HARVARD Kennedy School
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Reducing the Danger of Unintended U.S.-Russian Nuclear War

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The problem: U.S.-Russian nuclear dangers are increasing

- Moniz-Nunn: is risk of confrontation highest since Cuban Missile crisis?
- Intense hostility → greater conflict risk
  - Ukraine, political interference…
  - NATO expansion, color revolutions, missile defenses…
  - Many seem to focus on grievances, forget common interest in survival
- Lack of communication → risk of misunderstanding
  - Little political dialogue
  - Mil-mil, legislator, scientist-scientist dialogues almost completely cut off

Source: ITAR-TASS

The problem: U.S.-Russian nuclear dangers are increasing (II)

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- Evolving strategies → increasing reliance on nuclear weapons
  - Writings, exercises seem to call for early limited use to terminate a conflict on favorable terms
  - U.S. proposing new low-yield SLBM
  - Russia building new many-warhead heavy ICBM – vulnerable and threatening
- Arms control collapsing → fewer tools to manage the risk
  - No limits on INF systems
  - New START may expire
  - Agreements to avoid incidents working poorly

Source: Evan Vucci, *AP*

The problem: U.S.-Russian nuclear dangers are increasing (III)

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- BMD, cyber, counter-space, precision conventional, automomy create new complexities → greater escalation risks
  - Cyber blurs lines between peace and conflict, difficult to control
  - Counter-space and cyber may both create incentives to escalate early
  - Missile defenses complicate strategic planning
  - "Entanglement" of nuclear and conventional forces, command and control create incentives to escalate
  - Some new weapons not covered by any existing agreements

Hypersonic weapon concept. *Source:* space.com

Proposals 1: Tone down the rhetoric

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- Stop the Presidential nuclear saber-rattling (now at a level not seen since Khrushchev)
- Stop describing each other as threats to the very existence of the state, of the national way of life, etc.
- Acknowledge that U.S. and Russia are competitors with conflicting interests, visions -- but reaffirm the overwhelming common interest in avoiding nuclear war
- At the summit level, reaffirm the Reagan-Gorbachev core conclusion:
  - "A nuclear war cannot be won and must never be fought."
  - And reaffirm that neither intends to threaten the existence or sovereignty of the other, and both need to cooperate to prevent nuclear war

Proposals 2: Address the conflicts that are driving tensions

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- Need in-depth diplomacy to resolve the Ukraine conflict, lift most Western sanctions
  - Peace is better for all sides' interests than continued conflict
  - Need solutions that Moscow can accept, and Kiev can accept and is able to implement
  - Not likely to agree on Crimea
- Need to stop covert, government-sponsored political interference
  - Open U.S. support for democracy likely to continue
  - Defining where the lines are and understanding when they have been crossed will be major challenges
- Need to establish mechanisms for discussing, addressing other issues of special importance to either side

Proposals 3: Avoid and manage dangerous incidents

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- Need to stop buzzing each other's aircraft, near-collisions of ships, air strikes that risk the other's personnel…
- Need to stop violations of each other's airspace, territorial waters (and very close-to-line challenges to them)
  - Risks greater than any political, military, or intelligence benefits
- Strengthen, expand incidents agreements
  - Reaffirm principles of Incidents at Sea and Dangerous Military Activities agreements – bring people who can address recent incidents to key meetings
  - Add agreements with other relevant states that don't yet have them
  - Rebuild observation of major exercises – should be the norm for all important military exercises
  - Presidents should direct mil-to-mil meeting to work out highest-priority concrete steps to reduce incident dangers

Proposals 4: Renew communication and cooperation

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- Cutoff of communication, cooperation in areas of mutual interest increases dangers, damages both sides' interests
- Restart:
  - Regular, high-level political dialogue on key issues
  - Strategic stability talks
  - Arms control talks
  - Mil-to-mil discussions at multiple levels
  - Joint exercises in areas such as counter-piracy, emergency response
  - Lab-to-lab cooperation on nuclear safety, security, science, energy, cleanup, verification…
- Even during height of Cold War, worked together on nonproliferation, arms control, science…

