

James E. Doyle. *Renewing America's Nuclear Arsenal: Options for the 21st Century.* New York: Routledge, 2018. 128 pp. \$22.95, paper, ISBN 978-0-8153-8466-3.

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In today's volatile, uncertain, complex, and ambiguous environment and security situation, it is critical to frequently examine the current and future US nuclear posture and possible alternatives. Shortly before the release of the 2018 Nuclear Posture Review (NPR), which lays out the plan for the future nuclear posture of the United States, James E. Doyle released his book *Renewing America's Nuclear Arsenal*. The book discusses three alternatives to the planned US nuclear triad renewal and evaluates their relevance and validity for deterrence and flexibility, strategic stability and arms control, and nuclear security and non-proliferation. Furthermore, it points out procurement tradeoffs and analyzes the ability of the planned nuclear platforms to support conventional operations. Doyle compares the four options to influence decisions regarding the renewal of the nuclear forces by trying to find the most efficient and effective way to invest US taxpayer money while ensuring the right mix of nuclear and conventional forces.

The author begins by introducing the current plan for modernizing the nuclear triad for an estimated one trillion US dollars over the next thirty years. Reviewing the existing nuclear arsenal, he gives a detailed overview of the current modernization plans and the corresponding cost estimates for each element of the triad. He questions the ne-

cessity of the recent modernization plans to fulfill US security requirements. In his view, "meeting US deterrence needs with a smaller, cheaper nuclear arsenal creates a range of opportunities," including further de-nuclearization, enhancement of strategic stability, and improvement of nuclear security (p. 12). Furthermore, the resulting savings could be used to strengthen conventional capabilities and invest in measures that provide increased "protection from terrorism, regional conflict, humanitarian crises, environmental degradation or outbreak of disease" (p. 13).

After analyzing the purpose of the US nuclear arsenal, the author lays out three alternative force configurations. Option 1 (streamlined triad) calls for a slimmer triad, reducing the number of currently planned systems in the land- and sea-based legs of the triad. Options 2 (air-sea dyad) and 3 (dispersed maritime dyad) eliminate the Intercontinental Ballistic Missiles (ICBM) leg of the triad, cancel the planned new nuclear-armed cruise missiles, and retain the new B61-12 nuclear bombs in the US, rather than deploying them to Europe. The main difference between these two options is that option 3 reconfigures the dyad model by spreading the sea-based deterrent across a larger number of submarines, thus putting different emphasis on the seaborne leg. In the following chapters, the author analyzes the four options and com-

compares their relevance. Before concluding, he looks at the procurement tradeoffs of and support for conventional operations of each option.

The US plan to renew its nuclear triad that the book describes corresponds with the plan laid out in the 2018 NPR. Overall it calls for the replacement of the current carriers with new systems (introduction of B-21 aircraft and Columbia class submarines, both of which are currently under development), as well as the substitution of the Minuteman III ICBMs, the Nuclear Air-Launched Cruise Missiles (ALCMs) and the life extension/update of multiple nuclear warheads and nuclear bombs. Additionally, there is a plan to update/replace the nuclear-weapons infrastructure, including the plutonium production facilities.

In the following chapters, the author compares the current plan to his three alternatives. While the author admits that the currently planned triad will ensure a maximum of deterrence and flexibility, he believes that all three alternatives would provide sufficient firepower to deliver devastating retaliation, even after absorbing a first strike. Although the author recognizes that the retirement of the ICBM leg in the two dyad options would have negative consequences for deterrence, he feels that the survivability of the submarine and bomber force would be sufficient to fulfill US deterrence needs.

Concerning strategic stability and arms control, the author believes that the increased firepower of both the current plan and the streamlined triad, in conjunction with improved ballistic-missile defense capabilities and advances in conventional weapons that can destroy enemy nuclear forces, will weaken strategic stability by presenting an increased threat to Russia and China. This would undermine arms control (that is, the New Start Treaty) “because of the implications for strategic stability,” possibly raising tensions and leading “to a Cold-War-style nuclear stand-off between NATO and Russia” (pp. 64, 65). The two dyad options, on the other hand, would

decrease tensions and open unique opportunities for further arms reductions and de-nuclearization.

US objectives to support nuclear security and non-proliferation will also be undermined by the current plan as well as the streamlined triad. Both triads carry additional risks of sabotage and nuclear proliferation due to the increased number of US nuclear weapon locations and facilities. The possible arms races that could be triggered by the updated US triad would further enhance this risk and undermine nuclear non-proliferation. Moreover, the immense cost for the modernization of the triad limits the funds available for nuclear security programs. Finally, reducing the nuclear forces to a nuclear dyad would free additional funds for other defense priorities (up to “US\$443bn over 30 years compared to the current plan” [p. 88]), limiting necessary procurement tradeoffs and supporting the modernization of conventional forces.

The author concludes that while all presented options fulfill US deterrence requirements, a reduction to a dyad would have multiple advantages in all other assessed criteria. In his opinion, a reduction to a nuclear dyad would lead to enhanced strategic stability, improved arms control, better nuclear security, and a decreased risk of proliferation.

While some of the suggestions and evaluations in the book have been overtaken by recent events and decisions (for example, withdrawal of the US from the Intermediate-Range Nuclear Forces (INF) Treaty in 2019), the book still has merit, because its in-depth analysis and deductions are a solid basis for future discussions on possible changes to the current nuclear posture plan. Even though the 2018 NPR confirms that the US plans to continue to operate all three legs of its nuclear triad, a constant review of the current plan is essential, and changes in the security environment could lead to new approaches. Therefore, this book should be read by all who are in-

volved in the renewal of US nuclear forces and the future nuclear posture plan or anyone interested in getting detailed information on the current modernization plan and possible alternatives.

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