

Capacity Is Not Capability

written by Jack Lifton | July 21, 2026

The current American effort to rebuild domestic manufacturing rests on a dangerous misconception. Washington has become obsessed with creating industrial **capacity**, while largely ignoring the far more important issue of industrial **capability**.

The two words are often treated as synonyms. They are not. Capacity is measured in tons per year, square feet of factory space, nameplate throughput, or billions of dollars of announced investment. Capability is measured by something far more elusive: the accumulated knowledge, experience, discipline, and judgment required to produce a product that qualified customers will purchase repeatedly because it consistently meets their specifications. Capacity can be bought. Capability must be learned. America once possessed both.

Over the last quarter century—and, in many industries, for considerably longer—the United States quietly traded industrial capability for financial gain. Manufacturers discovered that it was easier and more profitable to outsource production than to maintain difficult, labor-intensive, technologically demanding manufacturing operations. Wall Street applauded. Quarterly earnings improved. Return on capital increased. Executive compensation soared.

The capability, however, departed with the factories. At first, few noticed. If a supplier in Asia could manufacture the same product at a lower apparent cost, why should anyone care where the expertise resided? The balance sheet showed reduced costs. It did not record the disappearance of process engineers, toolmakers, metallurgists, production chemists, furnace operators, maintenance specialists, production managers, or the countless technicians whose accumulated practical knowledge made

advanced manufacturing possible.

Financial accounting has no line item for industrial memory. Yet industrial memory is precisely what distinguishes a capable producer from a merely equipped one.

Today, the United States is attempting to reverse this process through subsidies, tax incentives, loan guarantees, tariffs, government purchasing commitments, and industrial policy. Billions of dollars are being directed toward constructing factories for semiconductors, batteries, permanent magnets, specialty metals, pharmaceuticals, and critical minerals processing.

Factories are necessary. They are not sufficient. A solvent-extraction plant for rare earths illustrates the point. The equipment can be purchased. The pumps, settlers, mixers, tanks, piping, instrumentation, and control systems are all commercially available. A sufficiently large government grant can finance their installation. Politicians can attend the groundbreaking, and investors can assign a value to the announced nameplate capacity.

What cannot be purchased so easily is decades of operational experience. Solvent extraction is not a static technology. It is a living industrial process requiring hundreds of judgments and adjustments every day. Feed compositions change. Organic losses occur. Phase separation becomes unstable. Impurities accumulate. Equipment fouls. Reagents vary. Process chemistry evolves. Operators learn. Engineers modify. Managers discover what cannot be found in textbooks or engineering diagrams.

Capability is the accumulation of those lessons. China did not achieve its dominance in rare earth processing simply by building more solvent-extraction plants. It became dominant because it continued operating those plants while the West

closed its own. Every year of production created another generation of experienced engineers, chemists, operators, maintenance personnel, production managers, equipment suppliers, and customers.

The West exported not merely factories. It exported an apprenticeship.

That distinction explains why so many contemporary announcements about rebuilding American industry sound impressive but so often produce disappointing results. A company announces a billion-dollar factory. Investors cheer. Politicians celebrate. The inevitable press release declares that domestic capacity has increased dramatically. Perhaps it has. But has domestic capability increased? Who will operate the facility? Who has encountered its inevitable process failures before? Who understands the feedstock rather than merely the equipment? Who can diagnose a problem that the computer model did not predict? Who has qualified the product with demanding industrial customers? Who understands why yesterday's successful operating parameters no longer work today? Who has already made—and survived—every expensive mistake?

Those questions determine whether a factory becomes a profitable industrial enterprise or an expensive monument to political optimism. This confusion between capacity and capability is especially visible in the rare earth industry. Nearly every proposed American “mine-to-magnet” venture begins with construction plans. Processing plants are announced before customers are qualified. Metal plants are designed before the chemistry of separation has been mastered. Magnet factories are proposed before consistent alloy production has been demonstrated. Production targets are published before feedstock contracts, product specifications, operating costs, and customer acceptance have been established.

The assumption appears to be that capability will somehow emerge automatically once sufficient capital has been invested. Industrial history suggests precisely the opposite. Capability creates sustainable capacity—not the reverse. Every successful industrial nation has first developed people, experience, supplier relationships, process knowledge, quality systems, and customer confidence. It has then expanded production capacity to meet demonstrated demand.

The sequence matters. America has reversed it. We now attempt to construct capacity in the hope that capability will follow. Sometimes it does. Usually it does not.

