity (Coletti et al., 2025), and it needs a normative test of legitimacy rather than a mere description of power (Roberts, 2024). The tension between national control and the need for cross-border cooperation is a recurring paradox (Ishkhanyan, 2025).

Competing regulatory models. China, the United States and the EU hold different ambitions for global AI governance (Mokry and Gurol, 2024). The EU and China pursue different forms of extraterritorial reach

for their AI laws (Yan, 2024), and Asian states are moving from soft guidelines to binding rules shaped by their internet governance traditions (Xu et al., 2024).

Fragmented institutions. International AI governance faces a choice between fragmentation and centralisation (Cihon et al., 2020), and geopolitical tension widens regulatory gaps across high-risk technologies (Li, 2026). Proposals for an international AI agency respond to this dispersion (Robinson, 2025).

Bridge-building and diplomacy. Some actors try to work across the divides. Over two dozen countries have adopted tech diplomacy as a distinct practice (Bjola and Kornprobst, 2026), and earlier work called for a new technology diplomacy to share AI's benefits (Feijóo et al., 2020).

Fragmentation has distributive effects. Divergent regulatory approaches among superpowers risk cultural imposition on others (Gwagwa and Mollema, 2024), and African states building AI strategies must manage the risk of digital colonialism and dependence on foreign solutions (Ndiaye, 2025). Corporate power also shapes regulation across borders, which complicates a purely state-centred reading of fragmentation (Ishkhanyan, 2026c).

4.4 Mechanism Z: surveillance capitalism externalities

Data and knowledge flow from peripheral to dominant actors, and that flow sustains their advantage. The core studies describe three externalities.

Extraction and dependency. Zuboff (2022) argues that surveillance capitalism became a crisis of democratic governance once states left information spaces to a few platform firms. In the Global South, the use of AI in public functions can embed the biases and values of foreign vendors and reduce sovereignty (de la Peña et al., 2025). AI projects offered under the banner of development, from China's Digital Silk Road to Western digital public goods, can turn development into digital dependency (Houenou, 2026). How the United States and China transfer AI technology shapes how far recipients in the Global South can advance (Chen et al., 2026), and small and medium states in Southeast Asia face a choice between dependence and independent development paths (Zhao, 2026).

Colonial and epistemic defaults. AI infrastructures are read as a continuous yet new form of colonial power (Ishkhanyan, 2026a, 2026b) and are tied to a colonial matrix of domination in Latin American decolonial scholarship (Correa Lucero and Martens, 2026). AI ethics itself remains grounded in Western epistemologies (Nemorin and Bonami, 2026), and practitioners from the Global South report that global debates marginalise their perspectives (Brown et al., 2026). African digital labour platforms operate under severe asymmetries in infrastructure, data representation and skills (Anning-Dorson, 2026).

Governance asymmetry. Big Tech's control over data, talent, computing and capital lets it displace public research institutions (Khanal and Zhang, 2026), and generative AI is likely to consolidate the power of these firms further (Zhang et al., 2025). States are not only regulators of platforms but also facilitators, buyers and producers, roles that both enable and constrain their capacity to regulate (Ferrari, 2024). EU

responses centred on AI and media literacy can even strengthen Big Tech by leaving structural power untouched (Oleart and Flores Moleón, 2026).

The literature on mechanism Z is the youngest in the core and, as Section 3.2 showed, the most dispersed. Non-dominant states do not respond uniformly: Singapore, Taiwan and Hong Kong construct distinct techno-developmental imaginaries of AI (Chung, 2026), which suggests that dependency is a tendency that national strategies can shape, not a fixed outcome.

4.5 How the mechanisms reinforce each other

The three mechanisms form a cycle: structural power enables fragmentation, fragmentation locks in dependency, and data extraction sustains the structural advantage. Figure 3 draws this cycle.

S enables T. Only actors with structural power can make sovereignty strategies credible. States now assert control over the AI value chain outside multilateral institutions, through export controls on advanced semiconductors, infrastructure partnerships and bans on foreign platforms, as a response to the infrastructural power of a few firms (Weymouth, 2025).

T deepens dependency. As regulatory models diverge, actors without their own capacity become rule-takers. Divergent approaches among the superpowers risk cultural imposition on others (Gwagwa and Mollema, 2024), and states building AI strategies in Africa face the risk of reliance on foreign solutions (Ndiaye, 2025).

