The Future of Critical Mineral Control Lies in the Formation of Chimerica

written by Jack Lifton | September 11, 2024

A Brief History of the Origins of the Demands for today's Critical Minerals and the Consequences of their Geographic Locations

In 1934, the American economist Harry Dexter White, who later was to mold the Bretton Woods Agreement, negotiated in 1944, into the American dollar's global dominance that, although beginning now, after 80 years, to fade, still exists, wrote:

"The stabilizing influence exerted by the interdependence of nations is not likely in the future, however, to be so great as it has been in the past. Other countries are awake to the disturbing forces coming from abroad. They also are concerned over their domestic stability and are less hesitant about adopting restrictive measures to ward off disturbances. Bumper export crops in the United States are more likely in the future to be met by specially imposed import restrictions designed to check 'dumping,' rising discount rates will be met with more effective measures for protecting gold, and so on. Increased government control by numerous important countries over their international trade and finance will be used more and more to wrest competitive advantage away from competing countries, and the struggle for competitive advantage in trading relations

will, as a result, become keener and more prolific of sudden important shifts in the movements of international goods and capital. These developments in the direction of more intense economic nationalism obstruct the path of such stabilizing influences as the free exchange of goods, services, and capital might be expected to have."

Ninety years later, world leaders, markedly unburdened with any knowledge of fact-based science or of common sense economics and too often completely inexperienced in the real world of commerce, are driving nations to economic ruin to "save" them from the most recent fantasy crisis of climate change. They use fact pickers, not fact-checkers, to carefully craft and support policies that churn capital needlessly to allocate it to favored industries that benefit only a few but benefit the "policymakers" themselves. Naturally, these leaders seek advice only from a carefully culled set of reliable "experts" who will be sure to agree with only the "correct" self-enriching policies.

The critical minerals of today are defined by consumer choices, not military ones, in the two nations that make up one-half of the world economy. The leaders and policies of both nations say that economic self-sufficiency is their goal, but the geology of geography has made natural resource self-sufficiency too expensive a goal to achieve (or maintain) in any one nation. This has impeded and probably eliminated economic self-sufficiency as a realistic goal if any modern nation wants to achieve and maintain a good standard of living for all of its citizens.

China and the United States have three things in common: They are both economic superpowers, deeply in debt, and economically interdependent. So that you'll continue to read, let me first define the terms in my title for you:

1. Chimerica is my shorthand for China + America; it does not mean that China has a secret project intended to control America from within and
2. A chimera is defined as something hoped or wished for that is impossible to achieve.

How do we choose which is a critical mineral for either China or America? First, we need to determine where and when we are speaking. For the respective governments, it depends on which historical time period and which part of the population we are trying to satisfy in that period. The common cohort in both countries is the average citizen. He/She today wants air conditioning in the summer and heat in the winter, as well as personal transportation for local needs and mass transportation for long-distance travel, low-cost and abundant food, adequate and reasonably priced medical care, housing, and safety from normal climate variation, industrial pollution, crime, and war. The wealthy elites of both countries at all times want safety to do whatever they wish, most of all, and the politicians in both countries want to balance their dependence upon and subservience to wealth creation by tilting the playing field in favor of money creators (but destroying any sincerity or possible effectiveness of good intentions by cutting themselves in on the wealth, of course, always).

Both governments state that wealth creation for the benefit of all is their goal. The Chinese name this as a socialist concept, actually going back to Mao, which they call “shared prosperity,” Both governments then ignore this lofty goal in favor of wealth accumulation by their reliable “donors” for their benefit, with, of course, some reserved for the governing officials. I note that Imperial Japan’s former aristocracy used this theme to justify their recent failed attempt at conquest. The Japanese purpose was the creation of “The Greater East Asian Co-

Prosperity Sphere.” Apparently, in political control themes, what goes around comes around.

Privately owned manufacturers’ universal goal is much more straightforward: They want to create wealth by supplying the widest market with *products* that the market demands at the highest price they can sell them for (this is why capitalists hate competition; it keeps prices down). Any interest in and designation of critical minerals derives from the motives of money and power acquisition and maintenance in both nations.

