

[Simulation: For Classroom Purposes Only]

THE NATIONAL
SECURITY STRATEGY
OF THE
UNITED STATES
OF AMERICA



FINAL DRAFT

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Forward Engagement
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April 30, 2010

Assistant to the President for National Security Affairs
Executive Office of the President
1600 Pennsylvania Avenue, NW
West Wing, 1st Floor
Washington, DC 20500

Dear Sir:

The following report is a response to your March 9, 2010 directive to create a report for the National Security Council's meeting of April 30 to discuss major long-range challenges. As you will read, the report has been formulated for eventual inclusion as a chapter in the President's pending National Security Strategy report to Congress.

As requested, the report is divided into two sections. First, we have identified some of the most crucial long-term challenges facing the United States and have given some recommendations for early responses to them. These challenges include climate change, cyber-power, and a global power shift toward China. This list is by no means exhaustive, but we have attempted to analyze the many facets of these problems so that the US can address them in a timely and effective manner.

These quandaries cannot be engaged without the involvement of every part of the government. To that end, the second section of the report offers a vision for the institutionalization of foresight in government structures. In the Executive Branch, we have recommended a new Office of Complex Priorities under the auspices of the Executive Office of the President, as well as a quadrennial reporting cycle for long-term strategic issues. We also include proposals for new bodies dedicated to long-term challenges for the Legislative Branch for the President's recommendations to Congress.

For the United States to address complex priorities, it is imperative that the American Government be recalibrated in a way that permits the Executive and Legislative Branches to work in unison on issues with long-term implications. We strongly advocate the reforms proposed in this report. We look forward to receiving the NSC's feedback on our suggestions.

Sincerely,

The Spring 2010 Panel on Forward Engagement

EXECUTIVE SUMMARY

OVERVIEW

Forward Engagement is a process that describes systematically analyzing complex, long-range issues for the development of informed public policy. Though inherently imprecise, the foresight employed by this concept seeks to provide alternatives rather than project a singular future. This provides actionable information that can help policy-makers think forward, toward policies that reflect the consequences and opportunities of future events and actions. Foresight uses a number of specific tools to achieve this outcome, including the Delphi method, scenarios, STEEP analysis and other forecasting mechanisms. These tools do not seek to predict the future, but instead help to better understand the relationships among emerging trends and the potential for complex interactions when considering national security priorities.

A more comprehensive concept of national security accounts for threats to the US outside the classical defense paradigm. A superior definition encompasses far broader but no less serious dangers, including: security from aggression against the nation, security against massive societal disruption resulting from natural forces, and security against the failure of major national infrastructure and economic systems.¹ If this new national security model is to succeed, it must incorporate long-range strategic thinking. It must make use of the forecasting tools at hand to examine complex priorities that will affect the future of American power.

National security is the capacity of the United States to define, defend, and advance its position in a world that is being continuously reshaped by turbulent forces of change.

The purpose of this memo is to underscore the need for future trend analysis in national security planning and outline the government structures that can institutionalize long-range thinking. By identifying the unknowns, and then embracing the questions about the resulting unknowns, it is possible to present a relevant set of future possibilities and consequent modern-day policy recommendations.

METHODOLOGY

A combination of forecasting methods can help identify Future Contingencies of Interest (FCI).

A future contingency of interest is an event or trend that could seriously shift the course of everyday life and disrupt global society by altering previously anticipated events.

An FCI, commonly described as a “game changer,” is an event or trend that can seriously alter the expected course of events. By providing multiple FCIs in this chapter, we intend to aid in anticipating trends that can dislodge negative futures. In order to assess the qualities and effects of the FCI, we used the STEEP model. The

STEPP model first distinguishes various changes that could result from a momentous trend or event and then categorizes those changes according to their **S**ocial, **T**echnological, **E**nvironmental, **E**conomic, and **P**olitical impacts.

Complex Priorities stem from the interaction of FCIs. This means that the problems presented in this report are interconnected, and constantly mutating and accelerating. In order to properly

¹ “Forging a New Shield,” Report by the Project on National Security Reform, Sept. 2008.

respond to the complex problems of tomorrow, policy makers must abandon the hope for absolute knowledge of the future and embrace the lack of linearity and predictability in complex systems. Breaking these problems down into their most basic components not only fails to address the interactivity of the issue's elements, but implies that simple, comprehensive solutions exist. It also ignores the fact that policies have unintended consequences of their own. Instead, we will present complex and dynamic systems such as climate change, cyber-power, and global power shifts to China as systems within systems. We will identify a number of FCIs within these complex problems, classify their elements into a STEEP matrix, and demonstrate their interconnected nature.

A complex priority is a critical policy dynamic defined by the interaction of multiple intersecting future contingencies of interest whose effects cannot be managed by engaging individual topics in isolation because of their non-linear and unpredictable interrelationships.

RECOMMENDATIONS

In response to the President's desire to develop foresight as a working component of the policy process, this report outlines one way to assimilate foresight mechanisms into domestic governance. He has expressed hope that a deeper awareness of the underlying complex issues this country faces will diminish partisan differences and enable early national response systems that can be sustained in the long-run. It is imperative that the United States government develop a culture of learning and understanding with regards to issues which may just be appearing on the horizon.²

This report ultimately recommends that the United States government commit resources and political capital toward the creation of new institutions within the Executive and Legislative Branches to address complex priorities. Our recommendations include a new Executive office on complex priorities, a Congressional research arm and independent Federally Funded Research and Development Center (FFRDC). The President has the authority to establish the new Executive structure with the help of agency secretaries, but Congress will also have to take independent action. Unless Congress adopts these recommendations in step with the Executive, this whole-of-government reform will fall short of the President's goals.

² See the National Security Council's complete directive in Appendix A.

PART ONE: NATIONAL SECURITY, COMPLEX PRIORITIES, AND FUTURE CONTINGENCIES OF INTEREST

In order to make effective decisions in an increasingly complex world, national security strategy must be proactive and forward thinking. Current and foreseeable threats may change far too quickly for a reactive approach. Furthermore, by the time a threat becomes imminent and the decision is made to react, it may be too late to address it effectively. Strategy—as an instrument of achieving national goals—should aim to put in place the infrastructure, laws, ideas, and capabilities that will enable the US to be flexible in adapting to both current and unforeseen threats.³

For the past 60 years, active response has been the hallmark of US national security policy. The focus has been on extinguishing fires rather than addressing the complexity and long-term ramifications of problems. The US response to emerging trends and threats has been hasty and incremental.

The US operates in an interdependent world, where allies and enemies all hold the ability to affect the fate of other states. No single state can expect to thrive alone.⁴ The concept of national security must expand to be congruent with the challenges and opportunities that America faces today. These challenges and opportunities range in scope from water shortages to the conduct of cybersecurity to the US relationship with China.

This report anticipates future unforeseen matters that may affect US national security while addressing threats to and opportunities for the US. Three critical policy dynamics or complex priorities⁵ are addressed: climate change, cyber-power, and a global power shift towards China. Each complex priority is composed of future contingencies of interest⁶ (FCIs). The interactivity of FCIs illustrates the complexity of issues affecting US national security. Both climate change and cyber-power include a discussion of two FCIs, one of which is developed through STEEP analysis, identification of policy considerations and resulting early response recommendations. The third complex priority, a global power shift to China, comprises three fully developed FCIs further demonstrating their highly interactive and complex nature. Early responses are recommended as “first steps” for the US Government to take to address the selected FCIs critical to national security with a proactive, forward thinking approach.

³ The National Strategy Forum Review, US National Security Strategy 2010, Winter 2009 Volume 19, Issue 1, page 2.

⁴ Ibid, page 58

⁵ A complex priority is a critical policy dynamic defined by the interaction of multiple intersecting future contingencies of interest whose effects cannot be managed by engaging individual topics in isolation because of their non-linear and unpredictable interrelationships.

⁶ A future contingency of interest is an event or trend that could seriously shift the course of everyday life and disrupt global society by altering previously anticipated events.

COMPLEX PRIORITY #1: CLIMATE CHANGE

FUTURE CONTINGENCIES OF INTEREST:

- PURSUIT OF NUCLEAR ENERGY
- WATER SHORTAGES

Human economic activity such as burning fossil fuels—coal, oil, natural gas, etc—is emitting greenhouse gases (GHG) in the air.⁷ Emission of GHG is causing climatic temperature to rise. As a result, global warming is expected to increase the average global temperature by 2.2-10°F between 1990 and 2100.⁸ The increasing concentration of carbon dioxide (CO₂)⁹, in particular, will accelerate global warming.

Climate change¹⁰ impacts not only natural environments but also human activities. Climate-induced changes are evolving as complex problems: it is apparent that some consequences of climate change such as melting glaciers and rising sea levels are occurring in the form of natural disasters. Likewise, changes in the hydro cycle affect the agricultural sector and aggravate diversification of the ecosystem. The interactive effects of climate change generate complex problems in other sectors. For these reasons, climate change should be made a top priority for national security. There are a number of FCIs¹¹ related to the complex priority of climate change. Presented below are examples of highly interactive FCIs:

- Decrease of biological diversification and natural resources from carbon concentration and rising global temperature;
- Competition for natural resources, including the potential risk of resource wars among individuals and nations;
- Desertification and prolonged droughts and resulting vulnerability of agricultural sector;
- Continuous glacier melting and rising sea levels;
- Fresh water scarcity due to salination caused by sea water leeching into groundwater;
- Severe damage to physical infrastructure caused by extreme weather (especially periods of intense or poor precipitation);
- Mass displacement of people, i.e., climate refugees,¹² with geopolitical consequences.

⁷ The United Nations Framework Convention on Climate Change (UNFCCC) considers greenhouse gases including water vapor, carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphurhexafluoride (SF₆)

⁸ United Nations Framework Convention on Climate Change. Web.

<http://unfccc.int/essential_background/background_publications_htmlpdf/climate_change_information_kit/items/281.php>.

⁹ According to UNFCCC, carbon dioxide accounts to more than 60percent of greenhouse effect.

¹⁰ UNFCCC defines climate change as a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability over comparable time periods.

¹¹ A future contingency of interest is an event or trend that could seriously shift the course of everyday life and disrupt global society by altering previously anticipated events.

¹² The Global Governance Project defines climate refugees as people who have to leave their habitats, immediately or in the near future, because of sudden or gradual alterations in their natural environment related to at least one of three impacts of climate change: sea-level rise, extreme weather events, and drought and water scarcity.

These FCIs reflect the complexity of climate change.¹³ FCIs are not mutually exclusive. Rather, they are highly interactive manifesting themselves in the complex priority of climate change. While all contribute to the complex priority, two have been determined to have more significance: carbon emissions and water availability. With continued population growth, these two elements are expected to worsen the effects of climate change.

An increase in population and corresponding high demand of energy will raise the level of competition for natural resources. The US Department of Energy (DOE) expects that energy consumption in the US will increase about 30 percent over the next 20 years.¹⁴ In turn, a rise in atmospheric carbon dioxide, as the major source of climate change, will aggravate the ecosystem. As a result, there is a need to substitute fossil fuel to reduce carbon emissions, such as nuclear energy.

The population in water-stressed countries, which now makes up about one-third of the world population, almost 2.4 billion people, is anticipated to grow to almost two-thirds by 2025.¹⁵ Consequently, the growing menace of water shortages seems to be accelerating. All combined, climate change warns of potential natural resource shortages, especially energy and water. Recognizing these ripple effects from two factors, this section will focus on nuclear energy to decrease carbon emissions and water shortages.

FCI: PURSUIT OF NUCLEAR ENERGY

To meet the growing energy demand without worsening climate change by limiting carbon dioxide emissions, the development of alternative energy resources to fossil fuels has become critically imperative. In this respect, nuclear energy has been identified as such an energy source.

Nuclear energy, which emits near-zero carbon dioxide in its full life cycle,¹⁶ has been highlighted for its future availability as a promising energy supply source.¹⁷ Given that fossil fuel burning plants emit carbon dioxide and result in a negative effect on social, technological, economic, environmental, and political factors, then increased use of nuclear energy should create positive and mitigating impacts in all of those sectors related to carbon emissions reduction.

¹³ Please note there are other FCIs that contribute to the complex priority of climate change. However, as a matter of brevity only a limited number were listed.