Z sustains S. Control over data, talent, computing and capital lets dominant firms displace public research (Khanal and Zhang, 2026), and public institutions become dependent on a few providers that extract recurring rents (Kianpour and Windekilde, 2026). The informational advantage that feeds structural power is thus renewed rather than eroded.

The framework yields three propositions, stated here for future testing rather than as findings:

1. **P1 (concentration).** Absent deliberate intervention, structural AI power concentrates over time instead of diffusing through catch-up.
2. **P2 (lock-in).** Actors without a credible position in at least one of Strange's four structures before fragmentation consolidates face growing exclusion from dominant AI ecosystems.
3. **P3 (agency).** National strategies can shift an actor's position, as the distinct paths of non-dominant states suggest (Chung, 2026; Zhao, 2026), so lock-in is a tendency, not a destiny.

5. Discussion

The central finding is that the three mechanisms do not operate separately: they reinforce one another. Structural asymmetry concentrates the capacity to set rules, techno-nationalist fragmentation pushes countries to align with a bloc, and data extraction feeds those who already dominate. The result is

structural lock-in: the more a country adopts, the harder it becomes to exit. For a semi-peripheral country, dependency is not an accident but a consequence of how the system is designed.

The literature on surveillance capitalism and data colonialism grew out of different disciplines with different vocabularies: sociology, media studies, law and decolonial studies (Zuboff, 2022; Ishkhanyan, 2026a; Correa Lucero and Martens, 2026; Oleart and Flores Moleón, 2026). It also tends to study single cases, such as one platform, one country or one practice, rather than the system. This helps explain why mechanism Z is spread across three small clusters in the present analysis. The GAPF gives these strands a common place: it shows that data extraction is not a side issue but one of the three engines of structural power in AI, connected to regulation and geopolitics.

The rise of the sovereignty and Global South cluster, from 18.5% to 26.8% of the records, is not only an academic trend. It reflects the concrete costs of dependency that countries of the South have begun to face: export controls, concentration of computing power and models that do not reflect their languages or contexts (Houenou, 2026; Brown et al., 2026). It also coincides with a wave of national AI strategies and debates on public infrastructure and data sovereignty in Latin America, Africa and Asia (Xu et al., 2024; Ndiaye, 2025; de la Peña et al., 2025; Zhao, 2026). Scholarship is following a shift that is already under way in policy.

The findings agree with Kacziba and Urbanovics (2026) that AI is not neutral in foreign policy and can homogenise how states think; their notion of epistemic monoculture is close to what the GAPF calls model colonialism. Urbanovics (2023) shows that South American AI strategies are part of digitalisation agendas with varying degrees of precision and sees regional integration as the way forward; the GAPF adds the structural constraint that explains why national strategies alone may not suffice. The difference lies in focus: these studies describe effects and strategies, while the GAPF seeks to explain the causal mechanism that produces dependency. Its contribution is to connect the epistemic with the material: computing power, data and rules.

The framework has practical implications. A ministry in a country such as Chile should assess AI adoption not only by efficiency but by dependency: who controls the model, where the data reside and what it costs to exit. A firm, especially the subsidiary of a multinational, should require portability, auditability and clear terms on the use of its data before committing to a provider. A development agency should fund domestic capabilities, such as shared computing, public data, local talent and regional cooperation, rather than only the adoption of external solutions. In all three cases the point is to negotiate while there is still room to do so.

The study has four limitations. It does not measure structural power; it proposes a conceptual framework that still has to be operationalised and tested quantitatively. The corpus is mostly in English, which probably under-represents scholarship from the Global South in Spanish, Portuguese and other languages. Records for 2026 are incomplete, so the recent trend should be read with caution. Finally, agreement between the two screeners was moderate ($\kappa = 0.457$), which was addressed through the adjudication of conflicts.

6. Conclusion

AI reconfigures structural power because it concentrates in a few actors the capacity to set the conditions for producing, accessing and using the technology. That concentration, combined with techno-nationalist rivalry and data extraction, pushes countries to align with different blocs, each with its own rules. This is why the global governance of AI fragments instead of converging.

Lock-in is not destiny, but the window is closing. Semi-peripheral countries can still negotiate terms, build capabilities and coordinate regionally, yet that room shrinks with every adoption decision taken without regard to dependency.

