STRATEGIC INCONSISTENCIES

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Remembering what the Italian historian and philosopher Giambattista Vico (1668–1744) said that history repeats itself, there is again a repetition in relations over the strategic use of old assets and new materials.

The international debate is about the strategic weakness of the West (and especially Europe) facing the threat of LNG (Liquified Natural Gas) being cut off from Russia over the row between Moscow, Washington and Bruxelles (NATO and EU capitals) concerning the Ukraine. This issue shows the long-standing foolishness and lack of vision of the Euro-Atlantic community leaders. But the problem is not only limited to that, for other challenges also are putting an immense strain on our individual and collective future.

In prehistoric times, the discovery of the metallurgy (copper, bronze and iron) brought great changes to humanity, with the emergence of new powers and the end of pre-existing structures and powers.

During the Bronze Age, the shortage of bronze (1800 and 1700 BC) led to various conflicts in the Mediterranean region, focused on the control of this meta; with which weapons were made. Subsequently, using what is now known as "replacement technology," it was possible to produce superior quality weapons from a much more abundant metal, but through a more complicated metallurgical process. The metal was iron. Its use spread, and the Iron Age began.

Rare earths today are the cornerstone of our technological evolution. Rare earth metals are needed to produce most high-tech products. Without them, many of the sectors in more developed countries, such as energy, telecommunications, medicine, and defense, would collapse the world over. On the other hand, the quantitative scarcity of rare earths, and the difficulties of various kinds and in their access, are nothing new. Shortages have already been predicted by 2025, by the European Commission, limiting the technological growth of Europe and the US and favoring that of China, with a strong impact on the struggle for global hegemony and international security.

Rare earths were first discovered by a Swedish army officer in 1787, but they did not generate the current frantic search, and their use was initially limited. Up to 1947, only 17 rare metals were found, and their importance increased with research in atomic physics, quantum physics and chemistry.

Today, it would be impossible to imagine everyday life without rare earths, as they are used in medical technology as contrast agents, as well as in radar devices, plasma screens, LEDs, special paints or lasers, to name a few. Their use in electric motors especially, such as in magnets or in batteries or fuel cells make them a key resource for the energy transition, which has become a global necessity. The properties of some rare earth elements make it possible to reduce the size of electric motors, increase the strength of the magnets and allow the use of lighter but more resistant alloys. The application of rare earths in most technological processes has triggered its demand, which is (thus far) endless.

The concentration in which these elements are found in minerals is very low, hence the name "rare." They are not rare in the world, but their low proportion gives them the name. Rare earth deposits are abundant all over the world. However, the economic profitability of their exploitation depends on the concentration in which they are found in these locations. China owns a third of the world's reserves, followed by Brazil, Vietnam, and Russia. Further, the extraction and separation of rare earths represents a technological and logistical challenge, associated with severe environmental pollution problems.

The industrial significance of rare earths is not yet equivalent to other raw materials, such as oil or gas. But many industrial sectors that would be affected by an interruption in the supply of rare earths are directly or indirectly linked to human safety and/or national security. The main reason is the link between rare earths and technology. Today, technology dominates the industrial processes, and its development is inconceivable without the use of rare earths.

For example, in the defense sector, rare earths enable the development of more effective, smart, and intelligent military capabilities and combat systems. Rare earths are now essential for night vision devices, precision guided weapons systems, communications equipment, navigation systems, batteries, stealth technology, drones, target design lasers and satellites for communications. They are also used in high performance protections and in both armored vehicles and projectiles to give them durability. Any disruption in the rare earth supply-chain would have a serious impact on the defense capabilities of any country with technologically advanced armed forces.

The importance of rare earths becomes strategic and particularly relevant when it is observed that, while the Organization of Petroleum Exporting Countries (OPEC) controls 41% of oil production, it is spread, even if unequally among, 13 states, China controls about 75% of rare earth production alone.

This fact has a direct bearing on the strategic choices of many nations. For example, during 2020, there

was a direct threat from the Chinese government against two major US weapon system manufacturers, though it ultimately did not materialize. However, this also suggests that any nation that could, even indirectly, pose a threat to China's security could be sanctioned with limitations or interruptions in the supply of rare earths. And seeing China's growing determination on the international stage, this is not just an academic hypothesis. Therefore, it becomes a strategic priority to have a secure supply-chain for these critical minerals.

The only country in the world with a complete, independent, and autonomous supply-chain is China. The difference of interests between the value-chain (economic interest) and the supply-chain (strategic interest) means that each economic and socio-political model has a different perspective on the supply of rare earths and the associated value-chain. The more liberalist perspective, like that of the US, is based on the "efficient market," leaving self-regulation in the hands of private corporations, to generate an adequate value-chain that should (ideally) have an associated supply-chain—in this case of rare earths. From the point of view of Beijing, the State/Communist Party intervenes directly in its companies and the private ones are kept under very strict control, and even more so those that operate in sectors considered strategic. Beijing primarily pursues national security goals, protecting the supply-chain, and subsequently, seeks to maximize value-chain profits.

Even with 40% of rare earth reserves currently in China, Beijing is also the world's largest importer. Thanks to these imports and the use of its own resources, the final production of rare earths in China amounts to about 140,000 tons, about 75% of world production. This figure readily shows China's dominance in the rare earth chain, followed by Australia (11%) and the US (8%).

