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# Frontiers of Flight, U.S. Industrial Policy, and Free Markets

by Roger D. Launius

It is something of a truism to suggest that the United States has never developed and implemented a coherent, long-term industrial policy. Since the origins of the republic there has been a lack—indeed a celebration of that lack—of coherent industrial policy in the United States. Because of the nature of our republic and citizenry, Americans have been loath to adopt anything approaching a centralized, rational, long-term industrial policy because of its inherently undemocratic and remarkably technocratic and elitist characteristics. The American belief in the power of free markets, always present in the national character, achieved preeminence as a fundamental part of the national consensus during the Cold War era of the last half of the twentieth century. Regardless, a barely existent industrial policy has been critical in driving government investment in technological endeavors throughout the century just past.

Accordingly, it is trite to conclude that anything other than what has passed for aerospace policy in this nation, a sub-unit of that largely non-existent industrial policy, has been both ad hoc and expeditious. Nonetheless, that barely existent policy is one of the major themes in aerospace history. This is true for several reasons but the most important may well be that this critical technology—critical especially for national defense and economic reasons—has never been particularly profitable for private enterprise in the United States. To help with the fielding of most new generation air and spacecraft, the Federal government has been forced to subsidize the industry. Often it has done this indirectly. For example, the Federal government has been fundamentally involved in fostering research and development aiding com-

mercial manufacturers of air and space technologies through organizations such as the NACA and NASA. More directly, as a matter of policy the United States has often placed orders for new aerospace systems at the time the industry seemed on the verge of sinking into a morass of red ink and ultimately perhaps to cease to exist as a separate industry. This was true even in the interwar years of the 1920s and 1930s, but it became a common occurrence during the Cold War, as major airframe manufacturers competed for contracts, and when one lost on a particular competition it usually received a different one.

During the post-World War II era the Federal government created a tremendous national infrastructure supporting science and innovation, expanding it even further into the mid-1980s. Another common practice involved sponsoring research and development on dual use technologies, such as the Boeing KC-135 jet tanker that found easy conversion to the 707 airliner. Of course, no aeronautical technology had greater application across the broad spectrum of flight operations than the jet engine, developed and put into heavy use under government auspices and then transferred to the private sector.

Such an approach recognizes that the overall health of the American aerospace industry is critical both for national security and economic competitiveness. Even so, anything that has passed for aerospace policy in this nation has been both ad hoc and expeditious. Since the 1980s, it has become increasingly important to be more aggressive in ensuring this type of direct support as a matter of industrial policy because of incursions of foreign competitors to the aerospace sector and the direct subsi-

dies they enjoyed from their governments.

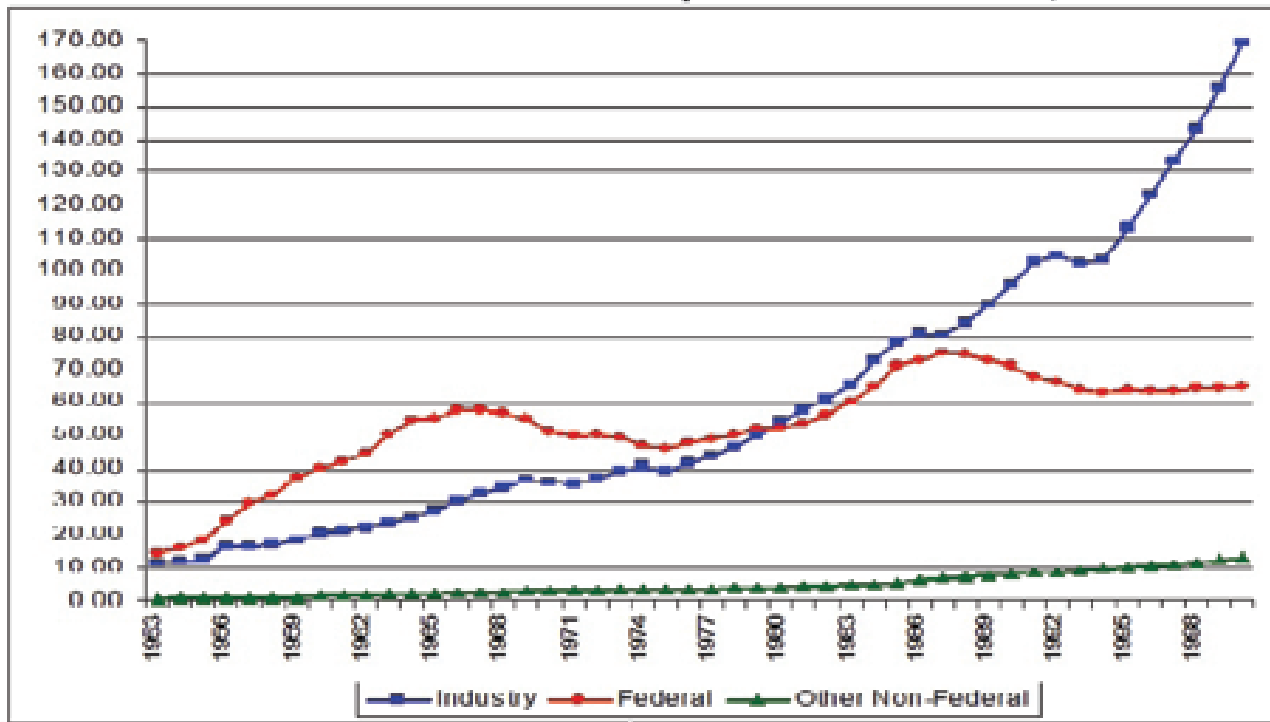
“In effect, the federal government was limping toward a sort of industrial policy,” claimed Norman E. Bowie in 1994. “Since American industry was failing to invest in sufficient research and development to bring new products to market that could compete internationally, especially with the Japanese, the government provided public funds to universities to help move the fruits of basic research in to the marketplace.”

