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Without the State, Who Would Invent Tang?

PETER G. KLEIN

During the 2012 presidential campaign, President Obama made his now famous claim that “you didn’t build that” in reference to the infrastructure that businesses use to provide goods and services to customers.

These comments were controversial, but Obama’s defenders quickly noted that Obama was not criticizing business owners, merely highlighting the supposedly indispensable role governments play in providing amenities on which businesses rely for success: “Somebody invested in roads and bridges. If you’ve got a business—you didn’t build that. Somebody else made that happen. The Internet didn’t get invented on its own. Government research created the Internet so that all the companies could make money off the Internet.”

This view is shared by almost all mainstream social scientists, even those who are generally favorable toward free markets and limited government. Sure, they will say, the market is good at producing shoes or trucks or laptop computers, but the market cannot provide basic research—it is a “public good” that only government can provide.

A general critique of the public-goods rationale for government science funding will have to wait for another day. But here I want to address a companion argument that is often used to justify not only expansive government per se, but a large military sector specifically.

It’s the argument that war is an important, and even necessary, source of scientific progress, because technologies developed by the state to fight wars often have important civilian uses. Innovation is a side benefit of war, say war’s defenders. By mobilizing all the resources of society, through coercion, repression, and exploitation, we get not only civic pride and the martial spirit, but also great new technologies.

Social science textbooks assume that war spurs innovation and note that the large-scale manufacturing of penicillin, for example, and the development of nylon and aerosol sprays occurred during the First World War.

But that’s nothing compared to the many benefits of the Second World War, we’re told, which brought us benefits ranging from atomic energy to jet engines and the world’s first electronic computing devices, which were developed to break the Nazi “Enigma” codes.

The Second World War changed the nature of scientific research as well. After the war, large-scale



Peter G. Klein is Executive Director and Carl Menger Fellow of the Mises Institute, as well as Associate Professor of Applied Social Sciences at the University of Missouri. This article is from his James M. Rodney Lecture delivered at the 30th Anniversary Supporters Summit of the Mises Institute.
Email: Pklein@Mises.org



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federally-funded laboratories devoted to practical applications for new research replaced the small academic laboratories that had existed before the war.

Later, the Cold War brought us the interstate highway system, modeled on Hitler's autobahn system in Germany, to allow for fast movement of troops and weaponry across the American mainland.

And of course, who can forget Tang? For years, it was claimed by NASA and the Feds that Tang was a byproduct of the government's space program, although in this case, it's difficult to claim any real connection at all, as Tang had been developed by General Foods before NASA's Project Mercury even began. (Today, even NASA admits that the space program merely used Tang, and did not invent it.)

It's true that many (though not all) of these technologies were developed—typically not invented, but refined—by government scientists working on military projects. The question nevertheless remains as to whether or not this model of innovation benefits society at large. Is this a “good side” of war?

The answer is no, for multiple reasons. If we look at each of these cases carefully, we find that the government was usually inefficient, chose bad technologies that crowded out other, privately-funded technologies, and led to inertia in research in directions that the private sector would likely never have supported.

Take the Egyptian pyramids, for example. Had there been no pharaoh, commanding a huge budget, with the ability to mobilize vast quantities of resources (including labor), there would be no pyramids. But were the pyramids unambiguously good for the people of Egypt? They were not, of course, and the pyramids were simply monuments to the power of the pharaoh and the state religion. To this day, governments build monuments to

themselves all the time, whether they're huge statues or atomic bombs. Sure, without the federal government, we might not have the Lincoln Memorial. Is that an argument for government?

Pyramids and statues are cases of the state producing a good that likely would not have been produced in any form by the private sector, but even in cases in which the government shapes the development of private goods and technologies, the distorting effects on the final outcome of research and development can be significant.

We can see these distortions in the effects of the work of Vannevar Bush, the initiator of the Manhattan Project. Bush was chairman of the National Defense Research Committee (NDRC), and later director of the Office of Scientific Research and Development (OSRD), in the Second World War.

Bush wanted a peacetime successor to the OSRD and pushed for creation of the National Science Foundation, which was established in 1950. The NSF was controversial (one proposal was vetoed by Truman in 1947) because of the lack of accountability. A key figure was Senator Harley Kilgore of West Virginia, who initially opposed Bush's plan to distribute the money through universities (he preferred the government to own the labs) but later agreed to Bush's model. As Terence Kealey describes it in his *Economic Laws of Scientific Research*, Kilgore's goal was not to generate new knowledge. Rather, “Kilgore wanted to create a reserve of scientifically trained personnel who could be mobilized for strategic purposes. . . . The National Science Foundation, therefore, was created in 1950, in the same year (and for the same reasons) as the National Security Council.”