¹⁴ *21st Century Challenges: Reexamining the Base of the Federal Government*. Rep. United States Government Accountability Office, Feb. 2005. Web.

¹⁵ Morrison, Jason, Mari Morikawa, Michael Murphy, and Peter Schulte. *Water Scarcity and Climate Change: Growing Risks for Businesses and Investors*. Rep. The Pacific Institute, Feb. 2009. Web. 12 Apr. 2010. <http://www.pacinst.org/reports/business_water_climate/full_report.pdf>.

¹⁶ *Comparative Carbon Dioxide Emissions from Power Generation*. Rep. World Nuclear Association, Aug. 2009. Web. 07 Apr. 2010. <<http://www.world-nuclear.org/education/comparativeco2.html>>.

¹⁷ According to the Environmental Protection Agency (EPA), nuclear power plants do not emit carbon dioxide, sulfur dioxide, or nitrogen oxides. However, fossil fuel emissions are associated with the uranium mining and uranium enrichment process as well as the transport of the uranium fuel to the nuclear plant.

However, increasing nuclear energy use may not be a remedy for climate change. While there may be reductions in air pollution and acid rain, significant concerns about waste management and nonproliferation issues are yet to be addressed. Pertaining to our national security, the risk of nuclear proliferation is of utmost concern.

Nuclear power is a water-intensive energy source.¹⁸ Unlike fossil fuels, such as coal, nuclear energy does not result in a loss of water due to contamination. Therefore, expanding the use of alternative energy resources could enhance initiatives for reducing both carbon emissions and water pollution. Energy and water are indispensable commodities in daily life. The rise in the global population and climate change further strain limited amounts of both resources.¹⁹ The following FCI explores the issue of water scarcity.

FCI: WATER SHORTAGES

The Intergovernmental Panel on Climate Change (IPCC) articulated in 2008 that water availability is the most central, and sensitive, issue regarding climate change.²⁰ Continuous glacier melting and corresponding rising sea levels²¹ has led to salination of ground water, while changes in duration and intensity of precipitation has brought both flooding and droughts around the world. All of these factors are causing shortages of fresh water. Climate change impacts on water shortages are already noticeable. More than one-sixth of people who live in glacier- or snowmelt-fed river basins, including China, India, Pakistan and the western US, are expected to face water shortages because of decreasing water storage availability from the melting of both glaciers and snowcaps.²² Fresh water is essential for both human consumption and crop irrigation (in addition to other human activities). Water has been considered a public good without need of competition; and even Americans have taken the use of water sources for granted.²³ Water shortages are also a looming threat for the US. For example, there is 50 percent probability that Lake Mead, which feeds the Las Vegas, Los Angeles, and Phoenix metropolitan areas, is

¹⁸ According to the report titled "Nuclear Power and Water Consumption," released by Friends of the Earth Organization, nuclear power consumes 2.5 litres per kilowatt-hour of electrical output. Compared to Coal (1.9 litres/kWh), oil (1.6 litres/kWh), and wind (0.004 litres/kWh), nuclear power requires relatively large amount of water.

¹⁹ Webber, Michael E. "Energy Versus Water: Solving Both Crises Together: Scientific American." *Scientific American*, Oct. 2008. Web. 15 Apr. 2010. <<http://www.twine.com/item/11kht3gyt-4q/energy-versus-water-solving-both-crises-together-scientific-american>>.

²⁰ B.C. Bates, Z.W. Kundzewicz, S. Wu and J.P. Palutikof, Eds., "Climate Change and Water," Technical Paper VI of the Intergovernmental Panel on Climate Change, IPCC Secretariat, Geneva, June 2008.

²¹ Changing sea levels could severely disrupt human activities through water pollution, fresh water scarcity, and flooding. See Bates, Bryson, Zbigniew W. Kundzewicz, Jean Palutikof, and Shaohong Wu, eds. *Introduction to Climate Change and Water*. Rep. Intergovernmental Panel on Climate Change, June 2008. Web. 15 Apr. 2010. <<http://www.ipcc.ch/pdf/technical-papers/ccw/chapter1.pdf>>.

²² *Climate Change and the Global Water Crisis: What Businesses Need to Know and Do*. Rep. The Pacific Institute, May 2009. Web. 20 Apr. 2010. <http://www.unglobalcompact.org/docs/issues_doc/Environment/ceo_water_mandate/UNGC-PI_climate-water_whitepaper_FINAL.pdf>.

²³ USGAO. *21st Century Challenges: Reexamining the Base of the Federal Government*.

expected to dry up by 2021.²⁴With its impeding scarcity, tensions to consume (and store) water will drive rivalry. Correlating to both climate change and nuclear energy, water shortages reveal significant impacts which merit further examination. This is done in the STEEP analysis below.

STEPP ANALYSIS

Social: Tensions among communities and countries may increase with competition to consume and store water. The public will hold their respective governments accountable for its poor administration and management of water resources. Furthermore, water shortages may affect agricultural output; resulting food shortages may lead to global hunger. To prevent social disorder and imbalance of supply and demand, stricter governmental regulations and improvement of social infrastructure should be considered.

Technological: Technology transfers to developing countries (lacking capabilities to tackle climate-induced events) should to be encouraged to help establish infrastructure to prevent future natural uncertainties. Currently, mining and processing oil sands requires a considerable amount of water, i.e. the Athabasca Oil Sands in Canada.²⁵ Research and development for technological advancements in water conservation, wastewater management, and less water-intensive energy generation processes may also be required.

Economic: Decreased agricultural production from a lack of water could reduce a country's Gross Domestic Product (GDP). Dwindling arable farmlands could raise unemployment while crop prices increase rapidly. The receding groundwater of the Ogallala Aquifer,²⁶ cautions that the global food supply could be reduced by an equivalent of more than \$20 billion.²⁷ India uses 80 percent of its water supplies for irrigation, mostly from groundwater, and expects to face a freshwater shortage by 2050.²⁸ This could bring about severe price volatility and food insecurity. Governments may need to adapt to a region-adjusted agriculture policy to create balance between demand and supply of crops.

Environmental: Fresh water could be contaminated by intrusion of seawater from melting glaciers or snowcaps. Unexpected flooding could lead to more erosion, and infrastructures such as dams could be destroyed. A rise of water temperature could be likely to stimulate algal and bacterial blooms, affecting public health. Severe flooding, driven by changes in patterns of the hydro cycle could also transmit more pathogens and

²⁴ Scripps Institution of Oceanography (February 12, 2008). Lake Mead could dry up by 2021. http://news.mongabay.com/2008/0212-lake_mead.html

²⁵ Martin Mittelstaedt, "Choke point for oil sands may be water shortage," The Program on Water Issues, Munk Center for International Studies, University of Toronto, Toronto, Canada, May 11, 2007. See: <http://www.powi.ca/pdfs/other/choke-point-for-oil-sands-may-be-water-shortage.pdf>

²⁶ The Ogallala Aquifer is located from South Dakota in the north to the Texas Panhandle in the south. The aquifer has been the main source of irrigation for the breadbasket of America, and supplies at least one fifth of annual US agricultural crops.

²⁷ Little, Jane Braxton. "The Ogallala Aquifer: Saving a Vital U.S. Water Source." *Scientific American Earth* 3.0, Mar. 2009. Web. 16 Apr. 2010. <<http://www.scientificamerican.com/article.cfm?id=the-ogallala-aquifer>>.

²⁸ Gleick, P. 2007. *The World's Water 2006-2007: A Biennial Report on Freshwater Resources*.

contaminants.²⁹ The risk of diarrhea, which is driven by climate change and its corresponding change in precipitation, is expected to rise by 10 percent by 2030.³⁰

Political: As water is being shared across borders, the right to have fresh water is of critical concern both nationally and internationally. Water privatization and resulting water monopoly in Bolivia in 1997 reflects how important the public's right to water is.³¹ Water shortages also lend themselves to cross-border geopolitical disputes such as China and other Southeast Asian countries,³² and more recently, Pakistan and India.³³ Stricter international agreements in dealing with water management and water rights could be necessary. Furthermore, close international cooperation could play a significant role to downplay future water conflicts among nations.

EARLY RESPONSE TO WATER SHORTAGES

How quickly and widely climate change could affect society is hard to define. In an effort to address these uncertainties, being proactive is of great importance. Within the complex priority of climate change, FCIs, such as expanding the use of nuclear energy and water shortages, are not mutually exclusive but rather interwoven. Subsequently, the US government's response to each FCI should not be determined in isolation. An early response provides policymakers with an opportunity to build up the capacity to prevent and mitigate potential unexpected consequences of climate change. Recognizing that any policy response to water shortages will affect the system, the following issues should be considered in developing an appropriate early response:

POLICY CONSIDERATIONS:

- Given the emphasis on limited resources, i.e. water shortage and nuclear energy, what other alternative energies should be considered?
- How much should be allocated for funding research and development of technology?
- To develop technology to manage water shortages, private sector cooperation will be important. How should the public-private partnership operate without infringing on the public's right to clean water?
- High temperatures will force the patterns of agriculture to shift. How could regionally adjusted agricultural policy be implemented by not harming farmers' profits?

²⁹ Corinne J. Shuster-Wallace et al., "Safe Water as the Key to Global Health."

³⁰ A.J. McMichael et al., *Climate Change and Human Health: Risks and Responses*. World Health Organization. Geneva, 2003.

³¹ Oliver, Oscar. *Cochabamba!: Water War in Bolivia/Oscar Olivera, in Collaboration with Tom*. Massachusetts: South End Cambridge, 2004. Print.

³² Fuller, Thomas. "Countries Blame China, Not Nature, for Water Shortage." *New York Times*. 1 Apr. 2010. Web. 3 Apr. 2010. <<http://www.nytimes.com/2010/04/02/world/asia/02drought.html>>.

³³ Lamont, James. "Pakistan Threatens to Bring Water Dispute with India to the Boil." *Financial Times*. 31 Mar. 2010. Web. 5 Apr. 2010. <<http://www.ft.com/cms/s/256375e8-3b93-11df-a4c0-00144feabdc0.html>>.

- How to effectively value the water price? When water scarcity triggers a higher value on water, how could an economically variable price be placed?
- How to make public change their water usage? Since many Americans take fresh water for granted, it might not be easy to force them to conserve their usage.
- How can international cooperation on water rights be achieved? Would the involvement of third party nations or international organizations help to resolve geopolitical issues, or lead to further conflict?

EARLY RESPONSE:

There has been a lack of awareness of the relationship between energy and water. The institutional capacity to regulate and manage them is insufficient. In response to water shortages, recognition of its impacts on energy within the broader context of climate change must be considered. An effective and efficient policy framework should take into account the correlation of water and energy.³⁴ By doing so, the implementation of overarching actions could improve energy efficiency and mitigate severe effects of water shortage.³⁵ Furthermore, the management of natural resources should be coordinated and planned with a long-term perspective, addressing future uncertainty. With a proactive approach, the US government's strong leadership will play a significant role in international community.

As a complex priority, climate change submits the need to reduce carbon emissions, perhaps by pursuing nuclear energy as an alternative energy source. However, nuclear power has the potential to further exacerbate water shortages. In addressing climate change, the role of information technology should also be considered.

Information technology and communication can shape a low-carbon economy for individuals and communities. Likewise, social networks and technology can contribute to a cleaner energy future where people learn to leave a lighter carbon footprint. Also, the power consumption of data centers can be explored to increase energy efficiency, cut down on power use and reduce carbon emissions. However, despite these benefits and opportunities, the Internet presents its own unique challenges to US national security—these are examined in the next complex priority.

³⁴ Webber

³⁵ *Water, Energy and Climate Change: A Contribution From the Business Community*. Rep. World Business Council for Sustainable Development, Mar. 2009. Web. 13 Apr. 2010. <<http://www.unwater.org/downloads/WaterEnergyandClimateChange.pdf>>.

COMPLEX PRIORITY #2: CYBER-POWER: GLOBAL ECONOMIC, INSTITUTIONAL AND SOCIETAL SECURITY

FUTURE CONTINGENCIES OF INTEREST:

- PURSUING A UNIVERSAL CYBERSECURITY POLICY
- INTERNET POLICY AND NET NEUTRALITY

The Internet has been described as a network of “organized complexity,” as its “essential nature [is] of an organic, interconnected communications web with no single control point.”³⁶ This system evaded linear processes in its inception, and is creating complex issues at an exponential rate. Since its founding, the Internet has been growing without a central authority, and has continued evolving in unintelligible patterns. Even though Internet penetration has grown by nearly 400percent since 2000,³⁷ scientists and social theorists argue that the Internet is still in its infancy. New frameworks, that may both benefit and disrupt everything from commerce, to government, to social engagement, are being created in an abrupt and seemingly unorganized fashion.