The next step is to move from framework to measurement: to build a structural AI power index that operationalises the three mechanisms. With that index, a cross-country panel can show how dependency changes over time. A further line of work will compare Latin America with Central and Eastern Europe, two semi-peripheries on different paths in relation to the United States, China and the European Union.

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Data availability: The search exports, screening decisions, keyword data and analysis scripts are openly available in Zenodo at <https://doi.org/10.5281/zenodo.23248084>.

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Figures

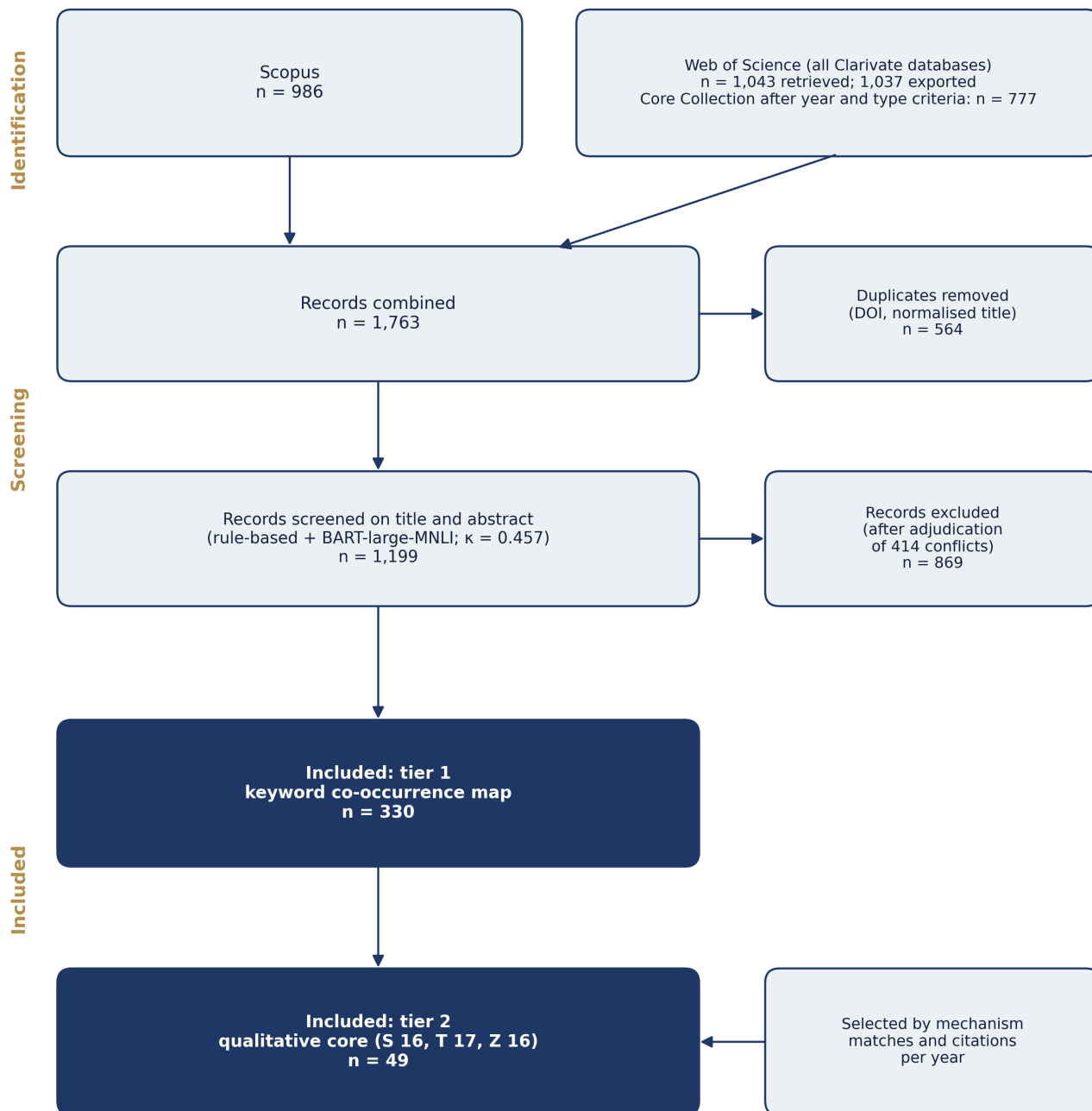


Figure 1

PRISMA 2020 flow of records through identification, screening and inclusion.

