The Global Competition for Dominance in Artificial Intelligence

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While steam powered the 19th century and electricity defined the 20th, the prime transformative force shaping the 21st century is artificial intelligence (AI). It is the heartbeat of what Klaus Schwab, founder of the World Economic Forum, calls the "The Fourth Industrial Revolution," a fusion of technologies blurring the boundaries between physical, digital, and biological realms.

We have seen very clearly during the past decade that AI is no longer confined to research labs; it is reshaping economies, militaries, and governance systems worldwide. Moreover, AI is not only a transformative technology, but also the focal point in a fierce global race for supremacy, where leadership in intelligence equates to leadership in economic power, national security, and the authority to shape international norms.

As Josh Howarth, Chief Technology Officer of Exploding Topics, notes:

- The global AI market is valued at approximately **$391 billion**;
- The AI industry is projected to increase in value **by around 5x** over the next five years;
- The AI market is expanding at a CAGR of **35.9%**;
- As of 2025, as many as **97 million** people will work in the AI space;
- **83%** of companies state that AI is a top priority in their business plans.

According to Omdia, the AI software market's global annual revenue stands at more than $100 billion.

Whereas previous industrial revolutions emerged from, and maintained, a clear epicenter, today's race has no single locus: the United States dominates commercialization, China scales patents and

deployment, the European Union defines governance, while India, Japan, South Korea, Israel, and the Gulf states advance through targeted strengths. But as this race accelerates, a daunting question emerges. *What will it mean for nations—and for the world order itself—if some fall irreversibly behind in the quest for AI leadership?*

Currently, AI leadership is fragmented rather than centralized. No single nation commands supremacy across all domains. However, two nations—the U.S. and China—are the prime contenders for dominance, and competition between the two is intensifying and broadening.

From 2018 through 2024, China's AI research output expanded by more than 120%, producing some 23,000 publications and capturing 27% of top-cited papers—edging past the United States at 24%. This would clearly suggest intellectual supremacy. However, scale alone does not guarantee leadership. The U.S., while publishing fewer papers, continues to generate the breakthroughs—transformer architectures, diffusion models, reinforcement learning—that underpin nearly all modern AI systems. In fact, in 2024, U.S. institutions produced 40 globally recognized AI models, compared with China's 15 and Europe's three, underscoring America's leading edge in frontier innovation.

In Europe's case, the continent's trajectory is markedly different, emphasizing collaboration. For example, more than half of European AI papers are co-authored internationally. This strengthens Europe's role as a knowledge broker, while commercialization gains often accrue elsewhere. As Daniel Wagner, CEO of Country Risk Solutions, argues in *AI Supremacy*, nations that export ideas without mechanisms to capture their value risk reinforcing the advantage of competitors.

The insight is clear. Research leadership only matters when transformed into strategic capability. China's scale builds prestige but leaks talent abroad. Europe spreads influence but struggles to retain ownership. The U.S., though smaller in volume, converts high-impact innovation into global standards. Without commercialization, enforceable intellectual property, and security leverage, even record-breaking research output risks becoming the foundation for another nation's supremacy. Yet publishing discoveries is only the first step. The ability to secure and protect these innovations through intellectual property determines whether ideas remain influential and translate into durable advantage.

Be that as it may, what is crystal clear is that six main features of the AI ecosystem, braced by the principal geopolitical rivalry between the U.S. and China, will seed the playing field of competition for the foreseeable future. These are: patents and intellectual property; commercialization and investment; infrastructure and computing power; education and talent; national strategy and long-term planning; and quantum readiness.

The features manifest in many ways:

Patents and Intellectual Property

Between 2015 and 2022, global AI patent filings surged by nearly 400%, with China accounting for roughly two-thirds of all new applications. This reflects a broader shift in patent strategies from volume to impact-driven IP leadership. Other countries around the globe tend to specialize: Japan

and South Korea lead in robotics IP, while Germany emphasizes industrial AI. Daniel Wagner and Keith Furst frame intellectual property as the "*currency of power*" in the digital age, enabling nations to convert discovery into durable advantage. Eric Engle interprets China's massive, state-backed patenting as a long-term strategy, even if primarily anchored domestically today.

The paradox is unmistakable. China's scale is unmatched, while the U.S. retains global reach through enforceable and impactful innovation. In the contest for AI supremacy, what matters is not just the volume of intellectual property, but the strategic depth—how broadly and meaningfully its protections extend.

Commercialization and Investment

In 2024, U.S. private-sector AI investment surged to $109.1 billion, nearly 12 times higher than China's $9.3 billion. This influx of capital created unprecedented dynamism: 65 new American startups achieved *unicorn* status-firms valued at more than $1 billion, bringing AI companies to nearly a quarter of global unicorns. Yet this raises a critical question: *should leadership be measured by billion-dollar valuations, or by how deeply these technologies transform economies and societies?* China, by contrast, derives its strength from adoption rather than valuations.