The Belt Road Initiative (BRI), a pillar of China's government policy, also serves as supply, trade and transport routes for rare earths and their associated products, both for import and export, and thus supporting China’s quasi-monopoly around the world.

Today there are only two companies outside of China that can be considered global producers of rare earths: one from Australia (Lynas Corporation) and one from US (MP Materials).

However, MP Materials ships its rare earth concentrates to China for processing and the Chinese government has a 10% stake in the company itself. China, in turn, sells manufactured and finished products at a large profit margin. The buyer countries thus maintain a relationship of dependence on China. Making political decisions without considering the entire supply-chain, or without knowing the

relationship between each of its processes, can lead to financing and increasing the Chinese monopoly of rare earths.

The trade war between US and China is not limited to the economic sphere and is associated with the pursuit and maintenance of technological superiority and the control of supply routes. Technology not only represents a growing value for the economy, but also has a direct impact on the daily life of citizens. And, historically, technology has played a decisive role in the quest for international power, while control of the supply-routes enables the security of supply chains, which have expanded and diversified with the advance of globalization.

Without an adequate supply of rare earths, it would not be possible today to maintain not only technological advantage, but also the normal functioning of the various sectors of the economy.

Some of the technologies currently under development may be disruptive; for example: artificial intelligence (AI), quantum computing, robotics, biotechnology, and nanotechnology. These technologies will not only change daily life but may also alter current international hierarchy. China has already made public its plan to achieve independence in 10 key technologies by 2025. Currently, as regards the supply of materials that are the physical basis of these technologies, independence is already ensured. China is constantly moving towards strategic autonomy. On the contrary, since Beijing has a near-monopoly on rare earths, the maintenance of US technological hegemony depends precisely on China.

The Biden Administration is fully aware of the problem and has ordered a supply-chain review in key areas of medicine, commodities, and agriculture. The resulting review sternly states that “decades of underinvestment, together with public policy choices that favor short-term solutions, have left the system fragile.” The Departments of Defense, Agriculture, Energy, Interior, the White House Office of Science and Technology Policy, the Environmental Protection Agency (EPA) are trying to address the supply-chain problem for rare earths and other critical materials. So far, the major effects of these policies have been reflected in the attempt to bring the supply-chain back to US soil, with the reopening of mines, activation of processing centers, agreements with commercial companies and securing of supply-lines—all by 2025.

Despite the trade war between China and the US, with the exchange of sanctions and other punitive measures, Washington has always kept rare earths out of it, no doubt because of the risk that China

could still use them as a deterrent weapon.

But China primarily has no interest in imposing export quotas, as this would damage Beijing economically, triggering a new escalation in the mutual imposition of economic or tariff sanctions.

In general terms, however, China's economic dependence on the US has been steadily declining in recent years and Beijing continues to build architectures that work to its advantage. It should be noted that, at the end of 2020, the largest free trade agreement in the world was signed, the RCEP (Regional Comprehensive Economic Partnership), promoted by China, and in which all ASEAN nations participate (without Timor-Leste), including Japan, South Korea, Australia, and New Zealand. The RCEP, operational since the beginning of 2022, representing 30% of world trade, has also seen the UK apply to join this treaty.

As mentioned above, the EU and the US have already officially predicted the shortage of rare earths by 2025. But this shortage, in addition, to being an instrument of pressure from Beijing to condition the international community, is also a problem for China because of the strong increase in domestic demand for the consumption of rare earths. Chinese development in recent decades has led to the emergence and growth of a huge middle-class (equivalent to the entire population of Europe) which, despite some slowdowns, continues to grow in number and economic capacity. This enormous middle-class now has access to previously unavailable technologies and goods, but their limitation could have a negative impact on internal governance, with risks related to domestic stability.

As an example, the Chinese demand for rare earths in the last five years has exceeded its own production, and the priority of Beijing will probably be to guarantee domestic market supply in the first place, but also continue to give regularity to their supply for strategic sectors, such as defense, medicine, and energy.

The outcome of this struggle for world hegemony can be determined by the pace, that is, by the speed of reaction by the US and its allies, or by China, which will take advantage of this clear geostrategic dominance for as long as it can maintain it.

Beyond the security impact of the Western world from the scarcity of rare earths, this situation would also allow China to gain an advantageous negotiating position on international security, which the

United States may not be willing to accept.

China's rare earth monopoly serves on the one hand, to strengthen its technological transformation and continue its economic progress associated with its struggle for hegemony. At the same time, for the US, China's dependence on the supply of rare earths poses a serious threat to its strategic autonomy, a potential threat to its security and apply a possible brake on its economy and technological development. With this monopoly, China has a weapon, not only economic and diplomatic, but also militarily, because by interrupting the supply of rare earths it could block the production of the defense capabilities of its competitors.

The US strategy dedicated to rare earths moves to promote replacement technology, the exploitation of new fields and the development of new metallurgical centers, reducing dependence on China. In the short term, increasing reserves of rare earth metals, increasing efficient recycling methods, and expanding secure supply-chains would be the best way to react to rare earth shortages.

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