However, at least in the United States, when the government tries to dictate consumer market demand (aka, “induced demand”), all common sense supply chains are interrupted.

In the most basic case, for the regular and reliable energy supply, that’s where we are now in both countries. Based on actual demand and economically determined supply, there would be no demand for any but the lowest-cost energy. In place of that actual demand for lowest cost energy by the majority of the people, we have in both countries the rule of “progressives” who say that they know better than the majority what is good for the majority, and so they just ignore, as much as possible, the actual wishes of the majority. Thus, for their holds on power and their own economic benefits, they promote higher-cost “alternate” or(as the Chinese call it) “new”energy sources, the construction and operations of which require larger quantities than ever before of scarce technology metals critical for such construction and operation. Thus, a demand for alternate energy-enabling metals such as lithium and rare earths is induced, but this is not in response to any real (free) market demand.

The current twenty-first-century selection of critical minerals has arisen to provide alternate (non-fossil-fueled) energy and to mass-produce consumer devices that are said to improve the

standard of living of the average person by giving them low-cost access to communications and entertainment.

Electrical energy is the lifeblood of the Global North. History, science, and technology have only recently given us the lowest-cost energy source ever: fossil fuels. And that factor, low-cost energy, gave impetus to the greatest flowering of scientific and technological progress in humanity's history.

The first mass production of relatively cheap (for the times) electrical energy was in the late nineteenth century when water flow turbine generators were invented. The invention of the steam-powered turbine (its own heat energy derived from burning coal) followed, and then the mass application of the electric motor and the invention of Alternating Current production, distribution, and end-use devices gave us the twentieth century's (second) industrial revolution, the affordable fruits of which we, in the West, have enjoyed up until now.

From the end of World War II until the first manned landing on the moon (in 1969 for you youngsters), military requirements and U.S. Defense Department money fueled, unintentionally, a third "consumer products" based industrial revolution. The military requirements were for miniaturized electronic communications and mechanical components, radar, and computers. This led to the invention of the integrated circuit "chip," but that was preceded (necessarily) by the discovery of methods to find, extract, separate, and ultra purify metals and non-metals, which until that time had been laboratory curiosities. These are the "technology metals" the electronic properties of which now make them critical minerals and metals to be utilized in mass-produced miniature devices for communication, data storage, micromechanical movement and entertainment.

Of course, silicon has been known for a long time, but its

ultrapurification, first for use in semiconductors and then in solar cells, was a post-World War II achievement that triggered a new discipline among metallurgists, the commercial production of quantities of ultrapure technology metals necessary and sufficient for the mass production of consumer devices.

None of these critical metals and minerals today deemed necessary for this micro miniaturization of electronics revolution were available in commercial quantities or even sufficient quantities for experimentation until or after World War II. All of them were brought into production during that period for the purposes and use by the U.S. Military for manufacturing and controlling weapons and communication. All of that initial production was done without regard to cost; it was for the “defense” of the United States. Even the best educated among my contemporaries overlook the fantastic advances in the chemical engineering of extractive and purification required and achieved to bring the technology metals of our age into “mass production” economically,

Ultrapurification, necessary to establish the baseline electronic properties of materials, would never have been accomplished commercially due to its research and development costs if it had not been for the military’s need for miniaturized electronic devices.

At the beginning of World War II the allied nations sought to secure sufficient supplies of metals to make armor and ammunition. These were the alloying elements for steel, nickel, chrome, and tungsten and the copper and zinc necessary to make cartridge brass.

During the war, uranium, zirconium, silicon, and gallium became necessary for weapons and communications equipment, and the ultrapurification of all of those above and of germanium became

a necessity. Interestingly, the separation of the rare earths and their purification was intensely studied during the war because the lanthanides (the rare earths) had chemical properties analogous to those of the actinides (the radioactive elements) and so they could be used to infer the chemical properties of the actinides without the need for massive and restrictive shielding that is necessary when working directly with the radioactive actinides.