The distinction extends far beyond rare earths. Semiconductors require process engineers who understand contamination at the atomic scale. Specialty steels require metallurgists who have spent decades refining furnace practices. Aerospace components require machinists whose judgment cannot be replaced by software. Pharmaceutical manufacturing depends upon production disciplines acquired through years of regulatory compliance. Permanent magnets require not simply presses and furnaces, but mastery of powders, alloys, atmospheres, grain boundaries, coatings, shapes, tolerances, and customer-specific performance requirements.

In every case, capability resides in people and institutions—not in buildings. Buildings depreciate. Capability compounds. Perhaps the greatest mistake in contemporary industrial policy is the assumption that capability can be purchased as readily as equipment. Governments announce funding programs measured in billions of dollars because money is visible, politically attractive, and easily quantified.

Experience is not.

No government press release announces that a hundred solvent-

extraction operators have completed ten years of continuous plant operation. No ribbon-cutting ceremony celebrates the process engineer who finally understands why a separation train becomes unstable under changing feed chemistry. No politician takes credit for the metallurgist who learns how to reproduce the same alloy composition from batch to batch, or the quality manager who establishes sufficient customer confidence to convert a sample into a long-term purchase order.

Yet those achievements determine whether an industry survives. Industrial capability resembles a professional craft more than a financial asset. It is accumulated slowly. It disappears surprisingly quickly.

The United States did not lose much of its industrial capability because its scientists and engineers suddenly became less intelligent. It lost capability because financial markets concluded that producing many sophisticated manufactured products was no longer the highest-return use of American capital.

The modern corporation was rewarded for being asset-light. It was rewarded for outsourcing production, reducing payrolls, eliminating inventories, closing laboratories, selling plants, and purchasing components from the lowest-cost global supplier. Executives were taught that manufacturing was a cost center, while finance, intellectual property, marketing, and brand management were the sources of value.

For a time, the strategy appeared brilliant. American companies retained the profits while others performed the difficult work. But industrial knowledge follows industrial practice. The engineers go where the plants are. The equipment makers go where the customers are. The technical schools train people for the industries that employ them. The suppliers improve alongside the

manufacturers they serve. Once enough experienced people retire, relocate, or enter other professions, the institutional memory disappears.

Today, we are discovering that rebuilding industrial civilization is considerably harder than rebuilding industrial buildings. Factories can be constructed in two years. Industrial capability often requires a generation. That reality does not mean America's industrial revival is impossible. It means that success will belong less to the companies announcing the largest factories than to those quietly rebuilding the deepest reservoirs of practical knowledge.

The real test will not be the size of a government grant, the scale of an announced plant, or the number of tons on a presentation slide. The real test will be procurement. Original equipment manufacturers do not purchase national policy. They do not purchase political enthusiasm. They do not purchase nameplate capacity. They do not purchase mines, processing plants, metallurgical flow sheets, or corporate aspirations. They purchase qualified products.

An automobile manufacturer does not care that a magnet was produced in a heavily subsidized domestic factory if that magnet cannot meet its specifications at the required price, in the required quantity, with the required consistency, and on the required delivery schedule. An aerospace manufacturer will not risk a flight-critical system because a supplier satisfies a political definition of domestic capacity. A semiconductor manufacturer will not tolerate contamination because the source of the material appears on an approved government map.

OEMs buy performance, reproducibility, reliability, and confidence. In other words, they buy capability. This is why industries must be built backward from customer requirements,

not forward from the existence of a mineral deposit, an available factory site, or a government subsidy.

The process must begin by determining what the OEM actually requires: the chemical purity, physical form, alloy composition, magnetic performance, dimensional tolerance, regulatory documentation, delivery schedule, price, and volume. From those requirements, the producer must work backward through manufacturing, metallurgy, refining, separation, beneficiation, and, finally, mining.

The American approach too often begins at the opposite end. A deposit is discovered. A mine is promoted. A processing plant is proposed. A factory is announced. Only afterward does someone ask who will buy the product. That is not industrial development. It is supply without a supply chain.

A genuine supply chain is not created merely because every physical link exists. It exists only when each link can deliver a qualified input to the next, and when the finished product meets the needs of a paying customer. The OEM purchase order is therefore not the final detail of industrial policy. It is the organizing principle.

Until American policymakers, investors, and corporate managers understand that distinction, the United States will continue to confuse construction with production, production with qualification, and capacity with capability.

Capacity produces announcements. Capability produces purchase orders. And only purchase orders create industries.