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Secrecy and the Military in American Science

$3.1 billion a year. DARPA, the main research organization of the Department of Defense, spends $3.1 billion a year on defense related research (*Defense* IV). Other Department of Defense agencies have their own research budgets; the government's annual research spending is no small figure. At first glance, that money might appear to slip into a black hole of secretive defense-related spending. Although government funded defense research has the primary goal to secure the United States, such research has a myriad of positive and negative non-defense secondary effects, which range from the development of new technologies and infrastructure to the degradation of the scientific process and citizens' rights through the classification of "national security" related information.

The ideals of capitalism preclude commercial and academic researchers from undertaking much of the research that the federal government has done. Corporations look to make money. Education institutions look to make new discoveries. Governments look to ensure international superiority and national security. While such a broad generalization overshadows intricacies of the three, it is clear that goals of the government are removed from the free market economics that drive industry and to a lesser degree education. Take the US nuclear weapons program for example. According to *Atomic Audit*, the minimum estimated cost of the US nuclear weapons program from 1940 to 1996 is $5.481 trillion in 1996 dollars (3). To put this number into perspective, "bricks of new $1 bills (such as one can obtain at a bank, bound at $200 to the inch) stacked on top of one another […] would stretch 459,361 miles (739,117 kilometers), to the

Moon and nearly back" (6). The nuclear weapons program is a program of spending. Such massive spending requires capital that only the federal government has. "By the mid-1950s, total capital investment in atomic energy had reached nearly $9 billion (in then-year dollars), 'which well exceeds the combined capital investment of General Motors, U.S. Steel, Du Pont, Bethlehem Steel, Alcoa, and Goodyear'" (357). In other words, no private entity could fund such a massive undertaking. Although nuclear weapons are not exactly a consumer item that corporations could market, the sheer massiveness of the nuclear weapons program supports the notion that certain projects can only come to life under the auspices of the federal government.

The primary significance of the nuclear weapons program, beyond providing "national security," is the spin-off projects involving nuclear power. In 1955, the government's Argonne National Laboratory powered a small town with nuclear power for the first time ("BORAX-III"). In the United States, any private company can operate and own a nuclear plant if government safety regulations are met, and so the nuclear power industry has piggybacked off research done by the government (*Future* 27). As a result, commercial nuclear power currently provides about 20% of all the electricity used in the United States (*Future* 1). In addition to catalyzing nuclear power research, the United States government has the responsibility of finding a way to safely dispose of high-level nuclear waste. The proposed geological repository at Yucca Mountain has been under investigation for the past 15 years (*Future* 10), with a lifetime budget estimated to be $57 billion ("Yucca"). Again, the nuclear power industry is going to piggyback off of the research and planning done by the federal government by storing its own waste alongside nuclear weapons waste in Yucca Mountain.

For almost fifty years, government programs like NASA and Russia's space agency have had a monopoly on manned space flight because of the capital investment required with no real

financial return on that investment. In other words, free market incentives have been unable to support manned space flight with the recent exception of the SpaceShip One team. Our space initiatives were born out of the space race of the Cold War. Our space shuttle was designed specifically for military purposes. Not by coincidence, the dimensions of the payload bay in the space shuttle are the exact dimensions of the Air Force's proposed "Star Wars" laser weapon satellites. After the Challenger disaster though, military launches of the space shuttle were cancelled, with the Air Force launching its payloads via conventional rockets. The space shuttle shed its military roots to become the cornerstone of the US manned space program. Manned space flight again exemplifies a project of massive undertaking that might never have occurred in the free market.

Much military and defense research can be considered a form of subsidy. Military space research has created the infrastructure for practical consumer products. Although GPS satellites were launched for military purposes, a commercial market for GPS navigation products have piggybacked off of the government's GPS infrastructure. Other corporations receive "subsidy" in the form of defense contracts. Boeing Integrated Defense Systems, a division of the same Boeing that makes commercial airplanes, is a $27 billion business and employs over 78,000 people, because of its defense contracts with the Navy, Air Force, and Army. During the Cold War, these lucrative defense contracts also had a significant impact on higher education institutions.

Starting around World War II, many universities became centers of classified government research with direct military applications. The influx of funding to these institutions from the government transformed many of them into the dominant academic forces that they are today. One specific example is the Massachusetts Institute of Technology. Before World War II, the

MIT derived 58% of its funding from tuition, 35% from investments, and 7% from miscellaneous sources. With the advent of the war, MIT's financial picture changed dramatically. In 1940, funding from defense research was more than MIT's entire budget for the previous year (Nelkin 17). This influx of money helped cement MIT as a major institution. A few short decades later though, student protests to military research at MIT began. Although students had wildly diverse perspectives, many could agree that military research "undermined the university as a 'community of individuals committed to free inquiry, to critical analysis, to experimentation and exploration of a wide range of ideas and values'" (71-72).