By the end of the war the chemical engineering had been done to assure greater supplies than ever before in history of many previously obscure metals and materials, because their extraction, separation, refining, and fabricating had been developed without regard to cost, and stockpiles had been built of them.

An intense period of invention based on the electronic and magnetic properties of the newly available technology metals occurred between 1945 and the end of the 1970s during which period America’s Federal Government lavishly supported research and development.

For example, separated rare earths became important for enabling true-color electronic displays, but their use in making very small but powerful permanent magnets was a scientific discovery made during the 1970s transition of R&D support, when private industry took over and made its own (market driven) choices for research and development. The engineering of the mass production of these magnets was entirely done by private enterprise and was driven by the needs of consumer products.

By the end of the 1970s, two cultures had emerged to support research and development: the military-industrial complex and the civilian consumer market.

Technology may be defined as the engineering of science.

The United States does not officially have an industrial policy, but its Department of Defense does have one: The application of engineering to the mass production of weapons shall be directed (and defined) by the Department of Defense.

The American consumer products industry follows the rules first defined by Adam Smith: Scientific discoveries to be engineered for mass production shall be chosen by either listening to the market or gambling that a “new” product will find acceptance. And such products must be affordable.

When the U.S. Department of Defense underwrote almost all basic research and development from 1942 until 1973, it was focused on military uses but open to civilian applications of technologies so long as, in its opinion, such uses did not compromise national security. Thus, the consumer market got transistors, integrated circuits (chips), solid-state electronics, and then electronic color television, and, most importantly, the widely available electronic components that allowed “inventors” epitomized by Steve Wozniak to assemble useful consumer devices such as the personal computer.

The invention (another term for the engineering of science) of the seminal miniature electric motor based on the use of rare earth permanent magnets was pioneered by scientists and engineers working for a large Japanese trading house, Sumitomo, and the then-largest OEM automotive company in the world, America’s General Motors.

The final triad of critical metals, platinum, palladium, and rhodium became such during the 1970s, when the engineering of catalyst materials for automotive exhaust emission catalytic converters occurred, and these three metals were chosen as the most effective for the purpose.

The honeymoon period for the dominance of development of new

military market uses of devices based on the electronic properties of the technology metals was brief in historical terms.

Today, the markets have flipped. Consumer demand for products dependent upon the electronic properties of technology metals is now the dominant driver for the exploration and development of sources of critical minerals. And the consumer market has now added the last critical mineral for our age. Lithium.

Even so, the U.S. military has distorted the sourcing of such minerals by making financial “grants” to potential mineral vendors and processors it believes can immediately benefit its (limited) needs. The American consumer-oriented manufacturing economy, if left alone without government-induced demand market distortions, does not favor reducing the scope of the fossil-fueled energy economy. The flood of wasted capital, all from “borrowing by the national government, that has gone into the climate change agenda has, in my opinion, wrecked the American manufacturing industry by distorting its focus away from the real market of actual consumer demand.

China’s rulers, in their quest for economic self-sufficiency, have also wasted enormous amounts of capital in constructing a massive overcapacity and overproducing almost all domestic natural resources. However, they have also achieved material self-sufficiency through the adoption of the capitalist system of resource acquisition solely by investment rather than the imperial one of conquest.

The American consumer manufacturing industry has not seen the need for technology raw materials’ self-sufficiency so long as it could piggyback on Chinese achievements.

The American military, though, is in panic mode. It has become obvious to the military-industrial complex that the civilian

resource market is no longer interested in or capable of supplying operational or critical mineral needs for national security.

One statistic tells it all: Today, in August 2024, China's domestic shipbuilding industry is 500 TIMES LARGER THAN AMERICAS!

What has America lost by shifting its consumer manufacturing to China? The answer is the development and maintenance of critical natural resources and, ominously, the continuity of engineering necessary to maintain modern, high-tech mass production.

China has now replaced the United States as the world's most self-sufficient manufacturing nation and as the world's leading educator of scientists and engineers.

The only important critical material is human capital. All the financial capital in the world cannot replace it. The United States is now China's largest trading partner.

The world's future financial health depends on the interdependence of the two economies.

That is the only thing that is critical.