### Neg

## I negate, resolved: The appropriation of outer space by private entities is unjust.

### 1NC – FW

#### the standard is maximizing expected well-being!

#### prefer it:

#### life is a prerequisite to value – stop death because it ontologically destroys the subject and is irreversible

#### actor specificity – governments must use util because they don’t have intentions and are constantly dealing with tradeoffs – outweighs since different agents have different obligations – takes out calc indicts since they are empirically denied

#### it’s a lexical pre-requisite – threats to bodily security and life preclude the ability for moral actors to effectively act upon other moral theories since they are in a constant state of crisis that inhibit the ideal moral conditions which other theories presuppose

#### extinction categorically outweighs – future generations, cognitive bias, prioritize individual lives

GPP 17 (Global Priorities Project, Future of Humanity Institute at the University of Oxford, Ministry for Foreign Affairs of Finland, “Existential Risk: Diplomacy and Governance,” Global Priorities Project, 2017, <https://www.fhi.ox.ac.uk/wp-content/uploads/Existential-Risks-2017-01-23.pdf> , thanks Eyan]

1.2. THE ETHICS OF EXISTENTIAL RISK In his book Reasons and Persons, Oxford philosopher Derek Parfit advanced an influential argument about the importance of avoiding extinction: I believe that if we destroy mankind, as we now can, this outcome will be much worse than most people think. Compare three outcomes: (1) Peace. (2) A nuclear war that kills 99% of the world’s existing population. (3) A nuclear war that kills 100%. (2) would be worse than (1), and (3) would be worse than (2). Which is the greater of these two differences? Most people believe that the greater difference is between (1) and (2). I believe that the difference between (2) and (3) is very much greater. ... The Earth will remain habitable for at least another billion years. Civilization began only a few thousand years ago. If we do not destroy mankind, these few thousand years may be only a tiny fraction of the whole of civilized human history. The difference between (2) and (3) may thus be the difference between this tiny fraction and all of the rest of this history. If we compare this possible history to a day, what has occurred so far is only a fraction of a second.65 In this argument, it seems that Parfit is assuming that the survivors of a nuclear war that kills 99% of the population would eventually be able to recover civilisation without long-term effect. As we have seen, this may not be a safe assumption – but for the purposes of this thought experiment, the point stands. What makes existential catastrophes especially bad is that they would “destroy the future,” as another Oxford philosopher, Nick Bostrom, puts it.66 This future could potentially be extremely long and full of flourishing, and would therefore have extremely large value. In standard risk analysis, when working out how to respond to risk, we work out the expected value of risk reduction, by weighing the probability that an action will prevent an adverse event against the severity of the event. Because the value of preventing existential catastrophe is so vast, even a tiny probability of prevention has huge expected value.67 Of course, there is persisting reasonable disagreement about ethics and there are a number of ways one might resist this conclusion.68 Therefore, it would be unjustified to be overconfident in Parfit and Bostrom’s argument. In some areas, government policy does give significant weight to future generations. For example, in assessing the risks of nuclear waste storage, governments have considered timeframes of thousands, hundreds of thousands, and even a million years.69 Justifications for this policy usually appeal to principles of intergenerational equity according to which future generations ought to get as much protection as current generations.70 Similarly, widely accepted norms of sustainable development require development that meets the needs of the current generation without compromising the ability of future generations to meet their own needs.71 However, when it comes to existential risk, it would seem that we fail to live up to principles of intergenerational equity. Existential catastrophe would not only give future generations less than the current generations; it would give them nothing. Indeed, reducing existential risk plausibly has a quite low cost for us in comparison with the huge expected value it has for future generations. In spite of this, relatively little is done to reduce existential risk. Unless we give up on norms of intergenerational equity, they give us a strong case for significantly increasing our efforts to reduce existential risks. 1.3. WHY EXISTENTIAL RISKS MAY BE SYSTEMATICALLY UNDERINVESTED IN, AND THE ROLE OF THE INTERNATIONAL COMMUNITY In spite of the importance of existential risk reduction, it probably receives less attention than is warranted. As a result, concerted international cooperation is required if we are to receive adequate protection from existential risks. 1.3.1. Why existential risks are likely to be underinvested in There are several reasons why existential risk reduction is likely to be underinvested in. Firstly, it is a global public good. Economic theory predicts that such goods tend to be underprovided. The benefits of existential risk reduction are widely and indivisibly dispersed around the globe from the countries responsible for taking action. Consequently, a country which reduces existential risk gains only a small portion of the benefits but bears the full brunt of the costs. Countries thus have strong incentives to free ride, receiving the benefits of risk reduction without contributing. As a result, too few do what is in the common interest. Secondly, as already suggested above, existential risk reduction is an intergenerational public good: most of the benefits are enjoyed by future generations who have no say in the political process. For these goods, the problem is temporal free riding: the current generation enjoys the benefits of inaction while future generations bear the costs. Thirdly, many existential risks, such as machine superintelligence, engineered pandemics, and solar geoengineering, pose an unprecedented and uncertain future threat. Consequently, it is hard to develop a satisfactory governance regime for them: there are few existing governance instruments which can be applied to these risks, and it is unclear what shape new instruments should take. In this way, our position with regard to these emerging risks is comparable to the one we faced when nuclear weapons first became available. Cognitive biases also lead people to underestimate existential risks. Since there have not been any catastrophes of this magnitude, these risks are not salient to politicians and the public.72 This is an example of the misapplication of the availability heuristic, a mental shortcut which assumes that something is important only if it can be readily recalled. Another cognitive bias affecting perceptions of existential risk is scope neglect. In a seminal 1992 study, three groups were asked how much they would be willing to pay to save 2,000, 20,000 or 200,000 birds from drowning in uncovered oil ponds. The groups answered $80, $78, and $88, respectively.73 In this case, the size of the benefits had little effect on the scale of the preferred response. People become numbed to the effect of saving lives when the numbers get too large. 74 Scope neglect is a particularly acute problem for existential risk because the numbers at stake are so large. Due to scope neglect, decision-makers are prone to treat existential risks in a similar way to problems which are less severe by many orders of magnitude. A wide range of other cognitive biases are likely to affect the evaluation of existential risks.75

