



## Response to Senator Lankford's "Federal Fumbles: Vol. 5"

The National Science Foundation (NSF) has been the backbone of America's science and engineering research enterprise for nearly 70 years. In fact, NSF is the only federal agency that supports all fields of fundamental science and engineering research and education. NSF supports cutting-edge research projects — many of which serve as bellwethers for solutions to the myriad complex issues facing society. NSF programs also traditionally integrate research and education, fast tracking innovation excellence via hands-on learning to train our next generation of researchers and innovators.

Each year, NSF competitively awards thousands of grants that collectively advance our nation's scientific capabilities and engage the talents of hundreds of thousands of researchers, postdoctoral fellows, technicians, teachers and students in every field of science and engineering.

NSF is the primary source of federal funding for non-medical basic research, providing approximately 11,000 new awards annually.

Through its merit review process, NSF ensures that proposals submitted are reviewed in a fair, competitive and in-depth manner. Competition for funding is intense, with only about one out of five proposals ultimately being approved.

Each proposal submitted to NSF is reviewed by science and engineering experts well-versed in their particular discipline or field of expertise. All proposals submitted to NSF are reviewed according to two merit review criteria: Intellectual Merit and Broader Impacts. NSF's merit review process is widely considered to be the "gold standard" of scientific review. Perhaps the best evidence of NSF's success is the repeated replication of its merit review model for discovery, education and innovation around the globe.

The results of this process — funding the best and brightest ideas through competitive merit review — have been profound. NSF-supported research has underpinned multitudinous discoveries leading to new inventions — the Internet, web browsers, Doppler radar, Magnetic Resonance Imaging, DNA fingerprinting, and bar codes — to name a few. These diverse examples underscore NSF's significant contributions to our nation's prosperity, health and well-being. NSF-funded discoveries have expanded our understanding of the world in which we live, led to life-saving medical advances, enhanced our national security, improved our everyday lives and yielded insights into the creation of the universe.

Moreover, the ripple effect of fundamental research can rarely be anticipated. Fundamental social and economic research on "game theory" revolutionized the way our nation apportions its airwaves, resulting in \$60 billion for the U.S. Treasury derived from spectrum auctions. In this particular case, the link between fundamental research and direct application was unclear — until it offered the Federal Communications Commission a viable solution for partitioning our wireless bandwidth.

NSF's task of identifying and funding work at the frontiers of science and engineering requires keeping close track of research around the United States and the world; maintaining constant contact with the research community to advance the horizons of inquiry; and choosing the most promising people to conduct the research.

In our current age, many countries, including the United States are putting immense resources into the race for ideas and information. Understanding our global competitors, including their tactics and strategies, is key to protecting our American values and interests. NSF-funded research is expanding our nation's capacity in this domain, enabling the academic community to continue to support our government's work in intelligence and other security efforts. Thanks to NSF's distinct approach to funding social and behavioral research in a range of international contexts, and our willingness to fund high-risk ideas, our policymakers, servicemen and women, and others are getting from NSF essential information that is available nowhere else.

The following grants cited in "Federal Fumbles Vol. 5" are examples of efforts that provide critical information for the nation.

Workshop Proposal: Russian Elite Attitudes Toward Conflict and the West  
NSF Award: 1742798  
Federal Fumbles Vol. 5 pg. 8  
Hamilton College

This grant on perceptions, beliefs, and values of members of the Russian government provides critical information about likely sources of support and opposition to various actions that the Russian government is taking now – or is likely to undertake in coming years. It provides an additional perspective from which to gauge the beliefs and actions of a broader set of national leaders, ones about who there is likely less information available. Also, it provides the unique perspective of data that has been collected over decades, allowing for more careful analysis of changes in national security. By exploring the foreign policy attitudes of Russian elites, the research will promote a deeper understanding of the causes of -- and possible ways to moderate -- Russia's recent actions, especially its confrontational stance toward the West. This research produces knowledge that assists our intelligence and diplomatic communities and the military in ensuring American freedom and security while more effectively anticipating actions that could threaten our values and destabilize our institutions.

Collaborative Research: RUI: Corporate Law, Finance, and Productivity in Historical Perspective  
NSF Award: 1658877  
Federal Fumbles Vol. 5 pg. 8  
Middlebury College

The grant is focused on the Russian Empire in the years preceding the October Revolution of 1917 because it is a point in history that offers uniquely high-quality data and the legal and financial characteristics of an industrializing economy. This point in time facilitates research on industries that can grow in volatile or uncertain times, statutory changes that can help or hinder the growth of new firms, and the relationship between law, finance, and firm performance in an industrializing economy. The project will look at how adaptations in the private and public sectors can help new industries grow in ways that create jobs – particularly in areas that have previously seen economic declines. This knowledge can help us to craft policies that enable our industries adapt and grow, and ultimately, the information could enhance US competitiveness in an ever-changing world. Importantly, this project will also speak to the role that legal institutions, corporate governance, and finance play in the process of economic development in Russia. Findings are salient for understanding the historical context of current legal and economic conditions in the Russian Federation, an area of current U.S. policy concern.