



The Project on Advanced Systems and Concepts for Countering WMD (PASCC) is run at the Center on Contemporary Studies (CCC) and sponsored by the Defense Threat Reduction Agency (DTRA). PASCC awards and supports strategic studies and dialogues that anticipate and try to reduce the threat of WMD capabilities.



The CCC has a respected track record for providing research and timely analysis on a variety of topics to leading decision makers in the U.S. national security community. Located in the Naval Postgraduate School, the CCC is the research wing of the Department of National Security Affairs.

Research in Progress describes ongoing PASCC research. For more information, please contact pascc@nps.edu.

Published May 2015

Predicting Proliferation: High Reliability Forecasting Models of Nuclear Proliferation as a Policy & Analytical Aid

Performer: University of California at San Diego

Project Lead: Erik Gartzke

Project Cost: \$121,000

FY15-16

Objective:

Scholars have spent decades studying and explaining nuclear proliferation. This project will develop a model to predict the behavior of states regarding their pursuit and acquisition of nuclear weapons. An accurate prediction model will allow for action against potential suppliers, interdiction of nuclear trade, intelligence collection on covert nuclear activities, and credible military action against countries of concern. The model will not only be a yes or no predictor; it will assess the probability of a state pursuing or acquiring nuclear weapons under a particular set of conditions. It is hoped that this model will be replicated and adjusted to suit the needs of analysts and scholars. Additionally, the model will provide the foundation for future predictive work.

Approach:

To create the model, researchers will leverage 65 years of data on the characteristics of states that pursue nuclear weapons. They will examine mechanisms that particular countries use in their nuclear pursuits. This model will harness the collective wisdom and data on past nuclear weapons programs. The vetted data will be used to construct a set of predictions of states' proliferation under a variety of scenarios. In addition, the project will use statistical learning approaches (e.g., neural networks, support vector machines, and methods to combine multiple statistical models). Once built, the model will be tested using separate data. This model, built upon flexible quantitative techniques, will identify an empirically grounded set of triggers or conditions under which countries are most likely to shift from latent nuclear capability to a full-fledged nuclear weapons effort.