## hypersonic – DA

### 1NC – hypersonic – DA

#### hypersonic missiles are being tested and deployed now

Al Jazeera, 21 (“China Tested Hypersonic Weapons Twice, ‘Stunned’ US: Report”, Military News, Al Jazeera, October 21, 2021, <https://www.aljazeera.com/news/2021/10/21/china-hypersonic-weapons-tests>)//AO

China conducted not one, but two tests of new hypersonic weapons in July and August, the Financial Times (FT) newspaper has reported, raising more concerns in the United States about the growing military capabilities of its geopolitical rival. The London-based Financial Times reported on Thursday that Beijing launched a rocket that employed a “fractional orbital bombardment” system to propel a nuclear-capable “hypersonic glide vehicle” around the Earth for the first time on July 27, according to four people familiar with US intelligence assessments. More than two weeks later on August 13, China conducted a second hypersonic test, the report said citing two people familiar with the matter. The newspaper initially reported, in a [story](https://www.aljazeera.com/news/2021/10/17/china-tested-new-space-capability-with-hypersonic-missile-report) published over the weekend that the first test was done in August, instead of the end of July. The latest report said that the missile test “stunned” American military and intelligence officials about the Chinese military advance. It further said that US scientists “were struggling to understand” the hypersonic weapon’s capability, “which the US does not currently possess”. In response to the FT’s initial report, China’s Foreign Ministry said that it had only launched a space plane and the test took place on July 16. “It’s understood that this was a routine test of a space vehicle to verify technology of spacecraft’s reusability,” Chinese Foreign Ministry spokesman Zhao Lijian said on Monday. Zhao was quoted by state-owned broadcaster CGTN as saying that the test was “essential” for reducing the cost of spacecraft use, and providing a convenient and inexpensive way for humans to use space for “peaceful purposes”. US ‘very concerned’ In a statement earlier this week, US State Department spokesperson Ned Price said that the administration of President Joe Biden was very concerned about the latest development in China’s nuclear arms capability and “novel delivery systems”. Reporters travelling with Biden on Wednesday also asked him if he was concerned by the report, and he replied, “Yes”. According to estimates and analysis, hypersonic weapons travel in the upper atmosphere at speeds of up to 6,200 kilometres per hour (3,853 miles per hour) – more than five times the speed of sound, which travels at about 1,235 km/h (767 mph) and evade even the most advanced radar systems.