Beyond the Internet, the proliferation of mobile technology is also rampant. Rollouts of new mobile platforms demonstrate that these advances are getting closer to each other. The rapidity of technological advances in information dissemination should be expected to still increase. Technologies within a digital space, such as the Internet and mobile technologies, are converging, evolving and becoming more widespread, leading to a greater possibility for both good and malevolence. The Internet “has already transformed the world;”³⁸ but the extent to which it and other information technologies will continue to affect the world and how it will do this has yet to be determined.

Understanding that there is an exceptional rate of expansion, it is less likely that governments will be able to control information and technological growth. For example, net-centric warfare with anonymous soldiers and nation-less armies could threaten international order, especially considering the past difficulties to resolve issues of aggression. Likewise, Internet governance on an international scale “will likely fail in terms of it[s] ability to elicit international agreement on information policies as a result of disparities among countries.”³⁹ It is imperative to bring the United States ahead of the problems coming from the digital space to the physical world. Continued implications of real world decisions based on the virtual capabilities of diminished boundaries and instantaneous response make the web both a powerful tool and a precarious void of unknown factors. Failing to comprehend this evolution and its subsequent effects on user behavior and decision making could leave the US lagging in innovation, preeminence and security. This highly interactive paradigm of information technology advancements and their utilization by governments along with their impacts on individuals and society can be understood

³⁶ Markoff, John. Scientists Strive to Map the Shape-Shifting Net. The New York Times. 1March2010

³⁷ The Internet Usage Statistics. World Internet Users and Population Stats. Available: <http://www.internetworldstats.com/stats.htm>

³⁸ Markoff, John.

³⁹ Whitmore, Andrew. One Size Fits All? On the Feasibility of International Internet Governance Journal of Information Technology. (2009): 4-11.

as cyber-power. As such, cyber-power should be perceived as a complex priority facing US national security.

There are many facets engaging cyber-power as a complex priority which the above discussion has attempted to illustrate. To reveal them in more brevity, a short list of FCIs that interact to make cyber-power so complex, follows:

- Internet as an organic network
- Materialization of threats with unidentifiable characteristics
- Convergence of virtual threats with real world consequences
- Cyber-warfare and/or attacks on critical infrastructure
- Pursuing universal cybersecurity policy
- Pervasive computing and mobile technologies redefines human activity

The US is nearing total reliance on the integrity of cyberspace. This trend appears irreversible, and presents great opportunities and dangers ahead. Yet, the US is unprepared to deal with the Internet and other technologies in their current states much less able to combat any threats that may emerge in the constantly changing virtual framework. The above FCIs demonstrate the various facets of cyber-power and what challenges the US will face. However, we will be focusing on two examples: the pursuit of a universal cybersecurity policy, and the loss of Net Neutrality.

FCI: PURSUING A UNIVERSAL CYBERSECURITY POLICY

US policy on cybersecurity aims to create a cyberspace environment protected against current strategic vulnerabilities so that the US, its citizens and global allies can benefit by using information technologies to their fullest extent. The US intends to accomplish this through a comprehensive approach addressing issues ranging from threat and vulnerability reduction to international cooperation on legal prosecution and law enforcement. While universal coordination on cybersecurity policy is needed, the process will not be straightforward.

The goal of creating a secure environment that allows for an all-embracing utilization, may impact innovation and current application in the interim, with a ripple effect on any future technological innovation. Information technologies may cause individual and social adaptations. Likewise, US attempts to thwart attacks, criminal activity and espionage on-line could precipitate new threats as unsavory groups or individuals maneuver new security measures. In implementing security measures, infringements on civil liberties, notably spying on American citizens, are also a concern.⁴⁰ Furthermore, the cost of implementing technology mandates may be questionable for both the public (taxpayers) and private corporations. Mandating specific requirements may be more disruptive than beneficial.⁴¹ The US may also be likely to coordinate its international

⁴⁰ Stiennon, Richard. *Why Rockefeller-Snowe's Regulations Won't Prepare the US for Cyberwar*. 5April2010. Available: <http://blogs.forbes.com/firewall/2010/04/05/why-rockefeller-snowes-regulations-wont-prepare-the-us-for-cyberwar/> . Accessed: 10April2010.

⁴¹ Stiennon, Richard.

efforts with “like-minded” nations, creating new global alliances.⁴² Meanwhile, retaliation by voluntarily excluded nations will remain a threat to national security.

A lock on a door to an empty room protects nothing, and is rendered even more useless if that lock is broken. Cybersecurity presents a similar dilemma; when trying to protect assets on the Internet, it is important to take into consideration the cost and value of said assets, and the impact on these items when some security countermeasure is applied. Instances where actions are taken in the name of cybersecurity that actively harm the Internet’s current ecosystem must be analyzed and weighed prior to their application. The following FCI is related to such action.

FCI: INTERNET POLICY AND NET NEUTRALITY

In the beginning, the Internet was born with the intention of sharing information with those who need it, and, as such, was built without security in mind. The result was the evolution of the Internet as sort of a “Wild West”; information on the Internet is not censored, and those who post information cannot be tracked easily. This system of non-attribution has led to the use of the Internet for nefarious actions –political dissidents and hackers use the Internet’s anonymity as a tool to hide their actions. Whether or not this is necessarily a bad thing, however, is somewhat ambiguous. Anonymity allowed protesters in Tehran to disseminate information back to fellow protesters during the Iranian election, and became so integral to the movement that the State Department asked the social networking site Twitter to stay online despite being scheduled to go down for maintenance.⁴³

Despite the benefits of Internet anonymity, individuals such as former Director of National Intelligence Mike McConnell view the issue of anonymity as a security failing of the Internet, and have been calling for the Internet to be restructured or re-engineered to restrict or deny personal anonymity⁴⁴. Worse, many telecommunications companies are attempting to bypass the Federal Communications Commission’s (FCC) regulatory rules on Net Neutrality⁴⁵. Net Neutrality is defined as a system in which “...Internet service providers may not discriminate between different kinds of content and applications online. It guarantees a level playing field for all Web sites and Internet technologies.”⁴⁶ A lack of Net Neutrality would give Internet telecommunications companies the right to deny their clients the freedom to post any information for any reason, as well as give preferential treatment to certain websites for whatever reason it chooses. The fall of anonymity as well as increased telecom control in the Internet is the focus of this FCI.

⁴² US Cyberspace Policy Review: Assuring a Trusted and Resilient Information and Communications Infrastructure. May 2009. Available: http://www.whitehouse.gov/assets/documents/Cyberspace_Policy_Review_final.pdf

⁴³ Mike McConnell on how to win the cyber-war we’re losing. Available: <http://www.washingtonpost.com/wp-dyn/content/discussion/2009/06/17/DI2009061702232.html>

⁴⁴ Ibid.

⁴⁵ Gross, Grant. Court Rules Against FCC’s Comcast Net Neutrality. PC World. Available: http://www.pcworld.com/article/193557/court_rules_against_fccs_comcast_net_neutrality_decision.html

⁴⁶ FAQ. Save the Internet. Available: <http://www.savetheinternet.com/frequently-asked-questions>

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Social: Tightened controls on the Internet could result in drastic changes to the way in which social interactions occur. There is the possibility that social media services may become less usable as corporate-backed services begin to stagnate from a lack of competition. Another likely scenario is a growing rich-poor gap, as telecom companies gain the ability to charge for more useful information, thus shunning those in the lower class from gaining integral knowledge. Tighter regulation and enforcement of non-anonymous networking will also be likely to cause much public outrage, especially from civil rights groups.

Technology: The areas of technological and scientific innovation may be stunted by both the loss of anonymity and loose restrictions on telecommunications companies. Likewise, companies may not develop new technologies which could threaten their business model not be developed. Added costs to developers could raise the barrier for technological innovation restricting the acquisition and dissemination of information to only the most affluent of organizations. This means that the lack of net neutrality regulation could, in fact, hinder both the US's ability to keep up in STEM education, and researcher's ability to gain and spread information.

Economic: Businesses will be affected drastically by this FCI. Without Net Neutrality regulation by the FCC, ISP's will be free to impose different fees to different businesses, which, at the very least, will make it more difficult for new e-commerce startups to break into the market, and, at worst, create a corporate controlled vertical-style monopoly over the market as corporate-owned businesses will gain preferential treatment. Similarly, as technological innovation is stymied, economic activity is also decreased.

Political: Politically, a failure to deal with these concerns in a way that balances the needs of the users could result in the US becoming a failed state. With the current emphasis on political ads in election campaigns, a telecommunications lobby with the ability to filter and block information as it sees fit would almost be able to dictate the outcome of the entire election.

EARLY RESPONSE TO INTERNET POLICY AND NET NEUTRALITY

It is paramount for the US to be aware of outlying implications of a policy response but also have a clearer understanding about the internet's evolution is while pursuing a global cybersecurity policy. The following issues should be considered before determining an appropriate early response and a course of action, because any action will have its own unintended consequences.

POLICY CONSIDERATIONS:

- What will occur if an Internet-style Patriot Act is past after a damaging incident of Internet espionage or cyberattack occurs?

- How can policy balance the need for security and anonymity in business, as well as individual rights?
- The current policy is only focusing on issues directly related to national security or securing information and communications technology. Does this allow for the possibility that unrealized threats will develop without any advanced precautions or preparations?
- If the US is only working with “like-minded” nations, will other vulnerabilities be spurred? Will nations not included in this collaboration attempt to retaliate against the US and its allies? Or if larger nations have similar infrastructure and protocols will it make them more vulnerable to attack by those countries or entities that developed methods specifically to attack those employed by the cybersecurity policy?
- The US continues to uphold its belief in civil liberties. However, how can these be guaranteed? What public safeguards can be implanted to ensure that the freedoms and privacy rights are not egregiously obstructed?
- Likewise, will this new policy allow for more transparency in the government? If so, what impacts – both positive and negative – would result from this?
- What resources does the US plan to donate toward this initiative? This includes financial expenses, but perhaps, more importantly the human capital needed to drive not only the policy formation but also implement specific technical protocol and system maintenance. Will such a comprehensive and intense strategy be gained at the expense of other security issues or other areas receive due to potentially less funding or resource allocation?
- What will be the fiscal costs to both private corporations and individual citizens? Will requirements be affordable to the public at large? If they are not, should they be considered requirements or remain just as recommendations?
- Once established, how will compliance be assured not only in the US but also with other nations? While there are intentions to create law enforcement and retaliation guidelines, in actuality how will these be sustained?
- How will new, unanticipated threats or vulnerabilities be dealt with? Will mechanisms or processes be created so that if a fast response is needed, the US and/or other nations or entities be able to respond accordingly?
- Will there be any external impacts to the economy or trade relations? This could be twofold. First, much of the financial sector is linked via cyberspace – what is the opportunity cost between efficiency of moving funds and security? Second, nations not wanting to comply with new policies could use trade barriers to react and inflict indirect damage against the US or its businesses.

EARLY RESPONSE:

In pursuing any policy in the virtual realm, the early response is first to determine US domestic policies regarding cyberspace. Current US policy is inherently contradictory. The US wants to pursue domestic policies which threaten the openness and anonymity of American citizens by limiting civil liberties and violating privacy. Conversely, the US heralds using the Internet as a means to undermine authoritarian regimes and closed societies. Finding a congruent, holistic policy which balances American openness and the need for security is first necessary before engaging any international partners. In effect, gauging Chinese responses to US efforts will also be vital to determining whether or not the US can use cybersecurity as a means of engagement with a potentially hostile partner.

Further, government must invest in research, development and implementation of new technologies and policies that look to the future, and stay ahead of the curve; reactionary policy is perilous, and focusing energies on the current framework can leave the country vulnerable to losses in a variety of sectors. Developing policy in a vacuum that is insensitive to changes in the virtual environment may deem that policy ineffective against new threats or irrelevant as it is inapplicable to the new environment, wasting resources and political capital.

