a discussion of current and future PRC nuclear submarine operations; an assessment of Cold War lessons for understanding the development of the PRC nuclear submarine force; and a discussion of the implications for U.S. national security in general and the U.S. Navy in particular. Worth noting is that this text is both more specific and broader in its scope of conception. It is more specific in that it looks at the neglected sector of China's undersea force—that small proportion of Chinese submarines using nuclear propulsion—and broader in that it concerns China's submarine force, navy, and grand strategy as a whole.

In the opening chapter, Rear Admiral Erik McVadon provides a detailed summary of current developments in the Chinese navy and includes a discussion of the maturity of the submarine fleet within the People's Liberation Army Navy, the role of the fleet in terms of the Taiwan "problem," and the potential threat the fleet poses to the United States.

In a chapter on the context of China's current maritime strategy, Bernard Cole argues persuasively that an understanding of that strategy must be grounded in an understanding of Chinese history, particularly since 1949. He also notes that while the Chinese navy once embraced Soviet ideas about strategy, it has since rejected them in order to develop its submarine fleet as a flexible, ready instrument of national security.

Additional chapters explore topics including analysis of available data concerning the capabilities of China's nuclear submarine; the implications of this analysis for China, the United States, and other major powers; and what, if any, lessons from the Cold War apply to the current situation. The collection also is unique in that five of the chapters draw substantially upon original Chinese sources. That reference is helpful in that it also shows the development of Chinese military analysis itself, something that has been downplayed in the past.

China's Future Nuclear Submarine Force is a followup to *China's Strategic Seapower*, by John Lewis and Xue Litai, published in 1993, which concluded that China had a seabased retaliatory capability. While arguably a premature conclusion at that time, *China's Future Nuclear Force*, looking at the second generation of Chinese nuclear submarines, presents a stronger claim for that conclusion. The Chinese navy, through its nuclear submarine fleet, is currently able to project power throughout China's littoral shores, from Taiwan, Honshu, and Sumatra. Soon, through the pursuit of its offshore defense maritime strategy, it will be able to project power throughout all of East Asia.

China's Future Nuclear Submarine Force provides both novices and experienced scholars an extensive primer on the context of the Chinese nuclear submarine fleet. It is quite readable, well organized, and extremely well documented in all chapters. It provides a solid foundation for understanding a new global security threat and its key elements.

Regardless of the political direction that China takes, the development of its military (and in particular its nuclear submarine fleet) bears watching. But it is important to remember that our own tendency to want to refight the same war again may apply here, too. That is particularly true given that many of the new Chinese nuclear submarines come from Russia, that the People's Liberation Army Navy originally used Soviet strategy and tactics, and that the U.S. Navy remains very much a force in search of a new naval rival. That bias can color the way we see this new threat and cause us to misunderstand it, as well as how to best deal with it.

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Gaming the 21st Century

National Strategic Gaming Center

Welcome to a new series on simulation and gaming in *Joint Force Quarterly*. With this column, the National Strategic Gaming Center (NSGC) at the National Defense University (NDU) intends to reach out to the community of simulation and gaming practitioners, stimulating debate about best practices in game design and analyses and sharing findings and insights from specific exercises with the wider national security policy community.

The discipline has long lacked an energized professional discourse about how games are best put together and what consumers can (and cannot) learn from them. This lack of substantive activity is costly to the wider policy and analytical community, whose members are left with few reference points for evaluating how seriously they should take the findings from games and how useful participation in them might be, and with little awareness of the interesting topics and exercises being run throughout the national security community. Despite some admirable attempts to stimulate debate and research, even Defense Department university-based wargaming groups have avoided publishing, lecturing, and generally competitively comparing ideas about why and how we do what we do.

A research initiative launched in 2008 seeks to fill this void and to invite colleagues in other gaming shops and the wider policy community to engage with us by participating in events, criticizing, contesting, elaborating, or extending research ideas. We want to challenge practitioners to reexamine how they write games and draw conclusions. We similarly wish to encourage and enable consumers of games to critically assess them. Our overarching focus is on gaming 21st-century challenges—both identifying issues and trends that could be well served by gaming and weighing whether and where exercise design needs to adapt in order to reflect these new issues.

What Policy Games Can Do . . .