#### were behind in hypersonic technology and need to catch up – strong space commercialization is key

Hampson, 17 (Joshua Hampson, he is a Security Studies Fellow at the Niskanen Center, “The Future of Space Commercialization”, Niskanen Center, January 25, 2017, <https://republicans-science.house.gov/sites/republicans.science.house.gov/files/documents/TheFutureofSpaceCommercializationFinal.pdf)//AO>

\*\*low-orbit satellites detect and track missiles

\*\*space development agency -> missile defense

National Security

Perhaps the most important legacy application of outer space for Americans is national security. The United States relies heavily on satellites for capabilities that make its global power projections and deterrence structures work. Satellites provide valuable real-time intelligence information, connect platforms and bases around the world, and provide the basis for highly accurate navigational systems on land, at sea, and in the air. It is not just that this space infrastructure is useful for American warfighters, but that it is essential. Elbridge Colby, a senior fellow at the Center for a New American Security (CNAS), wrote in his examination of recent changes to the space environment that space capabilities are “the stuff of which American global military primacy is made.” Military capabilities that the United States has 24 come to rely on, from remotely piloted drones to precision weaponry, all rely on satellites. To 25 manage this, The United States Space Command has 38,000 airmen based around the world working to secure access to national security space assets.26 It is not just the military that relies on satellites—the intelligence community does too. While the unclassified military space budget is around $10 billion on outer space a year, total national security 27 space spending may be over $25 billion annually. This reliance on outer space is not going to end any 28 time soon. At an event at the Center for Strategic and International Studies (CSIS) on October 24, 2016, Deputy Assistant Secretary of Defense for Space Policy Doug Loverro, spoke to the importance of leveraging space capabilities. Mr. Loverro highlighted that space is fundamental to everything the 29 United States does in conventional war, as well as nuclear deterrence, and disabused the notion that the country should pursue ways of fighting and projecting power without relying on outer space. Such an argument, he contends, is “not an attractive notion.” Going to war without space capabilities would put American soldiers at risk. Even so, managing the space environment is becoming more complex for the defense community. There is a growing perception that heavy reliance on satellites creates a soft spot in American defenses. America’s rivals have highlighted U.S. space capabilities as a possible vulnerability to 30 exploit. For some capabilities—particularly situational awareness, nuclear command and control, 31 and coordination among America’s widespread military and intelligence assets—satellites have become an almost “single point of failure.” This means that any one accident or disruption could 32 degrade or shut down a key tool. Concerns over this reliance have led to warnings of a “space Pearl Harbor” as defense analysts see American outer space assets as potentially ripe targets for 33 exploitation by international rivals.34 The United States is moving to mitigate some of these concerns by making more resilient and adding redundancy to the system. That way, if one satellite is damaged or degraded, the system as a whole still functions. The success or failure of these efforts may ultimately depend on commercial outer space. Building up U.S. space capabilities solely through government initiative could have both fiscal and operational problems—such a strategy would likely be expensive and spread unforeseen vulnerabilities across the entire American satellite fleet. Working with commercial companies for capabilities can reduce costs while providing strength through variation. Commercial satellites, for example, currently provide the military with 80 percent 35 of its satellite communications needs. Commercial providers also provide the vital launch services 36 that get the satellites into orbit. Today, these providers are the United Launch Alliance (ULA) and 37 Space Exploration Technologies (SpaceX). Without these companies, the United States government 38 would have to rebuild national launch capabilities. In the future, other commercial launch companies, such as Orbital ATK and Blue Origin, could also provide launch services for the military and 39 40 intelligence community. In short, a more robust commercial space market is key to ensuring the resilience of American national security by assuring access to space.

#### hypersonic missiles risk conflict – break current MAD by preventing retaliatory strikes

John **Kester 17**, 10-2-2017, "Report: Hypersonic Missiles Could Trigger a War," Foreign Policy, https://foreignpolicy.com/2017/10/02/report-hypersonic-missiles-could-trigger-a-war/