The advent of the Internet and its increasing prevalence in everyday life will continue to present new challenges and opportunities. Policy makers may be weary of engaging this environment as it is a wholly new endeavor without any historical precedent for guidance. While lacking experience in this, the US also faces a more familiar security dilemma with China and its rising status in the international arena.

COMPLEX PRIORITY #3: GLOBAL POWER SHIFT TO CHINA

FUTURE CONTINGENCIES OF INTEREST:

- CHINA ACHIEVES MILITARY BALANCE IN ASIA-PACIFIC
- US COMPLACENCY: CHINA BECOMES FUTURE CENTER OF EXCELLENCE
- DEVELOPING COUNTRIES INCREASINGLY ADOPT CHINA'S GOVERNANCE MODEL

As China continues to gain ground in the international system, it is likely to take the lead in critical future decisions regarding global security, climate change, innovation, cybersecurity, financial flows, international institutions, and more. Such a shift in global power to China has complex implications for the United States, as the economic, political, and security affairs of both become more interconnected and the relationship matures to one of mutual dependence. The US government must determine how to handle the trend towards a global power shift to China, consider the future implications of a loss of US leverage in the international system, and evaluate how to protect and maintain its global position of power into the future. The US government, in assessing these issues, should consider a global power shift to China as a significant priority on the US national security agenda.

The following subsections highlight highly interactive issues, in the form of FCIs, which illustrate the complexity of the US-China relationship and some of the many areas in which the two countries compete for leverage in the international system. First, a discussion of US-China competition for military power balance in the Asia-Pacific region is presented. China's effort to gain military strength is only one facet of its quest to achieve *excellence* in the international system. Our definition of excellence is the ability of a country to produce goods and services of the highest quality, and the capacity to set standards and benchmarks in every field. With this in mind, the second FCI highlights what may happen if the US should become complacent in its own quest for excellence. Not only would there be an imbalance in military capabilities, but also in areas of education, innovation, and manufacturing. If the US is at a disadvantage in pursuing excellence compared to China, the US's ability to serve as a model for the developing world would also be diminished. The third FCI forecasts China's model of governance, rather than that of the US, becoming the overarching model emulated by developing countries. Each of these FCIs can thus be seen to have a "ripple effect" on the others; and the US must consider the complexity of these issues when determining future courses of action to deal with a global power shift to China.

The three FCIs listed below will each be described and analyzed using the STEEP methodology. The FCI will then be subjected to a brief issues analysis, which will include a discussion of early responses to the FCI and demonstrate potential "ripple effects" on the system that may result in reaction to these responses.

- China Achieves Military Balance in Asia-Pacific Region
- US Complacency Allows China to Become Center of Excellence
- Developing Countries Increasingly Adopt China's Model of Governance

FCI: CHINA ACHIEVES STRATEGIC MILITARY BALANCE IN ASIA-PACIFIC

The Asia-Pacific region is one of increasing importance to the United States. With China's rise, there are a number of changes occurring in East Asia, notably a shift in military power to China. This slow but steady shift is something which policymakers would be wise to examine. While China's impressive economic rise is trumpeted, its equally rapid military modernization plans are less publicized.

The modernization of China's military should be of concern to the US. Should China's military modernization result in achieving a strategic balance with the United States in Asia-Pacific, it will change the current balance of power in the region, adversely affecting America's ability to project power in the Western Pacific. China's 2010 defense budget is officially \$77.9 billion, the world's second largest.⁴⁷ China's figures pale in comparison to the United States' 2010 military budget of \$663.8 billion.⁴⁸ These numbers, however, belie two important facts. The first is that China's military expenditures have been increasing at an annual rate of 12.9% for the past twenty years⁴⁹, and has increased its defense spending by a cumulative total of 194% over the past decade.⁵⁰ This far surpasses America's cumulative increase of 78%, even taking into consideration resources allocated for the wars in Afghanistan and Iraq.⁵¹ The second is that China's "official" military budget is quite different from its "actual" military budget. While exact numbers are difficult to attain due to a lack of transparency by the PRC government on the issue, some estimates have China spending anywhere between \$100 to 150 billion on defense in 2008, much more than the official budget of \$60 billion published for that year.⁵²

China achieving strategic balance in the region will alter the feasibility of certain US economic, political, and diplomatic goals, including the defense of Taiwan from blockade and/or invasion by China. Were Taiwan to be invaded, China would gain a strategic position in the East and South China Seas and be able to exploit resource deposits there.

With China becoming a challenge to American military power in Asia-Pacific, US allies in the region would have less confidence in America's military capabilities. With America's military support in question (including its nuclear umbrella), certain countries' policies towards building a nuclear deterrent may change, risking a new arms race in the region.

⁴⁷ "China's Defense Budget." *GlobalSecurity.org* accessed 4/17/10.

<http://www.globalsecurity.org/military/world/china/budget.htm>

⁴⁸ "DoD Releases Fiscal 2010 Budget Proposal". *United States Department of Defense News Release*. May 7, 2009. <http://www.defense.gov/releases/release.aspx?releaseid=12652>

⁴⁹ "China's Defense Budget". *Ibid*.

⁵⁰ Anup Shah, "World Military Spending". Originally cited in *SIPRI Military Expenditure Database*, accessed at *Global Issues*. September 13, 2009. <http://www.globalissues.org/article/75/world-military-spending>

⁵¹ Travis Sharp, "Growth in U.S. Defense Spending Over the Last Decade". *The Center for Arms Control and Non-Proliferation*. February 26, 2009.

http://www.armscontrolcenter.org/policy/securityspending/articles/022609_fy10_topline_growth_decade/

⁵² "China Slows Rise in Military Spending". *BBC News* March 4, 2010. <http://news.bbc.co.uk/2/hi/asia-pacific/8548803.stm>

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Social: Consequences of a shift towards Chinese military strategic balance in East Asia would restrict America's freedom and movement in the Asia-Pacific region, damaging America's self-image as a superpower; domestic backlash against the Chinese (and Asian) communities, and an increase in social instabilities.

Technological, Economic: An example of the connectivity of technology, economics, and military power is in the use of rare earth elements, 17 minerals that are scarce in volume, but crucial in the production of certain commercial and military hardware. Currently, China produces 93% of the world's rare earths.⁵³ One of these elements is neodymium, a rare earth element found in magnets that are used in high-tech products. It is in many technologies vital to America's defense and overall economy. China controls 95% of the production of neodymium, and the US relies heavily on China for the mineral.⁵⁴ With China's domestic demand for the mineral growing, China has stated it may cut off the supply of neodymium.

China is also looking beyond its shores in acquiring larger shares of rare earth production. Along with Japan, China is courting the Bolivian authorities for rights to Bolivia's lithium reserves. Like neodymium, lithium is crucial for certain technologies, including batteries used in electric cars.⁵⁵

China's actions are strategic and far-sighted. With tighter limits on the production and export of these rare earths, China is guaranteeing not only its own domestic needs for the minerals, but also forcing global manufacturers to move factories to China, in order to access these resources.⁵⁶ Because of China's export controls on rare earths, U.S. and other foreign manufacturers are at an inherent disadvantage. *Ipsa facto*, China is strategically advantaged, and better placed in the development of vital technologies using rare earths.

This reduction of supplies could lead to a growing strategic vulnerability for America. As it would be foolish to take such rare earths from China by force, the United States will have to cope by either finding different suppliers, or adopt alternative methods of production which do not require using such minerals.

Other technological consequences are US weapons previously sold to Taiwan falling into the hands of the PRC, should China successfully invade Taiwan.

Environmental: Environmental concerns may be the increased drilling of oil and natural gas in the East and South China Seas. With China achieving a stronger military position in East Asia, it will be easier to insist upon, and secure, more imports of natural resources from neighboring countries. China is already importing large amounts of illegally cut timber from Myanmar, to the detriment of its ecosystem and the forest-dependent communities it

⁵³ Keith Bradsher, "China Tightens Grip on Rare Minerals". *The New York Times*. Originally published August 31, 2009. http://www.nytimes.com/2009/09/01/business/global/01minerals.html?pagewanted=1&_r=1

⁵⁴ Jeremy Hsu, "Scientists Race to Engineer a New Magnet for Electronics". *LiveScience.com* Accessed on Yahoo! News, 4/10/10.

⁵⁵ "Japan and China Battle for Bolivia's Lithium Mining Rights". *Mining-Technology.com* June 17, 2009. <http://www.mining-technology.com/news/news57549.html>

⁵⁶ Keith Bradsher, *ibid*.

supports.⁵⁷ Examples such as this will most likely increase with China's new military dominance secured in the region.

Political: China's equal military position in East Asia will affect America militarily, politically, and diplomatically. The United States has stationed troops in Japan since 1945, and in South Korea continuously since 1950, primarily as a bulwark against Communist expansion during the Cold War (as witnessed during North Korea's attempt to annex the South, which sparked the Korean War). With the Cold War having ended, tens of thousands of troops are still stationed throughout East Asia, from Seoul to Okinawa to Guam. In addition, the United States has a number of bilateral security alliances, including agreements with Taiwan and the Philippines, both receiving substantial military aid. America is also increasing its military contacts with Vietnam, Indonesia, Timor-Leste, and Singapore. The impetus for such a wide range of hub-and-spoke agreements is in part due to China's military buildup. Growing at double-digit figures for the past decade, China's defense budget is officially \$77.9 billion, now the world's second largest.⁵⁸

EARLY RESPONSE TO CHINA ACHIEVING MILITARY PARITY IN ASIA-PACIFIC

If current trends continue, the United States may not have the conventional forces needed to deter Chinese actions deemed to be "aggressive" or "hostile" in nature. These include any attempt to blockade or invade Taiwan, forcefully claim disputed territories in the East and South China Sea, or attempts to deny or prevent the United States from projecting its own forces in the region. If China achieves a strategic military balance in the region, it would make some allies nervous and subsequently strengthen their relationships with the United States. For other allies, their confidence in America may be reduced. If the United States is unable or unwilling to defend Taiwan, countries such as Japan may feel the need to build their own nuclear deterrent. Despite the costs, the Japanese government may decide that it will have to do that, given America's diminished ability to protect its allies.

Although America may view the world through a lens of multilateralism not directed against Chinese interests, China perceives America's partnership with Japan, Korea, India, the Philippines, and other Asian allies as an effort to constrain China's growing military power. In calculating its responses to China's proclamations, gestures, overtures, and actions in East Asia, the United States must understand China's rationale when formulating policy. This will give American policymakers a more holistic picture of China's foreign policy strategies, and allow the United States to develop more appropriate responses to such strategies.

A short-term American response to a shift in the strategic balance of military power in East Asia towards China would be to influence China's emergence. The US would have to limit Chinese political and strategic influence on Southeast Asian nations, among others. It would also have to

⁵⁷ "A Choice for China: Ending the Destruction of Burma's Northern Frontier Forests." *Global Witness* briefing document, Global Witness Publishing Inc. October 2005.

<http://www.globalpolicy.org/images/pdfs/10burma.pdf>

⁵⁸ "China's Defense Budget." *GlobalSecurity.org* accessed 4/17/10.

deter Beijing from any sort of aggressive moves in the Taiwan Strait and in the South and East China Seas, strengthening existing alliances in the region. Assistance to allies can include direct military and economic aid, increased two-way trade, and enhanced bilateral security agreements.⁵⁹ Looking several moves ahead, the effects of such actions may go in one of several paths. One path is for China to view such maneuvers by the United States as a threat, further motivating the PRC to expand its military capabilities, continuing the cycle of escalation. An alternative path would be for the Chinese to become “responsible stakeholders” in regional peace and stability. A third path would be for the Chinese to respond in kind, essentially building its alliances the way the United States is. All of these would have different ramifications for the United States’ position in Asia-Pacific.

The issue of military strength in the region affects many areas of interest for the United States, some of which have been mentioned in the STEEP analysis listed above. Another area that military strength affects is the perception of a country’s power, by itself and others. The perception of a country’s power is directly connected to a country’s sense of “excellence”. Running parallel with China’s rising military clout is its emergence as a center of excellence—this trend is analyzed below.