Proposals 5: Manage the dangers of evolving technologies and doctrines

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- Military doctrine and posture:
  - Discussions of aspects each side finds most threatening
  - Both sides should choose not to rely on launch-on-warning
  - Presidents should task military leaders to work together to find ways to enhance decision time – potentially including de-alerting
- Cyber:
  - Joint discussions, scenarios, to explore aspects each side finds most threatening, how stability could be improved
  - Unilaterally, each side should protect nuclear C3
- Space:
  - Same as for cyber – stability discussions, unilateral protection
  - Some accords possible – no space-to-ground weapons, no space mines on C3, warning satellites…

Proposals 5: Manage the dangers of evolving technologies and doctrines (II)

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- Missile defenses:
  - Both U.S. and Russia likely to want at least limited defenses
  - Joint discussions, scenarios, on how best to manage inherent offense-defense linkages – develop accords on some restraints
- Precision conventional weapons:
  - Long-range ballistic or hypersonic conventional weapons likely to be few, cruise missiles many but slow – modest threats to nuclear forces, C3 (and unilateral protective steps can reduce threat)
  - Joint discussions, scenarios on how best to manage
- "Entanglement":
  - Joint discussions, scenarios, on what kinds of conventional operations would create greatest risks of escalation to nuclear use
  - Unilateral steps to disentangle (keep nuclear and conventional forces and C3 largely separate, resilient)

Proposals 6: Maintain and build on arms restraints

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- Extend New START
  - Address both sides' concerns in joint commission – U.S. approaches to bomber and sub launcher conversions, covering new weapon types on each side
- Negotiate next steps (more specifics in other presentation)
  - In both sides' interests to maintain predictability, monitoring beyond New START – may be other restraints that serve common interests
  - Treaties likely difficult for U.S. to ratify – need to explore non-treaty approaches
  - Explore approaches to restraining others' nuclear forces (could be informal, separate…)
- Build environment for CTBT ratification, progress on FMCT, other arms control issues – and ultimately disarmament

Idea: a Presidential commission on reducing the risk of nuclear war

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- Composition:
  - Equal U.S.-Russian representation
  - Strategic experts, retired military officers, ex-officials, picked by each side – people trusted by leadership on each side
- Role:
  - Develop concrete, actionable ideas for cooperative steps to reduce dangers of nuclear war
  - Write report to both Presidents
- One past model:
  - Joint commission on disposition of excess plutonium (late 1990s)
  - Laid out specific ideas that helped shape decisions

Possible summit-level initiative

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- Joint statement that would:
  - Reaffirm "nuclear war cannot be won and must never be fought"
  - Extend New START
  - Direct resumption of strategic stability talks and talks on shape of follow-on accords
    - Including acknowledging offense-defense linkage, addressing dangers of new technologies
  - Establish expert working groups, with other parties as appropriate, to find resolutions to Ukraine, political interference, sanctions…
  - Direct militaries to find ways to increase decision time for leaders
  - Direct militaries to find ways to reduce risks of inadvertent incidents
  - Direct restart of military-to-military, scientist-to-scientist, and legislator-to-legislator dialogues and cooperation
  - Establish joint commission on reducing nuclear war risks

Backup slides…

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The problem to be addressed

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- Unacceptably high (and rising) risk of nuclear war
  - U.S.-North Korea, India-Pakistan, U.S.-Russia, U.S.-China…
- Increasing risk driven by:
  - Geopolitical conflicts, hostility
  - Increasing focus on military strategies involving nuclear use (Russia, North Korea, Pakistan, United States…)
  - Strategic force and C3 vulnerabilities, entanglement
  - New technologies that may increase escalation incentives (e.g., cyber, counter-space, missile defenses, advanced sensing and strike capabilities...) – though advocates argue the opposite in some cases

The problem to be addressed (II)

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- Ongoing degradation, potential collapse, of arms control process, hopes for disarmament, leads to:
  - Loss of predictability, monitoring, competition management
  - Loss of forum for discussion of strategic concerns
  - Weakening of international political support for NPT and nonproliferation measures
- Cost of nuclear modernization
  - U.S. plans $1.2 trillion over next 30 years
  - Major investments in other countries as well
- Continuing risks of nuclear terrorism and nuclear proliferation
  - Need to focus on steps to address these risks as well (but not topics of this presentation)

Extending New START would serve U.S. national security interests

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- Limits Russian strategic forces
- Provides predictability, habits of nuclear cooperation, monitoring
  - Cheaper, higher confidence than providing information with intelligence alone
- JCS have concluded U.S. does not need larger nuclear forces
- Provides foundation for future accords, and for addressing new Russian weapons
- Significant benefit for political support for nonproliferation regime

Source: Sputnik

Another round of U.S.-Russian arms control?