Imagine if a foreign country launched a nuclear attack on the continental United States and the Pentagon had only six minutes to respond. That’s the potential of a new generation of weapons on the horizon, according to a recent Rand Corp. report. Rand is urging the United States, China, and Russia to form an agreement on how to handle hypersonic missiles, which travel at more than five thousand kilometers per hour (about 3,100 mph). Hypersonic weapons are more than five times faster than a regular cruise missile and would not be detected by U.S. air defense systems as early as ballistic missiles. The United States, China, and Russia are all known to be close to achieving deployable hypersonic systems and are ahead of other countries, according to Rand. “Hypersonic missile proliferation would increase the chances of strategic war,” said Richard Speier, lead author of Rand’s report, in a press release. The speed forces quick military counter-decisions with potentially disastrous effect. “It would give nations an incentive to become trigger-happy,” he said. The United States likely has less than a decade to counter the proliferation of hypersonic missiles, though they are not yet operational, according to the report. Current missile defense systems would not be effective at defending against hypersonic missiles, and Rand urges changes to the existing missile technology control regime to anticipate and address them. Crunched for time with dire stakes, countries might adopt a so-called launch-on-warning doctrine, or they might just strike first. Without time to consult a traditional chain of command, nations might feel compelled to give the military command and control, increasing the likelihood of accidental war. Countries might also scatter their weapons in order to better respond, which would give terrorists greater opportunity to steal the weapons for themselves, the report said. “None of these options is very good,” Speier said. The broad term “hypersonic missiles” actually refers to two distinct weapons: hypersonic cruise missiles and hypersonic glide vehicles. The former is propelled throughout its flight by a specialized “scramjet” engine, while its glider counterparts are propelled at the start by a rocket but glide dexterously using aerodynamic forces in flight. That maneuverability means gliders can conceal their eventual target until seconds before they hit. Yet the very complexity of the technologies needed to develop a usable hypersonic missile could on its own limit the spread of such weapons, according to Werner Dahm, a former chief scientist of the U.S. Air Force and the founding director of the Security and Defense Systems Initiative at Arizona State University. “Hypersonic missiles are not transformative in the way that nuclear weapons were in the late 1940s,” he wrote to Foreign Policy. “Instead, the warfighting capabilities they can provide are best viewed as part of the natural evolution of missile technology. As such, the existing [Missile Technology Control Regime] or additions to it may be sufficient to support efforts at limiting access to those technologies.” The United States, in the meantime, is making progress on its own hypersonic technology, and not just in missiles. A suspected “demonstrator vehicle” related to Lockheed Martin Corp.’s hypersonic activities was sighted in July flying into the U.S. Air Force’s Plant 42 in Palmdale, Calif., according to an Aerospace Daily & Defense Report story on Wednesday. Lockheed did not comment on the sighting in that report, but Orlando Carvalho, its executive vice president of aeronautics, speaking at an exhibition in Texas, gave a clear picture of the future. “The United States is on the verge of a hypersonics revolution,” he said.

#### that risks extinction – studies prove even limited nuclear war is a global catastrophic risk

Loria 17 Kevin Loria (Tech and science journalist). “Even a 'limited' nuclear war could trigger cruel nuclear winters and global famine.” Business Insider. 10 August 2017. JDN. http://www.businessinsider.com/nuclear-explosions-earth-atmosphere-temperature-2017-8

**After "fire and fury" comes** cold, **darkness, and hunger.** **Incendiary language by** President Donald **Trump**, which came after news of North Korea's tests of intercontinental ballistic missiles and the revelation that Pyongyang may be able to fit a nuclear warhead on an ICBM, **has stoked global fears of nuclear war.** In reality, North Korea's ownership of nuclear weapons and much-debated ability to launch them was a long time coming, so this state of affairs isn't a surprise— though experts do fear that extreme language could provoke a miscalculated conflict**. A nuclear event that could be catastrophic for the whole world wouldn't require the unlikely scenario of all the world's nuclear powers unleashing their firepower at once, according to a 2014 study published in an American Geophysical Union journal.** In fact**, that study found that a "limited, regional nuclear war" using 100 "small nuclear weapons" — such as the bomb dropped on Hiroshima — could cause a** **decades-long nuclear winter.** In the researchers' scenario, **the aftereffects of a nuclear war between India and Pakistan alone would eliminate between 20% and 50% of the ozone layer that protects us from the sun's radiation over populated areas. At the same time, surface temperatures would become colder than they've been for at least 1,000 years. Those combined effects "could trigger a global nuclear famine,"** according to the paper. The doomsday scenario **For this study, which is an updated version of a model these researchers calculated previously, scientists computed what would happen if India and Pakistan each launched 50 nuclear weapons at cities in the other nation.** (They chose two nuclear powers with a border and a history of conflict.) In that scenario, **the researchers estimated the effects of using 100 15-kiloton bombs, which are considered small by modern standards**. To be clear, even that sounds like more weapons and a significantly larger conflict than most people might imagine even in a worst-case scenario right now. **It's worth noting that the bombs in the researchers' scenario** — as powerful as the Little Boy dropped on Hiroshima, enough to devastate a city **— are far less powerful than many weapons that exist today**. The strength of North Korea's nuclear arsenal is unknown, though the latest weapon it tested was estimated to be in the range of 20 to 30 kilotons**. The US and Russia each possess weapons 1,000 times as powerful as these.** Still, the number of weapons used plays a bigger role than strength in the calculations for this study. **The researchers wrote that their scenario could cause nuclear winter. The bombs would ignite firestorms in the cities they hit, tearing through every available source of fuel** — buildings, vehicles, fuel depots, vegetation, and more. These firestorms are what would make the use of these weapons in cities different from the nuclear tests of far more powerful weapons that have already occurred.