FCI: US COMPLACENCY: CHINA BECOMES FUTURE CENTER OF EXCELLENCE

Excellence, as a system, can be defined as the ability of a society to produce goods and services of the highest quality and set standards in every field. Components of excellence are cross-cutting, and may include science, technology, engineering, and math (STEM) education, manufacturing, finance, quality control, global sports competition, innovation, R&D, applications for patents, dominating the value added scale, and the control of global markets for certain goods, among others.

The US, taking its global primacy for granted, may become overshadowed by China’s quest to achieve excellence. US growth may plateau, while China continues to invest heavily in its capacity to improve and optimize. On an international level, the US loses influence among its allies, institutions, and its position as the global leader. China, thus, becomes center for innovation and production, an example for other countries to emulate. Norms traditionally set by the US start to be questioned. Looking at future American performance capabilities, the US may risk falling into China’s shadow.

⁵⁹ Renato Cruz de Castro, “The US-Philippine Alliance: An Evolving Hedge Against an Emerging China Challenge”. *Contemporary Southeast Asia*. Vol. 31, No. 3 (2009), pages 403-404.

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Social: Chinese/Asian influence becomes a point of focus of global society. Immigration, or a “brain drain” to China, as well as increased outsourcing of the service sector to China, rather than only for production of cheap manufacturing goods, becomes prevalent. A change in global demographic dynamics is visible with respect to China’s vibrant, up-and-coming middle class; domestically, population trends toward big Chinese cities. Applications for international students to attend Chinese universities skyrocket, allowing China to become preeminent in university-level research. Mandarin becomes the language of international affairs, business, research, etc.

Technological: A decline in American-led technological innovation and drop of technological proficiency in the US becomes evident. The US sees a loss of leadership in research and development fields, and a shortage of American scientists, engineers, and innovators relative to China. China takes control of the Internet and cybersecurity mechanisms.

Economic: Desirability of Chinese goods and services increase. China also overtakes the US on the higher end of the value added scale; with quality and quantity of Chinese manufacturing becoming preeminent; the gap between quality and quantity of Chinese goods narrows. China becomes center of investment and finance, and becomes the largest contributor of international foreign direct investment, shaping growth in developing countries. Overall, China sets norms and benchmarks for economic growth in the world.

Environmental: A shortage of American scientists causes the US to fall behind in areas of alternative energy development, crucial to US competitive edge in global energy market. Chinese firms dominate development of new green technologies; China sets the new norm for rate of greenhouse gas emissions and also set trends for emissions caps. Huge Chinese cities create more pollution than any other country. China sets trends for a new free carbon model of society, in the sense that they may not put in the necessary amount of effort, and either postpone or avoid the reform.

Political: The Chinese model of excellence becomes an example for the developing world; China dominates political decisions in international institutions; China's influence causes extreme competition with regional actors, increasing nuclear tensions, especially with India, etc; Chinese domestic politics come to effect the international community; China tries to impose its political will over weaker countries; US credibility and leadership comes in second to China's.

EARLY RESPONSE TO CHINA BECOMING THE FUTURE CENTER OF EXCELLENCE

As affirmed by President Obama in his State of the Union address, second place is not acceptable for the United States of America.⁶⁰ However, China is not hesitating to ramp up its economy on

⁶⁰ Remarks by the President in the State of the Union Address, January 27, 2010, Available: <http://www.whitehouse.gov/the-press-office/remarks-president-state-union-address>

a quest for first place. Beijing is putting its emphasis and energy into math and science education, the building of infrastructure, military modernization, and is making serious investments in clean energy technology development, among other areas. The US may slip to second place if it does not boost its investments and optimization in these and other fields.

An artificial division between economic, political, and security competition with China would be comparable to "tunnel vision". All of these facets of competition are interactive and interdependent. National security strategy, as a whole-of-government analysis, must include all of these on a horizon line for gauging American standing in the world, relative to China. The US's ability to sustain a national social standard of excellence is a component of national security. US complacency in striving for excellence could lead to massive societal disruptions, with tremendous consequences for Americans. One of the most important currencies of the future will be education, science, technology, engineering, and mathematics. If the US does not address and reform its system of striving for excellence, it might have to borrow these and other resources from China. The resulting debt and loss of domestic and international influence will be a markedly different position for the US in the world.

On the spectrum of early responses, one option for the US could be to engage in extreme competition with China in every field, which implies a costly policy. Conversely, the US could simply let China take the burden of costs of innovation, research and development, and manufacturing, creating an unprecedented reliance on China into the future. In a middle-ground approach, the US could continue to innovate and produce items in its domain of experience, i.e. luxury goods and high-tech components, while relegating the "second class" manufacturing, goods and services, and other responsibilities to China.

These policy decisions, while mainly economic, would ripple through social, technological, environmental, and political affairs. The US can choose to respond to the rise of China now, or wait until the situation has progressed to the point where a reactionary response is required. In pursuit of the former, the first steps could be a governmental-level prioritization to emphasize excellence in the US, and to identify the fields in which we cannot afford to lose to China, putting money where we can be most efficient rather than trying to compete on every level. The US must decide to maintain an overall "first place" in the world, or at least to fight to be first in the fields that matter most to us. The US position is key because it has served as an example for developing countries to emulate. This issue is critical to the future of the international system, and is further analyzed below.

FCI: DEVELOPING COUNTRIES INCREASINGLY ADOPT CHINA'S GOVERNANCE MODEL

The US has given the developing world a "success path" to emulate. However, China has come to offer an alternative course, which may be more appealing to developing countries, especially those that are uninterested in democracy.

The concept of a model of governance is a doctrine of policy to maintain national security, i.e. the capacity to define, defend, and advance a country's position in a world that is being continuously reshaped by turbulent forces of change.

The “smart power” of the US model of governance is backed by success. Our position is that there is a direct link between our political system and our economic achievement. However, China's model of governance, based on authoritarian concepts and a government-planned economy, suggests to non-Westernized countries that the link between democracy and a free market economy is not automatic. If the Chinese model proves to be successful, or at least successful enough to threaten the US model, it will do more than provide developing countries an alternative path. It will demolish the credibility of the US democratic model that has based its legitimacy on its success, its growth rate, and its high standard of living.

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Social: Chinese values become the international norm, with Mandarin as new dominant language. Developing countries’ populations work for Chinese companies and emulate Chinese society; the Chinese model comes with a loss of social protections, including human rights, labor rights, and other social benefits of a democratic system like the US.

Technological: Chinese innovation and technology becomes a global standard, i.e., the area of renewable and alternative energy development; increase in technology transfers with developing countries that engage in trade and investment with China; companies and countries rely on Chinese-produced information and communication technology; intellectual property rights come to follow Chinese standards.

Economic: Companies relocate decision-making centers to China, taking profits with them; China continues to achieve double-digit growth as its production shifts up the value-added chain, given its increased trade and investment with countries in the southern hemisphere; government-planned economies along with state-owned enterprises flourish in developing countries; a new global currency—away from the US dollar—is established, i.e., International Monetary Fund's Special Drawing Rights (SDR); Chinese currency remains relatively undervalued with less international pressure for revaluation; China assumes a growing role in international institutions with increased voting power in the Group of 20, International Monetary Fund, World Bank, and the World Trade Organization.

Environmental: China dictates environmental standards that developing countries follow; more carbon emissions result; Chinese-style industrialization creates more pollution and may involve developing countries in disputes over emission caps.

Political: China, with its capability to destabilize the world economy, also destabilizes global governance. In a scenario with a rising China and a declining United States, a shift in attractiveness of political models occurs. The democratic model, presented as the achieved model of governance, is questioned first on a country level, as China’s model of governance and economics becomes more attractive to the developing world; the democratic model also is jeopardized on an international level, especially in international institutions and organizations in which global promotion of democracy is in competition

with political moves by China to extend its influence. Marked increase in south-south cooperation on a multitude of issues becomes evident.

EARLY RESPONSE TO DEVELOPING COUNTRIES ADOPTING CHINA’S GOVERNANCE MODEL

The US can no longer take for granted that the rest of the world will automatically accept the Western liberal democracy as the best model of development and could lose, at the same time, its economic and political leadership. The rapid growth of China will continue to engender questions about the effectiveness of the American model including the democratic system and culture on which the West has been built and developed. China's economy may now be only a fourth the size of the \$14 trillion US economy, but because of its enormous growth rate, it has already become a threat to the US, challenging the US’s capacity to shape the global strategic environment. “The ‘Washington Consensus’ of economic liberalism and democracy will find itself in competition with a ‘Beijing Consensus’ of state-led development and despotism,” which will look increasingly attractive to developing countries interested in following suit with China’s economic successes.⁶¹ Should China gain military superiority and become a center of excellence in the Asia-Pacific region, developing countries will no doubt see China a more salient example to emulate than the second-place American model.

On the spectrum of early responses, the US will have to choose between trying to contain Chinese influence (by negotiating for Beijing to adopt American economic and political norms which would likely necessitate hard power policies and/or sanctions or protectionist policies). At the other extreme, the US could resort to abandoning its quest to advance democracy in the developing world, re-focusing its priorities on its own economic and commercial interests in these countries.

Rather than making the same mistakes we made with the Soviet Union, or abandoning our fight for progress on human rights throughout the developing world, one early response could be to integrate China into global politics. A preliminary step could be encouraging China to revalue its currency, by giving it more weight in international financial institutions and asking for more participation and cooperation in return. This would include more than just voting power; where the Bretton Woods system could be revised to ensure China has more representation and leading responsibilities. Simultaneously, an effort to reach out to the Chinese population could be made. The US could gain from using public diplomacy to spread democratic values like labor rights, freedom of speech and assembly, and other civil liberties, in China's growing middle-class society. If accepted and adopted by the Chinese population, these American norms could slowly move China towards convergence with the US. This relationship would allow China and the US to compete on a similar level. Ultimately, this would send the message to other developing countries, especially those in Africa, that the American model is adaptable. The complexity in this approach stems from uncertainty. Taking the first steps to integrate China into the system may actually destabilize the international community, since there is little guarantee that China would engage on an open level. The dynamics of the power struggle also lie in the ability of the US to influence China. The US should attempt to take the lead on a range of international issues and should encourage Beijing to follow suit. In such a partnership, the US could accommodate

⁶¹ “Fear of the Dragon”. *The Economist* print edition. 1/17/2010.

China's rise to power in a peaceful way. At the same time, the US should reform domestically to regain its credibility and solvency, notably by reforming its financial system. If the US wants to regain and maintain its leverage on the international level, the government needs to break its dependence towards a China that is continuously buying the American debt and taking more and more advantage of it in every global discussions.

Given the complexity and interactivity of these and other contingencies of interest related to the US-China relationship, and the obvious uncertainties associated with the shifting of global power in the future, the US must continue to consider a global power shift to China a priority on the US national security agenda.

PART ONE CONCLUSION:

The US national security strategy needs to be forward thinking rather than marred in reactive policy. Thus far, this report has identified threats and anticipated future unforeseen matters that may affect US national security.

In an effort to illustrate the complexity of issues the US Government is facing, three noteworthy complex priorities were identified: climate change, cyber-power, and the rise of China. Particular attention was given to the rise of China as an emerging global power—the complexity and crosscutting nature of this national security priority warranted detailed analysis.

Within each complex priority, highly interactive and longer-range issues were identified, ranging from nuclear power and water scarcity to cybersecurity policy and Net-Neutrality, to China's rise in military balance, as a center of excellence, and the adoption of China's governance model by developing countries. These interactive issues, or FCIs, were further analyzed and presented with associated early responses:

- Acknowledging the correlation between energy and water in a climate change policy framework
- Developing coordinated plans for the management of natural resources;
- Investing in research, development and implementation of new technologies and policies;
- Seeking and maintaining international commitments to civil liberties;
- Understanding China's policy rationale in efforts to influence its emergence;
- Prioritizing and investing in areas of relative US comparative advantage;
- Reforming the US credit system and model of consumption to acquire more leverage and independence towards China.

In order to bring democratic governance into the twenty-first century, and enable government to handle the accelerating pace of challenges that lay ahead, a formalized system of operationalizing foresight in government is needed. If accomplished successfully, a proactive strategy for national security will allow the US to maintain its position as a predominant global leader. Part two of this report proposes the system and mechanisms for achieving this goal.