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- May be possible to do a post-New START round bilaterally
  - Russia has not been interested in negotiating deeper reductions – but wants some form of continuing restraints
  - U.S. politics likely to be difficult – but not necessarily impossible; continuing restraints are in U.S. national interest
  - Would probably require change in U.S.-Russian relations – resolution of some key issues
- Possible elements
  - Some further reductions -- ~1,000 total warheads?
  - Another 10-year term? (Rolling 5-year extensions?)
  - All weapons capable of delivering nuclear weapons to intercontinental range should be counted toward totals
  - Address Russian concerns on verifiable conversion of subs, bombers
  - May require deal on missile defense – possibly INF resolution

Banning land-based MIRVs would be desirable, but may not be achievable

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- Land-based MIRV ban would improve crisis stability
  - Without MIRVs, any counter-silo attack disarms the attacker faster than the defender
- All new Russian ICBMs are designed to be MIRVed
  - Sarmat SS-18 follow-on reportedly capable of up to 24 RVs
  - MIRVs key element of Russian response to U.S. defenses
- Political correlation of forces that allow for land-based MIRV ban in START II no longer exists
- China also deploying MIRVs
  - Key element of China's response to U.S. defenses
- Even India, Pakistan developing MIRVs

Need to explore non-treaty approaches

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- Severe U.S. political polarization will make it very difficult to get 2/3 Senate votes for decades to come
- Non-treaty approaches can be faster and more flexible – e.g., 1991-1992 Presidential Nuclear Initiatives
- Treaties have advantages over non-treaty instruments – but the difference is not enormous
  - Durability: Presidents can pull out of treaties, as George W. Bush did with the ABM Treaty
  - Specificity: Non-treaty accords can have specific, written provisions (e.g., JCPOA, SALT I Interim Accord)
  - Verification: Governments can voluntarily agree to invite inspectors in a non-treaty accord (e.g., JCPOA)
- Will the Senate try to block non-treaty accords?

First steps toward restraining smaller arsenals

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- Challenges all around:
  - China unwilling to be locked into inferior position
  - U.K., France unwilling to be counted as part of U.S. totals
  - India, Pakistan resist "slippery slope" to controls
  - Israel unwilling to even acknowledge arsenal
- Possible series of national initiatives, beginning with China:
  - China: "IF U.S. offensive and defensive forces do not undermine our deterrent, we have no intention to expand our forces."
  - U.K., France: "We have no intention of expanding our forces."
  - India, Pakistan: "We have no intention of building forces as large as China's."
- Could provide informal cap until the int'l community can figure out a multilateral approach

First steps toward limiting warheads and fissile material stocks

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- So far, arms control has only limited delivery vehicles
- Many challenges to formal limits on weapons, materials
  - Verification, political issues
- With changed political environment, could pursue initial steps:
  - U.S.-Russian discussions of:
    - How declarations of warhead and fissile material stocks, initial confirmatory steps, could bolster arms control
    - How restraints on warheads, fissile materials might be structured
  - "Pilot" declarations and monitoring visits for selected stocks
  - Lab-to-lab cooperation to develop improved approaches (including nuclear archaeology)
  - Initial discussions with other states

A particular initiative on fissile material: international monitoring of excess

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- U.S.-Russian Pu disposition agreement suspended, on verge of collapse
- Could send a signal that arms reductions will be permanent by placing material irrevocably under IAEA monitoring
- Legal, technical arrangements already worked out in 1990s-era "Trilateral Initiative"
  - Technical measures for HEU still to be developed
- U.S. could announce it was moving to put all excess pits at Pantex under monitoring, challenge Russia to do the same
- For detail, see Shea-Rockwood: https://www.belfercenter.org/sites/default/files/legacy/files/iaeaverification.pdf

Can we address the instability dangers posed by evolving technologies?

