

The Future of Weapons of Mass Destruction: An Update

John P. Caves, Jr.

NDIA CBRN Conference

18 August 2021

Distribution Statement A. The views expressed here are solely those of the presenter and do not necessarily reflect those of the U.S. Government.



Context

- **Updates 2014 publication, *The Future of Weapons of Mass Destruction: Their Nature and Role in 2030***
- Addresses six baskets of **geopolitical and technological developments** since the 2014 study that bear on the future of WMD
 - Shifting roles of the great powers
 - New pressures on arms control and nonproliferation regimes
 - More roles for chemical and biological weapons
 - Expanding use of financial sanctions
 - New types of delivery vehicles and more scope to deploy them
 - Other WMD-relevant emerging and disruptive technologies
- Finalized in **early November 2020**





Regimes Under Pressure: Chemical and Biological (1)

- **CWC** and associated norms are under unprecedented assault after repeated CW use, especially by Syria and Russia
- U.S. and like-minded nations **adapted and innovated** to keep CWC, OPCW relevant, but ...
- ... Syria's ability to employ chemical weapons repeatedly as an **integral part of a winning military strategy** in its civil conflict may motivate some other states to give more consideration to chemical weapons as instruments of **internal control**
- Syrian example also may increase appeal of some CBW for use in **gray zone**, exploiting their capacity for low-lethal and hard-to-attribute use and obfuscating use via disinformation



Regimes Under Pressure: Chemical and Biological (2)

- Islamic State gained CW expertise and experience that it and/or other **VEOs** may apply in the future
- **BWC** has not suffered comparable violations but is challenged by indications of BW programs in some countries, baseless allegations of BW activity by others, reduced practical support for BWC work, and the rapid pace of developments in the life sciences
- **COVID-19** pandemic's exposure of modern societies' vulnerability has some wondering if it will spur bioterrorism; more certainly, it demonstrated fragility of international community's ability to come together to respond (US leadership missed)



New Delivery Vehicles (1)

- U.S. and Russia are moving out on **INF-range** missiles in the treaty's absence; China already has thousands
- Russia, China and U.S. are pressing new **hypersonic** missile systems that pair speed and maneuverability to an unprecedented extent
- Russia is working on **nuclear-propelled**, nuclear-armed strike systems that might provide virtually unlimited range and direction of attack
- Further development and proliferation of **unmanned systems** are enabling many actors to deliver weapon payloads and conduct ISR



New Delivery Vehicles (2)

- More capable and distributed **remote sensing** capabilities are diminishing the protection afforded by mobility, concealment and deception
- New **conventionally armed strike systems** can accomplish more and are likely to have more impact on military competition and conflict than nuclear-armed ones
- **Entanglement** of nuclear and conventional systems will complicate crisis decision-making made harder by strike systems with greater speed and longer reach
- More capable conventional systems could make **great power war** more likely, especially in the circumstances of U.S.-China military rivalry in the western Pacific



Other Emerging or Disruptive Technologies

- **Artificial intelligence (AI)** could extend U.S. dominance but also raises concerns for strategic stability, including perceived security of strategic deterrent forces, speed of decision-making, and greater reliance on unmanned systems possibly making war more likely
- Accelerating pace of progress in **biological sciences and technology** could further reduce barriers to production and dissemination of existing bioweapons and enable the creation of new ones
- **Quantum systems** could, *inter alia*, dramatically improve sensors (with potential risk to some strategic deterrent forces), make communications provably secure, and decrypt information protected by existing encryption methods while enabling new methods
- **Additive manufacturing** is more likely to enable actors that already have technical knowledge and capabilities relevant to WMD design and production to make WMD more efficiently and in ways harder to detect than to enable naïve actors to produce WMD in the first place



Policy Considerations (for U.S. Leaders)

- Restore U.S. international leadership
- Pursue strategic arms control negotiations with Russia and China
- Continue to vigorously oppose nonproliferation/use violations
- Prioritize limiting North Korea's nuclear arsenal over denuclearization
- Restore common international front against Iran's nuclear program
- Pay more attention to South Asian nuclear developments/tensions
- Use financial sanctions more judiciously
- Consider carefully what U.S. should go to war over with great power rivals and ensure U.S. public's understanding and backing

BACK-UP SLIDES



Shifting Roles at the Top

- **Post-WWII international order disrupted** as China and Russia asserted themselves and U.S. stepped back from leadership under last administration
- Unclear to what extent last U.S. administration's new directions were unique to it or **reflective of more enduring forces** in the U.S. and world
- If U.S. does not restore international confidence in its **leadership**, then some countries, particularly some U.S. allies and partners, may pursue their own nuclear weapons or other WMD in a more uncertain international security environment.



Regimes Under Pressure: Nuclear

- Context for **nuclear arms control** has changed with China's rise, end of INF Treaty, and new technological developments
- Nuclear arms control increasingly will need to address both nuclear and advanced conventional systems and the capabilities and interests of more actors (**strategic arms control**)
- Last U.S. administration's contrasting approaches to **Iran and North Korea** nuclear challenges did not achieved intended results, suggesting the need for different policies
- **South Asian** nuclear arsenals and delivery systems have expanded in potentially destabilizing ways
- **TPNW** reflects many non-nuclear weapon states' loss of faith in NPT and may increase obstacles to practical cooperation on preventing proliferation



Expanding Use of Financial Sanctions

- Financial sanctions among most **powerful** instruments of U.S. policy, including for countering WMD proliferation (e.g., JCPOA).
- The power of U.S. financial sanctions flows from U.S. dollar's status as the **global reserve currency** and other countries' need for reliable access to dollars and U.S. financial institutions
- U.S.' increasing resort to financial sanctions, especially for **controversial** purposes, is motivating others (China, EU, Russia) to actively pursue ways to reduce their dependence on dollars
- Over time, other states' efforts could **deny to United States** the tremendous advantages it enjoys as the pivot of international financial system, including using sanctions to counter WMD proliferation and reduced costs for financing deficit spending