PART TWO:

INSTITUTIONALIZATION OF FORESIGHT IN THE US GOVERNMENT

By its nature, a complex priority cannot be addressed by isolating individual issues. As illustrated above, complex priorities span all areas of government, necessitating a whole-of-government approach to effectively analyze and address them. Furthermore, the durability of complex priorities will require commitment beyond Presidential and Congressional terms. To successfully confront complex priorities, foresight must be institutionalized in government structures. Below, we offer a vision for how it could be implemented in the Executive and Legislative Branches.

COMPLEX PRIORITIES AND THE EXECUTIVE BRANCH

OVERVIEW OF STRUCTURE

A whole-of-government approach to addressing complex priorities cannot succeed without leadership from the Executive Branch and interagency cooperation. To ensure that a culture of foresight is integrated into the Executive Branch, we propose that the President create the following by executive order:

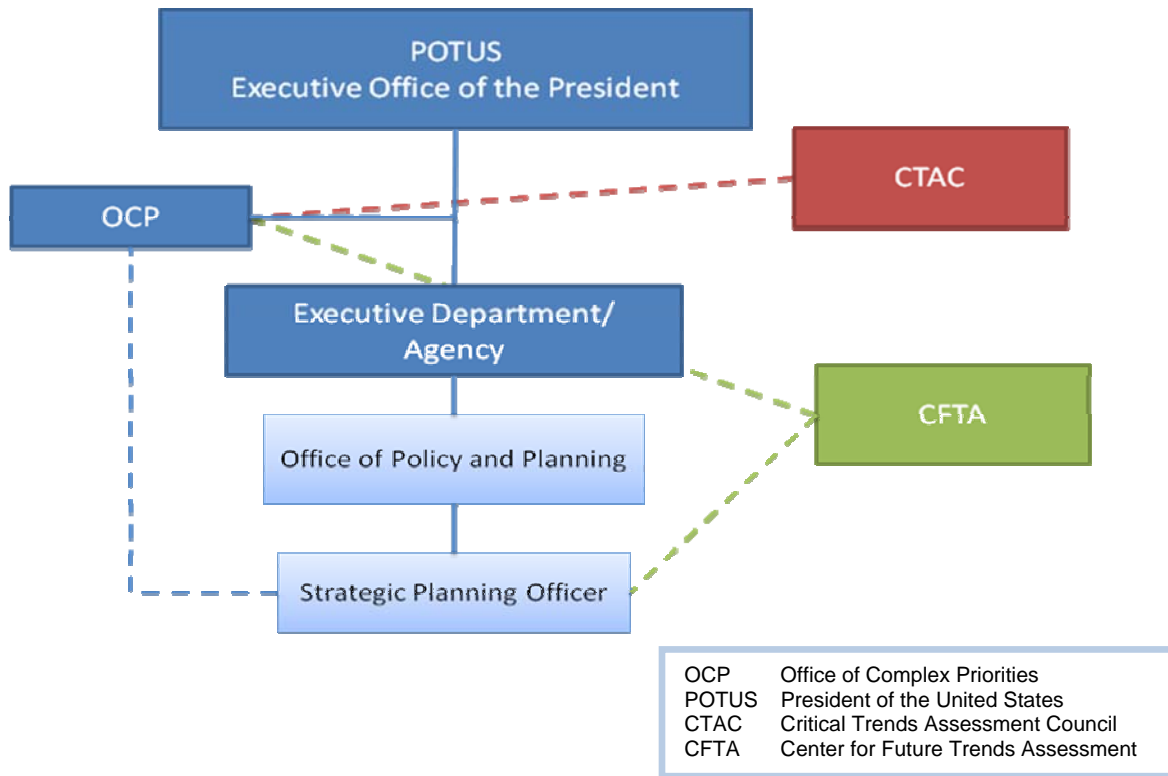
1. A new Office of Complex Priorities (OCP) will aggregate FCIs developed by other branches of the government into potential complex priorities, and help to formulate policy to address these complex priorities
2. The position of Director of Complex Priorities (DCP) to head the OCP and serve as advisor to the President and National Security Council on matters of foresight and complex priorities
3. The position of Strategic Planning Officer (SPO) in each of the agencies' Policy and Planning (or equivalent) Offices, to be designated by agency secretaries,⁶² who will liaise between the Executive agency and the OCP and communicate potential FCIs (especially those characterized by “faint signals”⁶³) from their agencies to the OCP
4. The formal production process for a Quadrennial Complex Priority Review (QCPR), based on the analysis from an NIE (National Intelligence Estimate), and which will inform the QDR (Quadrennial Defense Review), QDDR (Quadrennial Diplomacy and Development Review), and other agency reviews

⁶² Instead of creating these positions through law, which would give the Congress authority over their appointment, we recommend the President “recommend” his/her Secretaries of State, Defense, etc to create these positions in their respective agencies.

⁶³ “Faint Signal” is a potential attribute of an FCI where the signs of its possible advent have been observed, but it has not yet been identified as having “national security” implications.

The QCPR will analyze complex priorities as they emerge, present the policies of the current administration, and review progress on previously identified complex priorities. It will be released one year prior to the QDR and QDDR so that foresight and planning for complex priorities can be incorporated the United States’ defense, development, and diplomatic policies.

Figure 1: Complex Priorities in the Executive Branch



OCP is the central agency for complex priorities in the Executive Branch

- OCP will work with SPOs to identify and track complex priorities
 - OCP Director responsible for informing President of most important emerging complex priorities
- QCPR issued every 4 years by OCP will detail major complex priorities, recommended policies and actions

OFFICE OF COMPLEX PRIORITIES (OCP)

The Office of Complex Priorities (OCP), under the authority of the Executive Office of the President, will bridge the gap between Executive agencies in strategic planning. The OCP will be made up of 50-100 permanent staff members drawn from government and intelligence agencies, as well as experts in diverse fields such as economics, political science, computer science, and education. The budget for the Office of Complex Priorities will begin at 80 million dollars annually.⁶⁴ The OCP will also house a representative from each Executive agency to act as a liaison between their agencies and the OCP. These Strategic Planning Officers (SPOs) will communicate the interests of their agencies, and will present OCP with potential FCIs identified by their agencies.

The permanent OCP staff will consider the agencies' FCIs in concert with reports from the Center for Future Trends Assessment (see below). This information will allow the OCP staff to assess trends across the government in order to develop this information into complex priorities. The OCP will help to formulate a whole-of-government approach to deal with these complex priorities. Every four years, the OCP will release a Complex Priority Review (QCPR) to then guide the development of forward-thinking policies within government agencies.

DIRECTOR OF COMPLEX PRIORITIES (DCP)

The Director of Complex Priorities (DCP) will serve as the primary advisor to the President and the National Security Council (NSC) for long-term policy and strategy. We recommend that the DCP have "Principal" status (or administration equivalent) on the NSC. In addition to this advisory position, the DCP, in conjunction with the OCP staff, will synthesize policies derived from the assessments of SPOs in Executive agencies and departments and from the Center for Future Trends Assessment (CFTA).

EXECUTIVE AGENCY STRATEGIC POLICY OFFICERS (SPOs)

Strategic Policy Officers (SPOs) from each agency's Policy and Planning offices will communicate the faint signals of FCIs that they encounter in the day-to-day affairs of their agencies, and will relay these signals to the OCP. Because SPOs have specific agency experience, they will have insight on important future trends relevant to their respective agencies, as well as in-depth knowledge of agency operations and procedures. The OCP will make assessments on long-range policies based on information provided by the SPOs.

In addition to periodic reporting to the OCP, agency Policy and Planning offices will be required to compile quadrennial strategic estimates for their agencies. These reports will be published one

⁶⁴ Based on 2006 budget for the Office of the Director of National Intelligence. Pincus, Walter, "Intelligence Director's Budget May Near \$1 Billion, Report Finds," *Washington Post*, 20 April 2006. <<http://www.washingtonpost.com/wp-dyn/content/article/2006/04/19/AR2006041902381.html>>.

year before the scheduled release of the QCPR. A year after the QCPR, the agencies will then each publish a “review,” much like the QDR and QDDR, detailing how they will operationalize the complex priorities contained in the QCPR.

COMPLEX PRIORITY REPORTING IN THE EXECUTIVE BRANCH

The complex priority reporting cycle in the Executive Branch will identify and communicate emerging complex priorities to the President of the United States in concert with Congressionally mandated reports, such as the Quadrennial Defense Review. While integrating input from the agency level, the cycle will provide a mechanism to analyze future trends outside of the agency “stovepipe,” fostering a more collaborative approach. The release of quadrennial reports will be strategically timed so that the QCPR influences the QDDR, QDR, and agency quadrennial reviews. This series of coordinated reports in addition to reports from the Intelligence Community, and the Center for Future Trends Assessment (CFTA), the Office of Complex Priorities (OCP) will analyze and cross-reference information throughout the government to ensure foresight that reflects cross-government analysis.

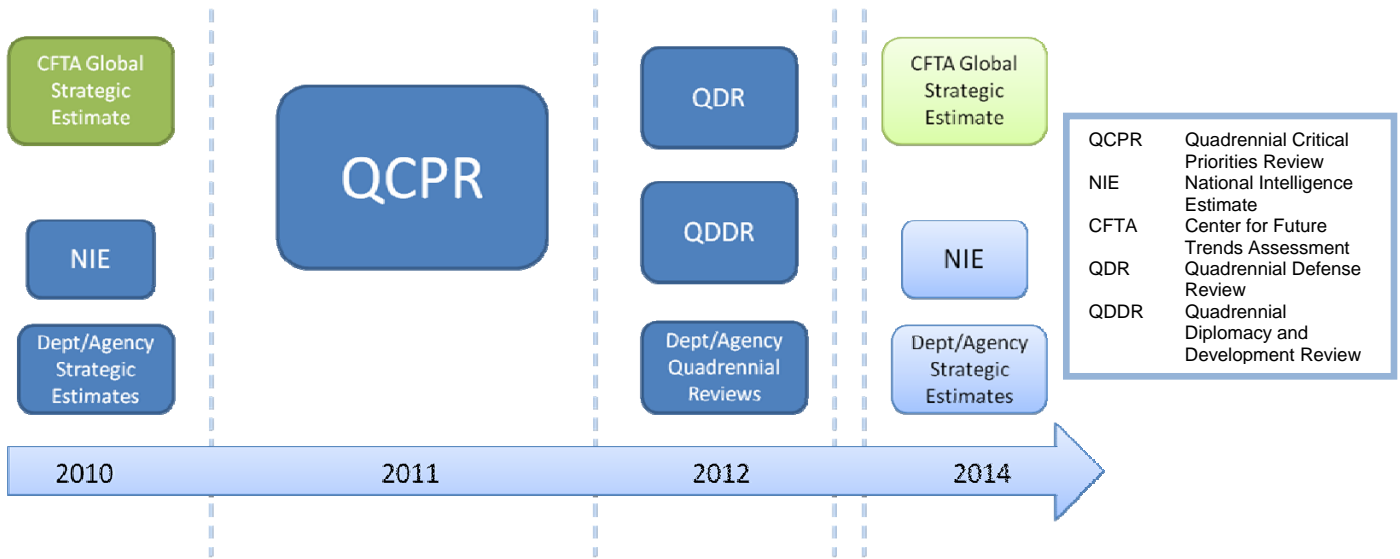
The QCPR will articulate the most significant complex priorities confronting the nation. While the President is the intended recipient of foresight analysis, he or she can also direct the study of foresight by requesting *ad hoc* strategic estimates from government agencies. Should the President want to explore a potential complex priority, he or she can initiate an *ad hoc* reporting process through the DCP.

REPORTING CYCLE

Every four years, a report compiled under the direction of each agency’s SPO will be submitted to the OCP. These agency quadrennial estimates will be directed by the President, and will contain analysis regarding what the agency sees as potential future contingencies. The OCP will integrate and analyze the information from each government agency’s quadrennial estimate, including a quadrennial NIE specifically aimed at long-range, global assessments. It is OCP’s responsibility to compare reports and identify how potential FCIs noted independently by different agencies might actually be interconnected. If OCP decides certain complex priorities warrant additional study, it can request an *ad hoc* report from one or more agencies linked to that complex priority. OCP can also coordinate further studies using other methods of analysis, such as scenarios or Delphi processes. OCP will coordinate closely with CFTA, seeking their expertise to guide its analysis and selection of various complex priorities. *Ad hoc* agency strategic estimates may also be submitted to OCP, which will aid in further developing the FCI. The DCP will then present the President and the NSC with the coordinated assessment of the complex priority, and will ensure that the analysis is incorporated into the next QCPR cycle.