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- Recap: new technologies may increase escalation incentives in crisis or conflict (though advocates argue opposite)
  - Missile defenses
  - Precision conventional weapons
  - Cyber
  - Counter-space
  - Entanglement of conventional and nuclear forces, C3
  - Surveillance advances may strengthen anti-submarine or anti-mobile-missile warfare
- Impact of all of these together is more than the sum of the parts – both Russia and China concerned
- Unilateral countermeasures likely to be most important – but negotiated measures might help in some cases

Proposed doctrine, force structure approaches already improve stability

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- Eliminate silo-based ICBMs, planning for launch under attack or on warning
  - Drastically reduces risk of crisis instability driving AMERICAN launches
  - Smaller reduction in risk of launches by others – U.S. SLBMs still have counterforce, counter-C3 capability
- Eliminating U.S. counter-silo and counter-C3 targets, eliminating first use threats, and reducing force structure for counterforce could reduce instability risks
  - If believed, would reduce "use them or lose them" pressures, incentives to rely on LUA or LOW

What is to be done? Missile defense

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- Politically inevitable that U.S. will maintain at least limited national missile defenses, significant regional defenses
  - Will be disagreements, however, over additional sites, more interceptors, space-based weapons, budgets…
- May be possible to build support for some constraints as part of a larger package designed to reduce nuclear risks
  - Possible interceptor, site limits (e.g., 2-3 sites, 200 interceptors, comparable to original ABM Treaty)?
  - Possible ban on interceptors or directed-energy in space?
  - Serious difficulty: regional defenses (SM-3 soon to be tested against an ICBM, hundreds will be deployed)
- U.S., Russian, Chinese unilateral steps to counter missile defenses are likely to be highly effective

What is to be done? Entanglement of forces and C3

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- Issues of entanglement and how to address them should be included in strategic stability talks
  - Helpful to clarify what types of attacks might be seen as especially escalatory
- But unlikely to be possible to negotiate specific restraints on attacks on either forces or C3
- States can, if they choose, avoid "entangling" their own forces and C3 (e.g., consideration of U.S. satellites for nuclear-specific C3 roles)
- States should, in their tactical and strategic planning, take the risks of escalation from entanglement into account (again, unilateral measures likely most important)

What is to be done? Precision conventional strike

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- Multiple countries will increasingly deploy large forces of high-precision conventional cruise missiles
  - Numerical constraints unlikely to be negotiable
  - Debates over how much weapons that take hours to arrive affect first-strike incentives, "use-them-or-lose-them" incentives
  - Unilateral steps to protect strategic forces, C3 from conventional attack likely to be effective
- Large "prompt global strike" forces unlikely to be attractive
  - May be possible to build support for some constraints on high-speed long-range precision conventional strike forces – e.g.
    - Counting all weapons capable of carrying nuclear weapons to intercontinental range in nuclear limits?
    - Limiting high-speed long-range precision strike forces to too few to pose serious conventional counterforce threat (~200)?

What is to be done? Counter-space systems

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- Counter-space systems include ASATs, jamming, cyber…
- Implausible to ban all further ASAT testing
  - Many countries pursuing ASATs
  - Testing ban would mean ban on testing mid-course defenses
- Implausible to ban or numerically limit ASAT deployment
  - Huge verification challenges
- Some restraints might be possible:
  - Ban on ASAT testing above LEO, especially geosynchronous orbits
  - Ban on testing space-based interceptors, DEW
  - Ban on stationing "mines" near nuclear C3 satellites in peacetime
- Unilateral steps to protect satellites (and prepare for rapid replacement) are critical, likely to be effective

What is to be done? Offensive cyber

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- Several pathways by which cyber could increase dangers of escalation in crisis…
- Implausible to ban or seriously restrain offensive cyber capabilities
  - Verification infeasible, technology changes rapidly, already central to both U.S. and Russian military planning
- Some restraints might be possible:
  - Agreement not to put cyber implants in nuclear C3 in peacetime?
    - Issue: Little difference between espionage and attack preparation, sides may be unwilling to constrain their espionage
  - Russian behavior on election interference leaves little confidence they would comply
- Unilateral steps to protect C3 systems will be key

What is to be done? Advanced ASW, counter-mobile-missile technologies

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- Advances in sensing, drones, AI, may enhance abilities to find submarines and mobile missiles
- BUT: The hiders can also take advantage of new technologies
- Implausible to ban these technologies
  - Verification infeasible, important for conventional warfare
- Some restraints might be possible:
  - Agreement not to challenge submarine bastions (but: freedom of navigation issue)
  - Agreement not to develop, deploy, combinations of satellite sensing, high-speed missiles with hunting ability, suitable for attacking mobile missiles in large countries like Russia or China
- Unilateral steps to protect submarines, mobile missiles will be key, and for major powers, likely to be effective