NSGC conducts strategic-level exercises in which scenarios concerning broad national or homeland security crises are described to participants, including executive branch officials, senior combatant command staffs, NDU, and Members of Congress—all of whom are asked to determine the best decision for that situation. These types of games go by many names—for instance, political-military exercises, seminar games, tabletop exercises—but share some common attributes. They are *qualitatively specified*; that is, game rules

that shape the space in which participants make choices are described with words and graphics, not mathematical models or a computer program, and usually focus on the strategic, policy-oriented level of analysis. In NSGC games, there is not usually an automatic if-then result to each player's decision that shows him all possible consequences of that choice or a red team of opponents who respond to those choices; nor is there necessarily even a highly structured problem, although other gaming groups do effectively use these tools sometimes in qualitative games.

In 2007 and 2008, the NSGC congressional division ran two energy security exercises that provide a good illustration of our exercises. Participants were introduced to the scenario through a series of high-quality video "injects" and asked to make policy recommendations. Each move represented an advancement of time, and participants considered issues such as supply-line disruptions and strategic implications of dependence on foreign energy suppliers. The exercise promoted dialogue across branches of government about pressing issues and explored the complexity of this policy area.

. . . And What They Can't

Policy games are expensive, time consuming (certainly to design, sometimes to play), seldom repeated many times, and executed for sets of participants with varying levels of expertise and equities. They attempt to represent complex challenges succinctly even though designers do not necessarily know which factors or variables are most influential. With few iterations of an exercise, these games have what social scientists would call a "small N problem"—that is, any conclusions reached from analysis are abstracted from a small sample and vulnerable to any coincidental variations inherent in the particular group that played that particular exercise. Moreover, because of the many-variables problem, they all, *always*, exhibit some investigator bias: when designers write a scenario, they make some guesses as to what factors are the most important ones that create a strategic challenge. And they can be wrong.

This has some implications for consumers of games: when perusing after-action reports or any other compilation of findings from an exercise, wise readers should ask themselves, "How does the author know

this? Why are they concluding that this is a sound recommendation?" Although some significant exceptions exist, gamers do not as a whole do a good job of clarifying how and why they underscore certain findings as important when reporting on games, or relate those conclusions to structural elements of the game. Designers and analysts should be pressed to identify issues such as the number of times an exercise was conducted, the sampling of participants whose choices and observations constitute the "data," what suppositions were made about dominant causal factors and the trends or outcomes explained, and which proved more and less important as the exercise proceeded.

Importance

The kinds of information this method of research can generate are varied, but it is particularly effective to elicit and collate otherwise disparate expert knowledge on issues. By presenting a complex situation in which participants need to take a wide range of factors into decisionmaking, the exercises can achieve a related goal of pushing participants outside of their "lane" to weigh an individual office's or even a department's narrower goals against a wider array of issues and incentives.

NSGC specializes in qualitative policy games because, for this level of analysis, where problems are often ill defined, choices unclear, information incomplete, but decisions still urgent, these games yield educational and analytical benefits. For the lineup of topics we'll tackle this year—Darfur, Afghanistan-Pakistan, energy security, and Russia—these games are an excellent way to frame problems, accessible to audiences ranging from Members of Congress to senior military officers and civil servants.

More parsimonious, mathematical games also make tradeoffs, assuming away some important factors in exchange for the conciseness needed in order to formalize them. Qualitative exercises can retain a good bit more complexity and do not need to make as many of these tradeoffs, and, for some topics, this can be advantageous. In 2007, for example, NSGC conducted a West Africa exercise, Divided Horizons, which weighed the impact of various domestic variables on a range of strategic interests. The exercise, which focused on a few key variables, was an effective means of eliciting

creative policy suggestions and conceptualizing the problem. Indeed, concept validation—weighing what factors are and are not so important to understanding an issue—is something qualitatively specified exercises are extremely useful for.

Qualitative exercises are not perfect for testing and confirming the ideal solution to a problem. They may, however, be valuable in examining decisionmaking processes and are an excellent tool for identifying and exploring relationships, and weighing factors that shape a strategic situation. They are good at helping define problems for learning and analysis.

Subsequent columns will consider the other major strand of our research endeavor—identifying new, 21st-century security challenges and thinking about how to adapt games to learn about them. As we do so, the National Strategic Gaming Center will continue to use this space to pose questions about what games can tell the wider policy audience and what questions that audience should be asking to challenge gamers to produce the best, most salient, and most robust insights and findings. **JFQ**

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