The CFTA will also time its Strategic Future Trends Assessment to be released a year before the QCPR. CFTA’s report, issued every four years, will evaluate how well the government is addressing complex priorities. The CFTA review will inject crucial feedback into the complex priority reporting cycle, telling Congress and the Executive branch where weaknesses in the cycle exist.

Figure 2: Executive Branch Reporting Cycle



The QCPR will be drafted by the OCP on a 4-year cycle, detailing major complex priorities and recommended policies and actions

- The CFTA will publish a Global Strategic Assessment the year prior, which will inform the QCPR along with the NIE and Department/Agency Strategic Estimates
 - Quadrennial NIE will be tailored for a long-range outlook across the spectrum of national security threats
 - Department/Agency Strategic Estimates will provide the OCP with an assessment of potential FCIs and progress made since previous Quadrennial Review
- Departments and agencies will release quadrennial reviews the following year, detailing their actions plans for executing the recommendations from the QCPR
- Two years after the quadrennial reviews are released, the cycle will begin again with the Strategic Estimates

TRACING AN FCI THROUGH THE EXECUTIVE BRANCH

The steps below demonstrate how the government might identify the global power shift to China as a complex priority by using the government model outlined in this report.

- Government agencies submit their quadrennial estimates to the OCP. The NIE notes that China's military power has grown considerably over the past several years. The Department of Energy notes that China is drilling more oil and capturing more natural gas in the East and South China Seas. The Department of Education's review includes statistics showing that China has significantly more college students graduating with math and science degrees than the US.
- OCP identifies a significant trend among these reports, and observes places where these systems might impact one another. The DCP relays this information to the President, who requests that the DCP work with specific agencies (e.g. Department of Education, DOD, DOS, etc.) to develop these observed trends into FCIs
- The CFTA is notified of the Executive Branch's interest in the developing complex priority. The CFTA compiles any research it has already conducted on the topic, and requests that the issue be analyzed further.
- OCP works with the SPOs and CFTA to identify critical connections between the data, prepares a report, and briefs the President and the NSC with its recommendations.
- The President decides what further action should be taken.

COMPLEX PRIORITIES IN THE LEGISLATIVE BRANCH

Given the long-term implications of complex priorities, it is imperative that the US government takes steps to ensure that both the Executive and Legislative Branches have a common format to work on complex issues. For this reason, we recommend that the Congress create the bodies listed below in the Legislative Branch. The creation of these institutions will ensure that long-term issues are prioritized within the Legislative Branch. In so doing, they would enable a whole-of-government approach, and ensure that long-term issues are prioritized within the Legislative Branch. Moreover, if the proposed recommendations are followed, it will minimize typical political divisions within these newly created institutions.

1. The Critical Trends Assessment Council (CTAC)
2. The Center for Future Trends Assessment (CFTA)
3. House Committee on Future Trends (HCFT)
4. Senate Committee on Future Trends (SCFT)

OVERVIEW OF STRUCTURE

This report recommends the creation of a Critical Trends Assessment Council (CTAC). The CTAC would serve as the primary institution for long-term priorities in the Legislative Branch. It will have a structure similar to the Congressional Budget Office (CBO) or Congressional Research Service (CRS), offering objective, non-partisan analysis. The majority of its research and development will be completed in a separate organization, the Center for Future Trends Assessment (CFTA). We recommend that the CFTA be an independent, government-funded research center. It would submit regular studies to the CTAC on an *ad hoc* basis, as well as a comprehensive report every four years.⁶⁵

The CTAC will determine which priorities have the most long-term significance based on reports from the CFTA and the OCP.⁶⁶ The issues selected by the CTAC will be broken down using the Component-Level Implementation Process (CLIP).⁶⁷ Through CLIP, long-term objectives will be translated into legislation based on the recommendations of CTAC. This report proposes that the

⁶⁵ All CFTA and CTAC reports/critical findings will be shared with the Office of Complex Priorities.

⁶⁶ The Office of Complex Priorities will share all reports and studies with the CTAC.

⁶⁷ *Component-Level Implementation Process (CLIP)*: We “recommend adopting the Fall 2004 panel’s recommendation to employ the Component-Level Implementation Process (CLIP).”⁶⁷ “CLIP is a tool that enables policy makers to mitigate the political risk inherent in introducing programs with long-term objectives whose final results may not be seen for decades.”⁶⁷

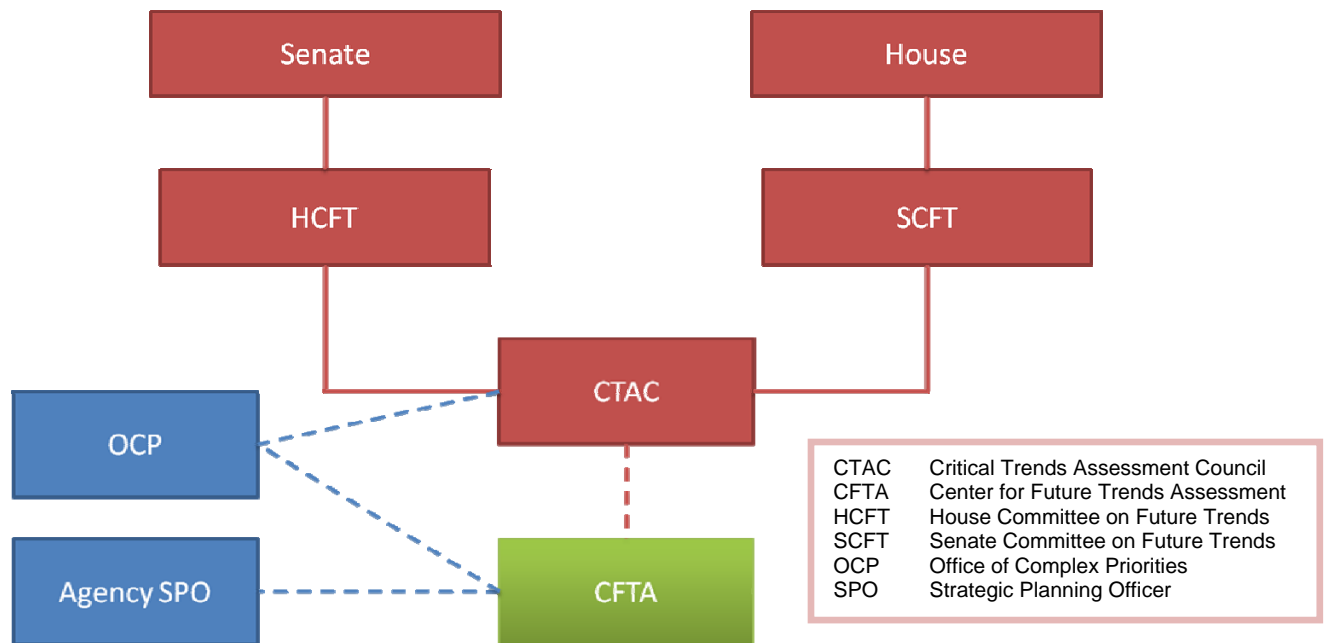
The CLIP process first “describes a desired long-term objective.”⁶⁷ Then, a “series of short-term steps or components needed to achieve the objective”⁶⁷ are developed, in order to “frame components in legislative language and timed to match political cycles.”⁶⁷

CLIP would be used by CTAC, and would help match short-term steps and long-term goals defined by policy makers. “CLIP breaks complex problems into manageable pieces, turns those pieces into policy recommendations, and then translates the recommendations into legislative language and timelines.”⁶⁷ FCIs appropriate for CLIP will come from the OCP and the CFTA.

legislation be drafted in two newly created committees: the House Committee on Future Trends (HCFT) and the Senate Committee on Future Trends (SCFT).

These are recommendations only and the Congress is free to create any institutions it sees fit. It is critical, however, that any newly created Congressional bodies correspond with their counterparts in the Executive Branch, as depicted in the chart below.

Figure 3: Complex Priorities in the Legislative Branch



The CTAC is the central body for complex priorities in the Legislative Branch

- Quadrennial and *ad hoc* reports on complex priorities sent from CFTA to CTAC
 - Reports will also be passed on to Executive agencies
- The CTAC will send recommendations to HCFT and SCFT
- OCP and the CTAC will coordinate on long-term executive policy

CRITICAL TRENDS ASSESSMENT COUNCIL (CTAC)

The Critical Trends Assessment Council (CTAC) will be the main node of synthesis between executive policy directives, CFTA research, and budgetary considerations. The CTAC will operate like the CBO, CRS and General Accounting Office (GAO), generating reports that ultimately get passed on to particular Congressional committees for policy consideration. The CTAC will be charged with merging long-term executive policy and departmental goals with relevant research garnered from CFTA and then incorporating budget constraints based on both CBO and OMB data. CTAC reports will be available to Congress, the OCP (Office for Complex Priorities), and the public, and will concentrate on long-term challenges that would require whole-of-government responses.

The CTAC will have a staff of approximately 50 to 100 from a diverse range of fields such as computer science, physics, engineering, sociology, public policy, and others. The CTAC's experts will not be responsible for preliminary research (done mainly by the CFTA and CBO), but for combining this data into a nonpartisan and actionable format. A maximum operating budget of \$10 million should sustain this work and cover employee salaries as well as any other associated costs.⁶⁸

After issuing its reports, and in order to delineate between short and long-term action that the government needs to take, the CTAC will perform CLIP analysis on the various issues that the reports address.⁶⁹ By identifying immediate actions that need to be taken, the CTAC can give the SCFT (Senate Committee on Future Trends) and HCFT (House Committee on Future Trends) options that have more short-term, verifiable results and can build towards a more sustainable future policy agenda. This will enable Congress to better act on long-term challenges without great political risk because short-term measurable objectives will be met.

The CTAC will prove especially vital to the forward engagement and actionable foresight process because of its semi-independent status and professional staff. Like the CBO and CRS, it will operate as a research arm of the Congress. Instead of researching very short-term and immediate interests, however, the in-depth and objective reviews will focus on more long-term trends that have the potential to transform government policy and societal interactions.

A public affairs office will be included for the CTAC because of the non-transparent nature of long-term trends. The public affairs function will enable the CTAC to communicate to the public how the long-term threats/issues are being addressed through short-term legislation.

⁶⁸ Based on the CRS model, which operated FY2009 with 675 employees and a budget of approximately \$107 million. See the CRS FY2009 Annual Report.

⁶⁹ CLIP: See Note 51.

CENTER FOR FUTURE TRENDS ASSESSMENT

The Center for Future Trends Assessment is a government-funded research corporation that will provide research and reports on the subject of foresight into specific future contingency of interests as requested by the CTAC (Critical Trends Assessment Council), OCP (Office of Complex Priorities), or as researched at its own discretion.

CFTA will examine complex priorities from the top down. Government bodies will analyze the facts before them to assess FCIs and complex priorities. CFTA will work with these agencies to gather and synthesize information from all corners of the government, as well as from open sources, gaining a more broad view of the possible weak indicators that could otherwise evade a set of smaller organizations. Specifically, government agencies typically *react* to intelligence and then develop policy, CFTA will ask grand “What-if” questions, envision potential alternative futures, and will be bound by imagination, rather than politics.

The structure of the Center for Future Trends Assessment will be similar to that of an FFRDC (Federally Funded Research and Development Corporation), requiring it to report to political bodies but without any direct political control. This separation will create a setting in which researchers will be able to ensure that factual and unbiased information is provided to the OCP and Congress, while maintaining the ability to perform specific research and development tasks in relation to future trends and planning. An analogous organization in government is the NSF (National Science Foundation), which functions with minimal political control as required by the nature of its work.

Official and unofficial reports will be made on an *ad hoc* basis to those who request the research and at the discretion of the CFTA in order to ensure that the information is provided to all who need it. A secondary report, similar to the Quadrennial Defense Review or the Quadrennial Development and Diplomacy Review, will be provided every four years as a basis of assessment for how well the entire predictive system is functioning. Finally, we recommend that CFTA have its own publishing body that will function as a public interface for the research and development side of future trends assessment, allowing the organization to interact with the academic community and media through research papers and review documents. This will be done similar to the way publishing is undertaken by think tanks and scientific societies.