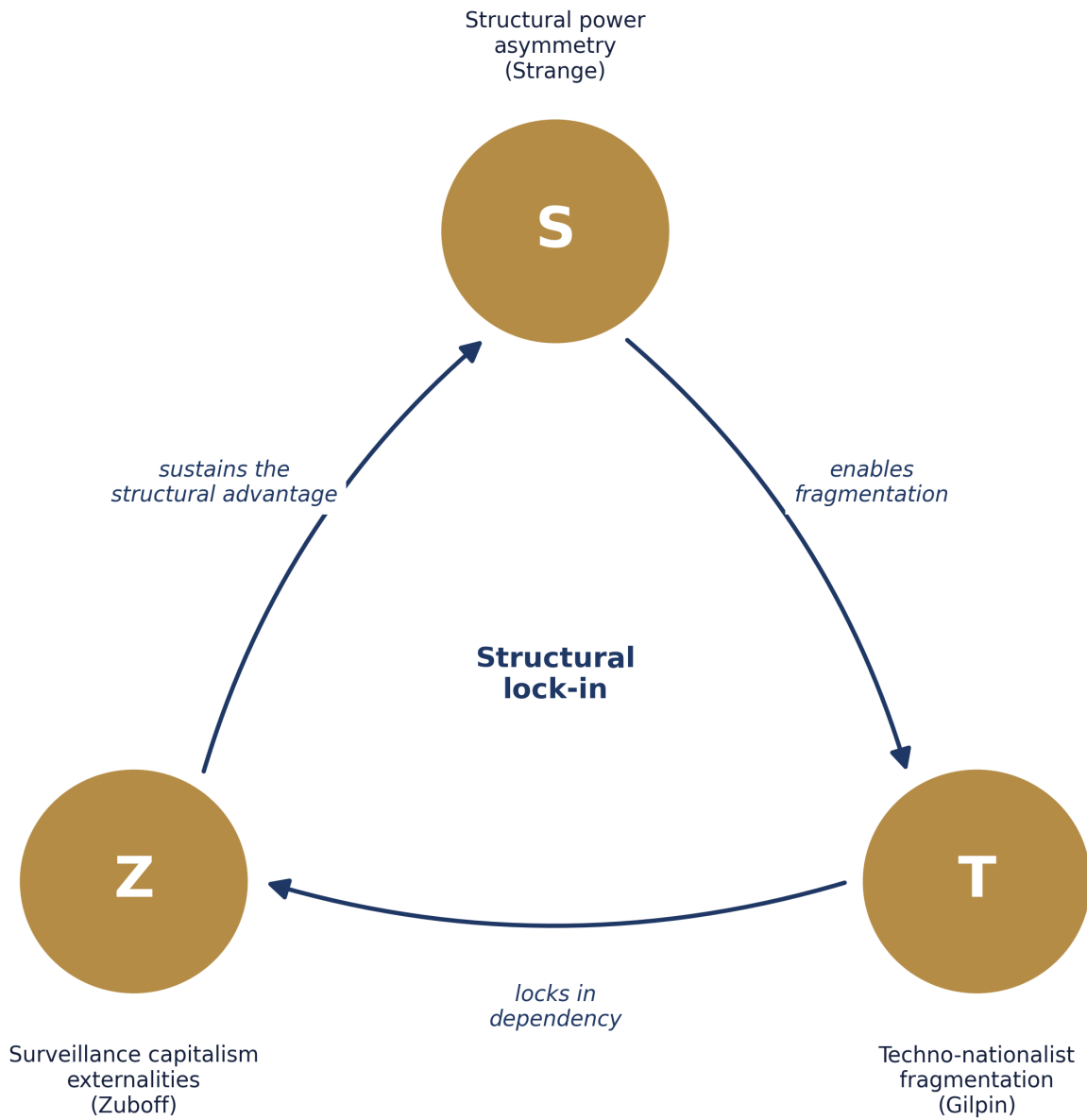


Figure 3

The Geopolitical AI Power Framework: three mutually reinforcing mechanisms produce structural lock-in.