Other steps to reduce U.S.-Russian nuclear dangers

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- Rebuilding the broader relationship
  - Need to respond to provocations while reducing tensions – difficult, but necessary
  - Need mutual agreement not to interfere in domestic affairs, cyber rules of the road, understandings on key political issues
  - Should restart mil-to-mil cooperation – so officers on each side in crisis may know each other, know where to call to talk
  - Should restart nuclear energy, security, safety cooperation – danger to all for world's largest nuclear complexes to be proceeding in isolation from each other
- Resolving regional disputes
  - Resolving crisis in Ukraine
  - Confidence-building to assure stability in Baltics, elsewhere in Europe
  - Coordinating, tamping down conflict in the Middle East

Building foundations for disarmament

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- Environment needed for nuclear disarmament does not currently exist
- Could begin active work to build foundations
  - Work with other countries (including ban states?) to develop verification concepts, technologies, procedures
  - Work to address regional conflicts that drive demand (e.g., Middle East, South Asia, Korean peninsula…)
  - Work to develop concepts for stronger international security mechanisms
  - Work to explore institutional mechanisms that would be needed
- Continue reductions, ratify CTBT, begin shift to limiting stocks of warheads, fissile materials needed to make them

A fundamental need to rebuild the arguments for nuclear restraint

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- Advocates for more aggressive U.S. nuclear postures have successfully framed the issue as:
  - "less aggressive" (smaller numbers, less first-use threat, less focus on counterforce and high alerts, fewer new weapons") = "less deterrence"="more risk of nuclear war"
- Need to rebuild the argument for restraint:
  - "less aggressive"="more stability, predictability"="less risk of nuclear war"
- "Broad brush" description – nuances on both sides of discussion
- Advocates for restraint also need new arguments, approaches, on response to noncompliance
  - "Russia cheats" will be part of arms control debates for decades

Why should we care? Benefits of U.S.-Russian arms control

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- Benefits of the agreements themselves:
  - Reduced mutual perceptions of threat
  - Force structure stability
  - Predictability (important for planning)
  - Transparency
  - Reduced cost of maintaining forces
- Benefits of the arms control process:
  - Discussions allow greater mutual understanding of nuclear policies, plans, perceived dangers
  - Build relationships, habits of cooperation that spill over to other areas
  - Offers arena in which Russia is treated as an equal – helps assuage prestige, humiliation concerns

Crisis stability: most arms control agreements have had little effect

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- Arms control theory always focused on crisis stability – ensuring neither side felt it could get a first-strike advantage
- But militaries on both sides energetically pursued counterforce, counter-C3I capabilities
  - Creates "use them or lose them" pressures
  - Most arms control agreements had little effect on this dynamic
  - Exceptions: Defunct ABM Treaty near-ban on defenses, START II ban on MIRVed ICBMS (never happened)

Test of RS-24 MIRVed ICBM. Source: ITAR-TASS

U.S.-Russian nuclear dangers are increasing (II): crisis stability at risk

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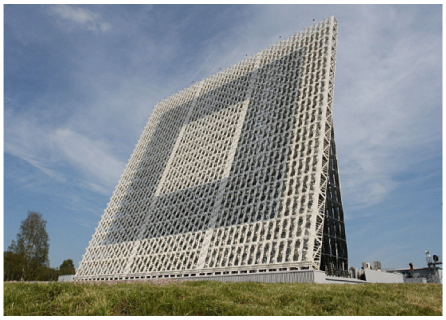
- Russian forces and command and control vulnerable; limited space-based early warning; potential for launch on false alarm
- U.S. ICBMs, SLBMs in port, C3 also vulnerable
- Both sides appear to be pursuing forces, doctrines of tactical use of nuclear weapons
  - Russian (disputed) "escalate to deescalate" doctrine
  - New NPR calls for low-yield SLBMs, SLCMs to counter