Structurally, the CFTA will begin with a staff of approximately 250 employees. After its creation, it will determine its staff and human resources requirements as necessary, expanding and hiring as it sees fit within its existing budget. The majority of its staff will consist of high-level academic personnel from a diverse background, including everything from political science and international affairs to engineering and computer science. Its budget will begin at roughly \$25 million annually.⁷⁰

⁷⁰ "A History of the Department of Defense Federally Funded Research and Development Centers." *Princeton.edu*. Princeton, n.d. Web. 25 Apr 2010. <<http://www.princeton.edu/~ota/disk1/1995/9501/950110.PDF>>.

This budget amount is based off of the idea that it should be at roughly half of what an analogous group, the NDRI, is currently receiving.

NEW CONGRESSIONAL COMMITTEES

This report recommends the creation of two Congressional committees: the House Committee on Future Trends (HCFT) and Senate Committee on Future Trends (SCFT). These committees will only focus on how to legislate long-term issues. The primary goal is to make the new committees as non-partisan as possible. Given the polarization that currently exists between the major political parties, we recommend attempting to brand the Future Trends committees in a distinct way. Because long-term issues, such as climate change, are critical to the survival of the United States, typical political squabbles must be put aside. To this end, we propose Option A as the recommended composition of HCFT and SCFT. However, if option A is later deemed infeasible, Option B is an acceptable alternative.

OPTION A:

- Co-chairpersons (one from each party) or annual rotational chairpersonship (regardless of control of House and Senate).
- Equal membership for both major parties in each committee regardless of party in power.

OPTION B:

- Co-chairpersons (one from each party) or annual rotational chairpersonship (regardless of control of House and Senate).
- Membership based on control of House of Representatives and Senate.

TRACING AN FCI THROUGH THE LEGISLATIVE BRANCH

The steps below demonstrate how the government might identify the global power shift to China as a complex priority by using the government model outlined in this report.

- CTAC receives CFTA reports and the QCPR and then analyzes all the data from these reports and discerns certain “faint signals” that illustrate a global power shift towards China; China has significantly more college graduates in science and engineering than the US; China’s military has grown considerably vis-à-vis the United States; China is consuming considerably more resources than it did ten years previous, etc
- CTAC requests that CFTA compile an *ad hoc* report on the interconnections between these issues. Moreover, CTAC requests, through the Office of Complex Priorities, that certain government agencies undertake similar *ad hoc* reports, which focus specifically on the respective agencies’ area of expertise
- After the requested reports are completed, CTAC takes the new information, and using the CLIP method,⁷¹ determines potential legislative action.

⁷¹ Clip: see Note 51.

- CTAC notes that increasing funding in education for science and engineering could offset China's increasing advantage. A specific legislative recommendation is given to the newly created House and Senate committees—SCFT and HCFT
- SCFT and HCFT decide how to proceed based on CTAC's recommendations
- CTAC's compiled report is shared with the Office of Complex Priorities in the Executive Branch and CTAC encourages the Director of Complex Priorities to address the newly developed complex priority

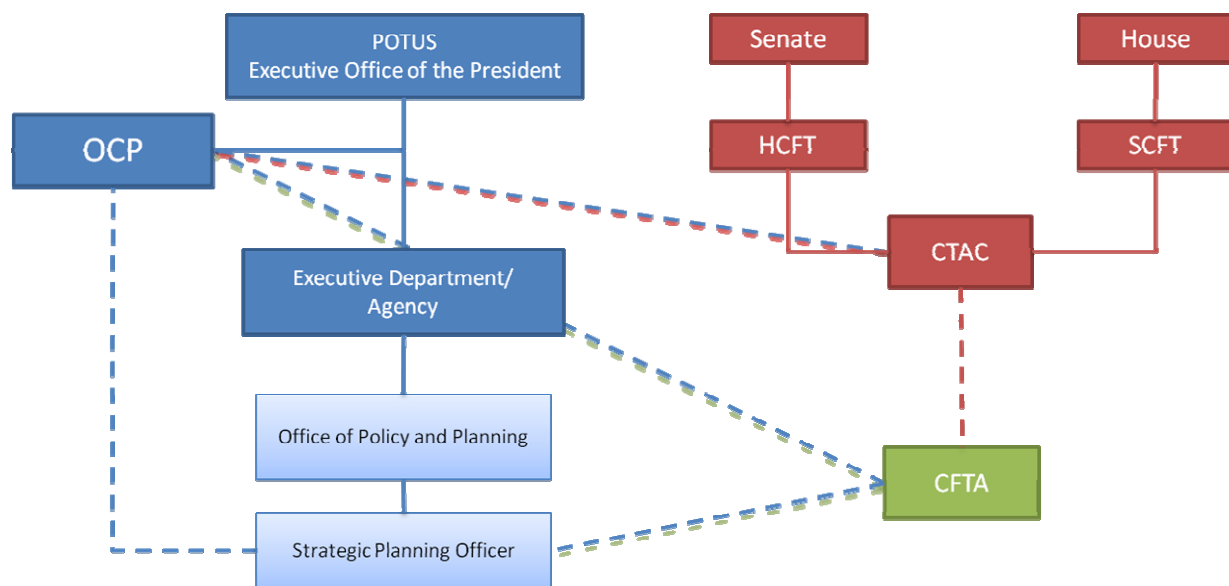
PART TWO CONCLUSION:

A WHOLE-OF-GOVERNMENT APPROACH

For too long, the federal government has not prioritized long-term issues. As FCIs continue to emerge, it is crucial that the Executive and Legislative Branches integrate complex priorities into policy, planning, and programming considerations. To that end, this report has highlighted a number of the critical future contingencies of interest and complex priorities that the United States currently faces. The list provided is by no means exhaustive, but illustrates the diversity and potential ramifications of complex priorities for the US Government.

For the United States to address these and other complex priorities, it is imperative that the Executive and Legislative Branches have a common format to work on long-term issues. We strongly advocate the reforms proposed in this report and believe they would facilitate synchronization between both branches. Above all, the Spring 2010 Panel on Forward Engagement asserts that long-term trends and foresight must be prioritized in governance. If the US Government remains reactive and long-term priorities are continually relegated to the backburner, there may be dire consequences for future generations.

Figure 3: Complex Priorities in the Legislative Branch



APPENDIX A:
SPRING 2010 SCENARIO-THE NATIONAL SECURITY STRATEGY OF THE UNITED STATES

IAFF 290-13
Forward Engagement
Professor Leon Fuerth
Spring 2010 Scenario

By law, the President is required to submit a report to Congress on The National Security Strategy of the United States, due 150 days after inauguration (see Wikipedia). The purpose of this requirement is to force **each** new Administration to provide the Congress with an overview of how it defines the national security, and how it intends to provide for it. In theory, the report should serve as a basis for dialog between the Executive and the Congress.

In the real world, Administrations usually miss the legal deadline because the task of organizing an administration – even for a second term – is consuming, not to mention the multiple challenges that must be dealt with from day one. The Obama administration is no different from its predecessors, on this point. As of today (March 9, 2010), work on The National Security Strategy is still under way. This creates an opening for our scenario.

Members of the class are to consider themselves as a team that is preparing a draft of the Presidents Report on the National Security Strategy, under the direction of the National Security Adviser, who, in turn, is working under overall guidance from the President. Specifically, your group is working on a new chapter for the report, which is to reflect the President’s particular interest in long-range planning.

As the scenario begins, you receive the following message from the National Security Adviser:

The President believes that many of the worst problems waiting for him after his inauguration could have been anticipated and acted upon much earlier, during the administrations of his predecessor, or even earlier. This explains, as you know, his particular interest in finding ways to develop foresight as a working component of the policy process. He now wishes to use his pending report to Congress, on the National Security Strategy of the United States, as a way to formally bring his views on this subject to the Congress and to the American people.

Accordingly, the President wants us to develop a chapter identifying major long-range challenges (whether threats or opportunities) that lie beyond the normal four-five year planning horizon of the government. You have already been looking at some of these with the help of four working groups. Your group will pick up where these efforts leave off. You will be identifying, at extreme range, what you consider to be major future contingencies, and you will be suggesting very early responses to these that are intended to begin an effort to shape them.

I want to emphasize that the President's overall definition of the scope of national security is much broader than physical defense (see attached definition adopted from the Project on National Security Reform).

The President wants to present these contingencies to Congress in a way that encourages the Congress to develop its own approach to systematic foresight. He hopes that, in this way, partisan differences will be tempered by deeper awareness of the underlying issues and of their complex inter-relationships. He therefore wants not only to identify major long-range contingencies, but to suggest early national responses that may have to be sustained and evolved well into the future, beyond the terms of many who are now serving.

This raises the question of how long-range national priorities can be translated into terms that fit within relatively short-term legislative horizons. The President is open to suggestions as to how this might be done.

Your draft chapter on Long Range Issues and Planning is due on Friday, April 30, 2010, when you presented it for discussion a special meeting of the National Security Council.

*ON THE SCOPE OF NATIONAL SECURITY*⁷²

National security is the capacity of the United States to define, defend, and advance its position in a world that is being continuously reshaped by turbulent forces of change.

The objectives of national security policy are:

- Security from aggression against the nation, by means of a national capacity to shape the strategic environment; to anticipate and prevent threats; to respond to attacks by defeating enemies; to recover from the effects of attack, and to sustain the costs of defense;
- Security against massive societal disruption as a result of natural forces, including pandemics, natural disasters and climate change;
- Security against the failure of major national infrastructure systems, by means of building robust systems, defending them, and maintaining the capacity for recovering from damage;

Success in national security matters depends on integrated planning and action, and on sustained stewardship of the foundations of national power: Sound economic policy, energy security, robust physical and human infrastructure, including health, and education systems, especially in the sciences and engineering. It also depends on the example the United States sets for the rest of the world through its actions at home and abroad.

⁷² From “Forging a New Shield” Report by the Project on National Security Reform, September 2008.

**APPENDIX B:
GLOSSARY OF TERMS AND ABBREVIATIONS**

Complex Problems: Challenges that are defined by non-linearity, decentralization and adaptation, in which multiple agents interact at once and where everything affects everything else

Complex Priorities: A critical policy dynamic defined by the interaction of multiple intersecting future contingencies of interest whose effects cannot be managed by engaging individual topics in isolation because of their non-linear and unpredictable interrelationships

Faint Signals: Weak and disorganized signs that are hard to interpret and could indicate much larger, more comprehensive changes in society

Foresight: The art of anticipating future developments, events and trends while acknowledging a degree of error and inherent incompleteness in the process

Forward Engagement: A combination of forecasting methods and policy-making mechanisms that seeks to offset the challenge posed to traditional policy-making structures by complex problems; a theoretical framework for thinking systematically about the long-range future in ways that can be practically applied to and integrated into the public policy process

National Security: The capacity of the United States to define, defend, and advance its position in a world that is being continuously reshaped by turbulent forces of change

Future Contingency of Interest: An event or trend that could seriously shift the course of everyday life and disrupt global society by altering previously anticipated events

STEEP Model: A method of analyzing FCIs by breaking down their possible effects into the following categories: Social, Technological, Environmental, Economic, and Political

CBO	Congressional Budget Office
CFTA	Center for Future Trends Assessment
CLIP	Component-Level Implementation Process
CTAC	Critical Trends Assessment Council
CRS	Congressional Research Service
DCP	Director of Complex Priorities
DOE	Department of Energy
FCC	Federal Communications Commission
FCI	Future Contingency of Interest
FFRDC	Federally Funded Research and Development Center
GAO	Government Accountability Office
GDP	Gross Domestic Product
GHG	Greenhouse Gases
HCFT	House Committee on Future Trends
IPCC	Intergovernmental Panel on Climate Change
NSC	National Security Council
NIE	National Intelligence Estimate
OMB	Office of Management and Budget
OCF	Office of Complex Priorities
POTUS	President of the United States
PRC	People's Republic of China
QCPR	Quadrennial Complex Priority Review
QDDR	Quadrennial Diplomacy and Development Review
QDR	Quadrennial Defense Review
SCFT	Senate Committee on Future Trends
SDR	Special Drawing Rights
SPO	Strategic Planning Office
STEPP	Social, Technological, Environmental, Economic, Political
STEM	Science, Technology, Education, Math
US	United States