Many institutions such as MIT have distanced themselves from classified research for those very ideals, although academia and "national security" continue to clash even today. The recent "War on Terror" has been used extensively to eliminate the rights of American citizens with laws like the Patriot Act and the hypersensitivity of law enforcement agencies. Sean Gorman, a graduate student at George Mason University, felt this pressure as the government wanted to classify his PhD research. What could a graduate student do that is so dangerous? Using publicly available information, he created a map of all the fiber optic communication lines in the United States. Terrorists armed with this information would know where to strike to disable electronic bank transfers, phones, the internet, air traffic control information, control information to utilities, etc. (Blumenfeld). If a graduate student could create this map with publicly available information, so could anyone else. While it is easy to see how this information might aid a terrorist, classifying Gorman's work violates his rights as a researcher by essentially silencing him.

Although the government has been responsible for otherwise impossible research, the bureaucratic nature of the government coupled with the secrecy inherent in national security can

be a disastrous combination. In industry, there at least are patents, intellectual property laws, and the US justice system that, while not infallible, do protect trade secrets. In contrast, there is no larger entity to protect the United States from aggressive enemies seeking to steal and implement our own security safeguards. In order to maintain national security, secrecy is necessary. But by its very nature, the same secrecy that protects us is inherently dangerous.

What is secret? What is classified? The American public will not know until the veil of secrecy is removed. Although documents shrouded behind the veil of secrecy must "not be classified for any reason not relating to national security" according to DoD guidelines, there is no public oversight of the classification process because that would defeat the purpose of classification (*Guide* 4). With the ability to classify information, the federal government has the potential to censor anything under the guise of national security.

The Hanford nuclear weapons facility, located in Washington State, serves as a prime example of the dangers of "national security" secrecy. The nuclear weapons program in the United States has operated in secrecy since the beginning, with "little independent oversight or meaningful public scrutiny" (Whiteley 36). Leaders made decisions that could adversely affect the health of employees and the surrounding population, and they kept those decisions secret. The nuclear power plant accident at Three Mile Island, which resulted in the release of 14 curies of radiation, is dwarfed by the estimated 630,000 to 980,000 curies of radioactive iodine that were released from the Hanford site between 1944 and 1972 (39). This information was withheld, and is just a small part of a larger pattern of secrets that pose a great public health threat.

Although classified research may yield legitimate results, that research is deficient without peer scrutiny and public review of published research. Peer scrutiny and public review

help spawn further inquiry. At Hanford, many questions were simply not asked. Studies have shown that environmental contaminants become increasingly concentrated as one moves up the food chain. Methyl mercury and tuna is a modern day example of the phenomenon. Although a small amount of radioactivity in the environment might not be dangerous by itself, that small amount can become concentrated by a factor of nearly 3,700 as it moves up the food chain to animals and fish that humans eat. Reports show that scientists were aware of this phenomenon but believed this effect to be a nonissue (43). Such a conclusion directly contradicts statements made by the Atomic Energy Commission, which claimed "'All radioactive materials routinely detected beyond the plant perimeter are at or below one-tenth of the maximum permissible limits'" (37). 3,700 times more than one-tenth of the maximum limits exceeds the maximum limits. Scientists doing classified studies lose a vast resource, their peers. Had these scientists been under the scrutiny of their peers, such assumptions would likely have been questioned and additional studies might have been done. Instead, few questions were raised as the studies were classified and public health was potentially put at risk. The government and its contractors cannot claim innocence. DuPont, a government contractor at Hanford, demanded indemnification by the government from "'any damages … incurred in the course of the work'" (30). In the context of Hanford, "national security" clearly was a means to reduce the government's and its contractors' liability. The public was, in the words of John Whitely, "galvanized" by the declassification of information about Hanford in 1986, and a series of new studies were initiated to answer the glaringly unanswered public health questions (51). The questions these studies set out to answer might never have been asked if documents concerning Hanford had never been declassified.

Military research has significantly influenced American science. Student concerns over classified research on campus have forced education institutions to adopt scientific ideals that allow an openness of information. Declassified research has been a significant contributor to new ideas and interesting results, with nuclear power, GPS, and space flight being just a few examples. Yet military research creates a paradox: the vast funding potential of the government creates research that could never be done in the free market, but the secrecy surrounding that research precludes research that would take place in the free market. So if the entire scientific world could take a glace at the government's trove of classified research, what new questions would that inspire?

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