A few scholars have recognized the potentially harmful effects of this approach. Best known is the “distortion

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Ludwig von Mises Institute, 518 West Magnolia Avenue, Auburn, Alabama 36832-4501 Phone: 334.321.2100; Fax: 334.321.2119; Email: info@mises.org;
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thesis” of historian Paul Forman, which holds that WWII and Cold War national security concerns distorted the path of the physical sciences.

Applied to technology, there is the “crowding out” thesis, most closely associated with Seymour Melman, which maintains that, during the Cold War, commercial R&D was crowded out by government-funded R&D. As summarized by the distinguished historian of technology David Hounshell, “Research, development and manufacture for a single customer (the national security state or the military) led firms and whole industries into a kind of fatal attraction, which ultimately undermined their ability to compete in the global economy in which consumers had very different wants than those of the military; ‘spin offs’ from military projects into the civilian economy simply did not compensate for the drawbacks of being dependent on military contracting.”

There were also hugely distorting effects on the university, to which the military R&D dollars flowed. The top-heavy, bloated, inefficient research university with its extensive laboratories, staffed by highly paid faculty, doing federally-funded research, and little interest in teaching, is largely a product of Cold War military funding.

We find then that in many ways society can be worse off because government intervention in the research process has created things that we don’t actually need or want. In this way, the process of taking money from the taxpayers and then spending that money on research that is favored by government alone, destroys value.

We see once again the relevance of Frédéric Bastiat’s Broken Window Fallacy. That is, the Research and Development institutions created and sustained by government are like the pane of glass in the broken window. We see it being repaired but cannot see what might have been produced with those same resources had the glass not been broken.

Moreover, military-funded R&D, like any government-funded projects, does not have to pass any kind of market test, so there is no way to know if it is actually beneficial to consumers. We cannot rely on the judgments of government scientists and scholars to say what are the “best” technologies.

Remember Betamax? The experts told us that Betamax technology was superior to VHS tapes, from an engineering point of view. Yet, in the end, VHS proved to be *economically* superior in that consumers ultimately chose

VHS over Beta. Betamax failed the market test in spite of its arguably superior technology.

Today, when we look at private companies like Google, Apple, and Facebook and marvel at their innovations, we should remember that these companies are constantly subject to market tests, and that the goods and services they innovate must be accepted by consumers to be profitable. When they succeed, we know that they are creating value for society because consumers have chosen their products and services over others.

The goods and services produced by the Rand Corporation and the Pentagon and the National Science Foundation do not face any kind of market test. The goods and services they produce are valuable to the directors, and members of Congress, and to the researchers themselves who are on the payroll, but the value of this research is determined arbitrarily.

The reality is far more complicated than the myths repeated by those who claim that many of the technologies and innovations we now value were produced single-handedly by government. Yet, the historical reality does not diminish the ease with which Obama and other fans of government spending can point to innovations like the Internet and the interstate highways and say “you didn’t build that.” We can only speculate on what *might* have been produced had the market been allowed to function. Likewise, we can still see the pyramids today and marvel at the innovation that went into their construction, but unfortunately, the wealth and labor stolen from ordinary Egyptians to build them has now been long forgotten. ■

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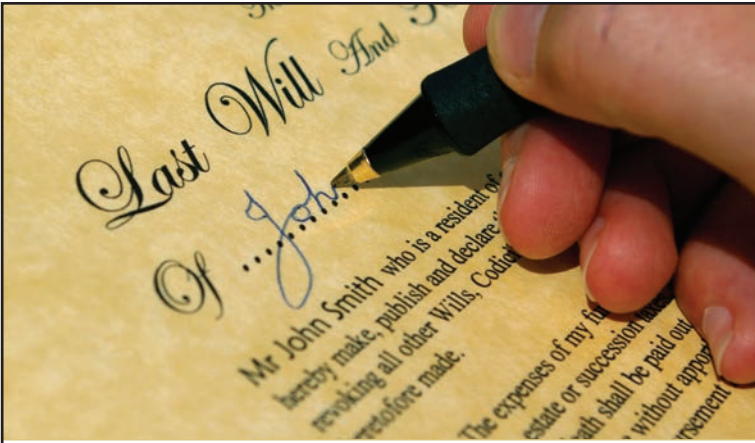
June 10–14, 2013

ROTHBARD GRADUATE SEMINAR
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Ludwig von Mises Institute
518 West Magnolia Avenue
Auburn, Alabama 36832-4501