Voronezh early warning radar *Source: telemax.spb*

U.S.-Russian hostility is poisoning the atmosphere for progress

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- United States and Russia, each see the other as aggressive, hostile powers, threats to their national security
- In the U.S. view, Russia:
  - Violated longstanding norms by seizing Crimea (after Georgian war earlier), effectively invading eastern Ukraine
  - Interfered in U.S. elections, and is doing so again
  - Is protecting Assad from consequences of brutality, chemical use, thereby undermining chemical weapons regime – constant lies
  - Is murdering opponents (including with banned chemical weapons)
  - Is building new classes of nuclear weapons, planning nuclear use early in nuclear conflicts, rattling the nuclear saber in a way not seen since Khrushchev, violating arms control treaties
  - Democrats, most Republicans (except for Trump) united in anti-Russian hatred in a way not seen for decades

U.S.-Russian hostility is poisoning the atmosphere for progress (II)

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- In the Russian view, the United States and NATO:
  - Violated promises by extending NATO toward Russia's borders
  - Violated international law by bombing Serbia, invading Iraq, overthrowing Qaddafi without UN authorization
  - Organized the "color revolutions" and had one planned to overthrow Putin – routinely interferes in other countries' elections
  - Organized the ouster of the Ukrainian government and planned to draw Ukraine (and Georgia) into the EU and NATO
  - Threw out the ABM Treaty and is now building missile defenses to threaten Russia's deterrent
  - In essence, conducts more aggressive behavior than Russia – but more cynically, claiming to support a rules-based order
  - Remarkably widespread anti-American hostility

U.S.-Russian hostility is poisoning the atmosphere for progress (III)

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- Even when locked in a global Cold War, the United States and the Soviet Union cooperated on mutual interests:
  - Built the arms control structure
  - Built the global nonproliferation regime
  - In-depth military-to-military, scientist-to-scientist contacts
  - Cooperated on security in Europe – from Austrian State Treaty to OSCE
- Today, even this Cold War cooperation is largely blocked
  - Except for JCPOA, little nonproliferation cooperation
  - No arms control talks
  - Military-to-military, scientist-to-scientist contacts mostly cut off
  - No effective cooperation on security in Europe
  - Mostly looking for ways to undermine each other

Confronting Russia where needed, but cooperating where it serves U.S. interests

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- No doubt the United States needs to respond to Russian aggressive behavior – to deter Russia, assure allies
  - Elections, Ukraine, murder, nuclear threats, treaty violations…
- But Russia and the United States also have mutual interests
  - Most basic: survival – avoidance of nuclear war
  - Nonproliferation (though here, too, Russia has opposed U.S. approaches in recent years)
  - S&T, trade, some international issues
- President Reagan called the Soviet Union an "evil empire," funded anti-communist insurgents in many countries – and negotiated new arms control agreements with them
  - Russian hostility, nuclear force buildups make arms control *more* urgent and important, not less.

Understanding Russia's narrative

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- Putin's Russia perceives an array of U.S. threats, "misbehavior"
  - U.S. has >10x Russia's GDP, ~10x Russia's defense budget
  - Expansion of NATO brings hostile forces to Russia's borders
  - Putin believes U.S. behind the "color revolutions" – bringing Russia's neighbors into Western orbit – had one planned to overthrow Putin – now providing military help to hostile forces in Ukraine, Georgia
  - U.S. a "rogue superpower" – bombing of Serbia, 2003 invasion of Iraq, military action to topple Qaddafi all illegal
  - U.S. withdrawal from the ABM Treaty, refusal to limit missile defenses, increased counterforce capability, threaten Russian deterrent forces, require new Russian weapons
- Seeing the world through the adversary's eyes can help in reaching deals that serve both sides' interests

Limiting new types of nuclear weapons

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- Hypersonic weapons should be treated as countable reentry vehicles
  - High speed may pose a short-warning decapitation threat
- Intercontinental torpedos should be limited as strategic launchers
- Similarly, nuclear-powered cruise missiles should be limited as other cruise missiles are
- New START extension could include covering these systems, with specifics worked out in Bilateral Consultative Commission

Hypersonic weapon concept. *Source:* space.com

Coping with a multipolar, multi-technology nuclear world

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- U.S. nuclear forces also have to deter China, N. Korea…
- Chinese nuclear forces to deter U.S., Russia, India…
- Indian nuclear forces to deter Pakistan, China…
- Missile defenses, cyber, space, precision conventional all affect balances, risks
- Will future accords be multi-party? Or coordinated accords and unilateral initiatives? Or…?

Source: defensetalk.com