This came as a direct result of foreign competition in the aerospace arena. As an example, one of the major factors energizing U.S. government subsidies was the necessity to respond to the ever-present and widespread subsidization of aerospace industrial development in Europe.

In the last decade the situation has gotten worse. Market share in all major aerospace sectors has declined. In commercial space launch, which the United States dominated until the advent of the Ariane launcher built by the European consortium Aerospatiale, the market collapsed for the United States in the aftermath of the Challenger and has not recovered. In passenger aircraft, Airbus Industrie’s analysis suggests that to satisfy an expected average annual growth rate in passengers and cargo of 5.2 per cent during the next ten years, the number of passenger aircraft in service will increase from some 10,350 in 1999 to 19,170 in 2019. Satisfying that requirement is Airbus’ objective for the indefinite future. And they are showing remarkable staying power there. At the Paris airshow recently they nailed down 110 orders for new aircraft to Boeing’s less than 40.

What is to be done? Do free markets work? There are those who believe that free markets are the ideal to which all must

## Total U.S. Research and Development Investment, 1953-2000



aspire; that government contributes almost nothing to progress in industry and that industry should rely on itself to fund whatever research and development is needed. Should they have their way, government investment in science and technology would not take place and everything would be market driven.

At some level this has been taking place as a broad neo-liberal experiment in the U.S. as government is viewed not just as a benign sponsor of research but a detriment to scientific advance. Beginning with the Reagan administration in 1981 private sector investment in scientific research in the U.S. surpassed government investment for the first time since World War II. It has been gaining ever since, so much so that by 2000 \$170 billion was invested annually by private entities to \$55 billion—in 1996 constant dollars—for the Federal government. And of the increases of Federal investment in the 1990s, and there were some, only the life sciences sustained a five percent increase for the decade. During that same period 63.2 percent of the aerospace industry's R&D dollars came from Federal

sources; the remaining 36.8 percent came from the private sector. In contrast, pharmaceuticals financed 100 percent of its R&D from company funds; machinery, 93.4 percent; computers, 83.3 percent; non-air transportation, 95.3 percent; and information services, 96.8 percent.

This is the level of investment that has brought us to the world that we live in today. The question to be considered; is this an acceptable place for the United States as it proceeds into the twenty-first century future? If free marketeers are right, the nation is moving in the right direction but I doubt it. Private sector investment works well for R&D with near term payoffs, but not so well on great ideas that need long gestation and incubation periods. All of the successful innovations of the recent era—computer technologies, the internet, and the sequencing of the human genome—required significant government investment to get the process of innovation started. Once the gains were understood and the path to profits clear many private sector firms entered the arena and ultimately put considerable investment into it, but not until the technologies were

advanced enough to show marketability.

As one such free market analyst, Terence Kealey, commented in *The Economic Laws of Scientific Research* (1996): “If this book has a message, it is this: relax. Economic, technical and scientific growth are free lunches. Under laissez-faire they just emerge, like grass after the rain, through the efforts of individual entrepreneurs and philanthropists. Once the State has initiated the rule of law and sensible commercial legislation, the goodies will flow—and laissez faire is morally superior to dirigism as it maximizes the freedoms and responsibilities of the individual.”

Really? Where would the effort to push back the frontiers of flight be in such an environment? Is there a conversation to be had here?

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