Finally, smaller but resource-rich states seek relevance through targeted flagship projects. The United Arab Emirates' Falcon 40B, an open-source, large language model, exemplifies how sovereign wealth can purchase entry into the frontier. Taken together, commercialization reveals not a single epicenter, but a fractured map of power: the U.S excels in capital and innovation velocity, China in adoption density, Europe in governance exports, and smaller states in strategic entry.

Infrastructure and Computing Power

Infrastructure is clearly the bedrock of AI power. In 2025, NVIDIA controlled 92% of the GPU market, cementing U.S. dominance in the processors that drive modern AI training and inference. American cloud providers likewise anchor global compute access, providing the platforms on which AI systems are trained and deployed. Yet chip production remains a chokepoint. Taiwan Semiconductor Manufacturing Company (TSMC) commands roughly two-thirds of global foundry revenue, underscoring the world's reliance on a single geographic hub. To somewhat mitigate this vulnerability, TSMC announced a $100 billion U.S. expansion, including three fabrication plants and advanced packaging facilities-an investment signaling a deliberate move to "onshore" supply chains and reduce dependency.

Education and Talent

Human capital is one of the most decisive determinants of AI power. In 2023, 57% of the world's most-cited AI researchers were based in the U.S., though nearly 70% were foreign-born. This underscores both strength and fragility: America attracts the world's best minds, but its edge depends heavily on its immigration policy. Currently, that policy is in flux. China has pursued scale, graduating more than 77,000 STEM PhDs annually by 2025, almost double U.S. levels.

Recognizably, China has been the most important foreign supplier of U.S.-based scientists for more than two decades. However, while most China-born, U.S.-based scientists intend to stay in the U.S., the number leaving has steadily increased. Scientists of Chinese descent in the U.S. report in surveys regarding their anxiety and new difficulties in pursuing their research, with [61% considering leaving the U.S. and 45% avoiding federal grant applications.](#) U.S. science will likely suffer, given the loss of scientific talent to China and other countries.

As Daniel Wagner and Keith Furst argue in *AI Supremacy,* resilience in talent is measured not only by how many minds are trained, but by how many can be kept and applied to strategic innovation. The real question for the AI century is this: will supremacy belong to nations that graduate the most, or to those that channel talent into breakthroughs that reshape societies?

Long-term Planning

Embodied in national strategy, long-term planning reveals how nations attempt to convert ambition into durable advantage. China's New Generation AI Development Plan explicitly set the goal of global leadership by 2030, supported by vast state funding and a drive for [semiconductor self-sufficiency](#). The U.S., by contrast, relies on a more decentralized model. The CHIPS and Science Act injects $52 billion into semiconductor sovereignty, while private-sector dynamism sustains frontier innovation and commercialization.

The Readiness to Embrace Quantum

Finally, there are emerging technologies, especially quantum computing—and *the readiness to embrace quantum*—that are transforming the AI landscape. Quantum computing represents the most disruptive frontier in the race for AI supremacy—a technology capable of collapsing timelines and overturning current hierarchies. Unlike incremental gains in algorithms or data, breakthroughs in quantum could transform AI almost overnight by enabling models to process information at scales unimaginable today.

We can state with confidence that the global AI contest will not produce a clear winner. Instead, it will expose a web of interdependencies where dominance in commercialization, patents, or governance is inseparable from deep vulnerabilities. The U.S. excels in frontier breakthroughs and commercialization, but its strength rests heavily on immigration pipelines that remain politically fragile. China produces unmatched research scale and patent volume, yet it relies on Taiwan for chips and struggles to retain top talent. Europe asserts unmatched normative authority through the AI Act, but too often loses the economic returns of its intellectual capital to competitors abroad. India demonstrates how scale in workforce readiness can tilt global skills, but it lacks the research depth of frontier powers.

This divergence reveals a deeper truth—leadership in AI is conditional, rooted as much in dependence as in dominance.

What can we conclude about the globally competitive environment in AI? True supremacy will not rest on technology alone. It will belong to those who can withstand shocks, retain talent, and align long-term investment with credible governance. As Wagner reminds us, this rivalry will

remain fluid and multipolar, while Engle argues China's centralized model could tilt the balance. Both perspectives underscore that the real struggle is not just for algorithms, but for the political and institutional systems that transform innovation into lasting power.

Ultimately, advantage will accrue to nations that align private incentives, open research, and credible governance into a durable strategy that turns breakthroughs into inclusive and secure prosperity.

AI will not just reshape industries—it will redefine the architecture of power.

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