

What will digital war do to world?

ANALYSIS *Techno-geopolitics, by influencing traditional patterns of global competition, has brought about significant transformations in the realm of digital technologies and geo-economic rivalries. In this context, China, the United States, and the European Union are striving to leverage new tools to dominate the future global order.*

The pursuit of technological superiority has turned into a new arena of competition among global powers, particularly China, the United States, and the European Union. Mastery over advanced technologies such as artificial intelligence (AI), microelectronics, big data, machine learning, and quantum information systems ultimately shapes and solidifies the international balance of power. Global powers are determined to develop technological capabilities to gain a strategic advantage in their broader competition. The development of such capabilities has been prioritized as a national strategy by global powers and is pursued at the highest levels of government. These powers have realized and emphasized the importance of achieving technological superiority in terms of economic development, national security, and international competition.

This has led scholars Saeed Pirmohammadi, Mehdi Hedayati Shahidani, and Amir Niakooee to write an academic paper, titled "Technogeopolitics and the Change of Traditional Global Patterns in Digital Technologies: A Strategic Vision for Iran". In that paper, a summary of which is given below, they sought to examine the potential relationship between techno-geopolitics and the transformation of traditional global patterns in digital technologies, using a comparative study method and data analysis.

Geo-economic competitions in future

Technology is at the core of geo-economic competitions in the future international system. Therefore, it is generally argued that success and superiority in shaping the future world order depend on staying at the cutting edge of technology. Among the most important advantage-generating technologies are artificial intelligence, hypersonic technologies, quantum computing, the Internet of Things, and others, whose emergence has transformed the nature of competition among major powers. Geo-economic competitions for dominance over new multipurpose technologies based on big data, machine learning, and artificial intelligence influence the structure and patterns of interaction and agency of countries in regional and international environments. The competition among global powers in the technological domain, particularly in artificial intelligence, is a multidimensional rivalry encompassing technological, economic, military, and political spheres.

Much of this competition currently revolves around the United States and China; thus, further in-depth research is required in this regard. The European Union also emphasizes the critical importance of sensitive and multipurpose technologies in strengthening technological sovereignty and reducing strategic dependencies among its members.

What is techno-geopolitics?

Techno-geopolitics, or the geopolitics of technology, as the name suggests, examines the relationship between "technology" and "geopolitics". As a result of the Fourth Industrial Revolution, technological capabilities and dimensions have gained a special place at the forefront of the competition of global powers.

In traditional definitions, power was defined by geography and control over territory or oceans, whereas, based on the new definition, power is measured and evaluated by the ability to influence social capital; control goods, money, and data; and exploit the connections that technology enables.

Thus, any interaction between countries — over issues ranging from energy to information technology standards — becomes a tool of geopolitics. The new concept of techno-geopolitics requires further elaboration. Introducing this concept clearly demonstrates the ever-solidifying link between the technological capabilities of countries and their national security and geopolitical power. At a macro and strategic level, techno-geopolitics examines the contemporary relations between the United States and China — and to some extent the European Union — and the future of global



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cybersecurity through the lenses of geopolitics and financial-technological competition.

Competition of global powers over AI techs

In general, technology has always been a critical element in shifting the balance of power. Since the competition among major powers revolves around the relative distribution of power, controlling and developing new technologies can influence the dimensions of global power competition. There are numerous historical examples of this. For instance, during the agricultural age, tools such as the chariot, saddle, stirrup, and similar equipment were considered advantage-generating tools. Over time, in the industrial age, nuclear warheads, cruise missiles, ballistic missiles, combustion engines, submarines, and missile defense systems became significant. In this context, missile superiority can sometimes alter the balance of power among major powers. This is particularly impactful when missile capabilities are combined with advanced technologies and a strong economy.

According to many experts, technology is currently the most important and decisive arena of competition among global powers, and artificial intelligence is the main axis of competition between the two sides. The prevailing view among American elites is that AI could turn China into a greater strategic threat. Despite significant advancements by Chinese companies in artificial intelligence, technological dependence on Western and American companies remains evident.

New forms of espionage devices

Some American legislators have expressed concerns that China is using AI-generated deepfakes to disseminate false political

information and influence public opinion within the United States, particularly during critical moments such as presidential and congressional elections. Compared to traditional threats, new forms of espionage and counter-espionage devices and systems that utilize artificial intelligence are far more complex and extensive; tracking and countering them is extremely difficult, and they can easily infiltrate the critical infrastructure of target countries for extended periods.

Competition in field of advanced chips

The CHIPS and Science Act was passed in the United States in August 2022. When president Biden signed that \$52 billion law, he highlighted an issue that many had overlooked: the critical importance of semiconductors. Joe Biden stated during the signing ceremony, "These tiny little computer chips are the building blocks of the modern economy."

The law prohibits semiconduc-

tor companies from exporting advanced chips to China and increases pressure on China to develop domestic production capabilities. The equation is quite clear; companies intending to export AI chips to China or other sanctioned regions must inform the US government. These sanctions also apply to companies headquartered in China or other sanctioned regions with branches in other countries. Therefore, this competition must be analyzed at a strategic level, far beyond superficial layers.

Huawei-Open RAN techno-geopolitical dualism

Concerns that the Chinese company Huawei might dominate 5G technology are among the primary worries of American officials. This Chinese giant, alongside Sweden's Ericsson, Finland's Nokia, and China's ZTE, controls about 27% of the global market revenue for 5G network equipment. While Huawei dominates many older telecommunications infrastructures in the developing

world and the Global South, it relies on Western technology to provide 5G services. China's mastery over building 5G networks has given it a strategic advantage in technological competition with the United States. The United States does not have a strategic counterpart to Huawei, the global leader in building 5G networks.

New restrictions against competing platforms

Washington and Beijing have sought to deploy their domestic operating systems in pursuit of geopolitical and geo-economic objectives. TikTok, as China's first global internet platform, plays a pivotal role in expanding China's digital influence worldwide, including in the United States.

This platform has become a reference for news, particularly among American youth, and many businesses rely on it to expand their trade. It is important to note that TikTok's entry into the broader technological competition between the Unit-

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In general, competition in the export of AI-related technologies between China and the United States is ongoing. European countries have largely opted for the more expensive yet more secure American systems, while poorer countries, primarily in Africa and the Indo-Pacific, are drawn to the Digital Silk Road initiatives.



Then-US House Speaker Nancy Pelosi (sitting), joined by fellow Democrats, enrolls the bipartisan bill designed to encourage more semiconductor companies to build chip plants in the United States, at the Capitol in Washington on July 29, 2022.

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