## leadership – DA

### 1NC – leadership – DA

#### strong space commercialization catalyzes US tech innovation now

Hampson, 17 (Joshua Hampson, he is a Security Studies Fellow at the Niskanen Center, “The Future of Space Commercialization”, Niskanen Center, January 25, 2017, <https://republicans-science.house.gov/sites/republicans.science.house.gov/files/documents/TheFutureofSpaceCommercializationFinal.pdf)//AO>

The size of the space economy is far larger than many may think. **In 2015 alone, the global market amounted to $323 billion. Commercial infrastructure and systems accounted for 76 percent of that 9 total, with satellite television the largest subsection at $95 billion. The global space launch market’s 10 11 share of that total came in at $6 billion dollars.** It can be hard to disaggregate how space benefits 12 particular national economies, but in 2009 (the last available report), the **Federal Aviation Administration** (FAA) **estimated** that commercial space transportation and enabled industries generated **$208.3 billion in economic activity in the United States alone**. Space is not just about 13 satellite television and global transportation; while not commercial, GPS satellites also underpin personal navigation, such as smartphone GPS use, and timing data used for Internet coordination.14 Without that data, there could be problems for a range of Internet and cloud-based services.15 **There is also room for growth**. The FAA has noted that while the commercial launch sector has not grown dramatically in the last decade, there are indications that there is latent demand. This 16 **demand** **may catalyze an increase in launches and growth of the wider space economy in the next decade**. The Satellite Industry Association’s 2015 report highlighted that their section of the space economy outgrew both the American and global economies. The FAA anticipates that growth to 17 continue, with expectations that small payload launch will be a particular industry driver.18 In the future, **emerging space industries may contribute even more the American economy**. Space tourism and resource recovery—e.g., mining on planets, moons , and asteroids—in particular may become large parts of that industry. Of course, their viability rests on a range of factors, including costs, future regulation, international problems, and assumptions about technological development. However, there is increasing optimism in these areas of economic production. But the space economy is not just about what happens in orbit, or how that alters life on the ground. **The growth of this economy can also contribute to new innovations across all walks of life**. Technological Innovation Innovation is generally hard to predict; some new technologies seem to come out of nowhere and others only take off when paired with a new application. It is difficult to predict the future, but it is reasonable to expect that a growing space economy **would open opportunities for technological and organizational innovation**. In terms of technology, **the difficult environment of outer space helps incentivize progress along the margins**. Because each object launched into orbit costs a significant amount of money—at the moment between $27,000 and $43,000 per pound, though that will likely drop in the future —each 19 reduction in payload size saves money or means more can be launched. At the same time, the ability to fit more capability into a smaller satellite opens outer space to actors that previously were priced out of the market. This is one of the reasons why small, affordable satellites are increasingly pursued by companies or organizations that cannot afford to launch larger traditional satellites. These small 20 satellites also **provide non-traditional launchers, such as engineering students or prototypers, the opportunity to learn about satellite production and test new technologies** before working on a full-sized satellite. That expansion of developers, experimenters, and testers cannot but help increase innovation opportunities. Technological developments from outer space have been applied to terrestrial life since the earliest days of space exploration. The National Aeronautics and Space Administration (NASA) maintains a website that lists technologies that have spun off from such research projects. Lightweight 21 nanotubes, useful in protecting astronauts during space exploration, are now being tested for applications in emergency response gear and electrical insulation. The need for certainty about the resiliency of materials used in space led to the development of an analytics tool useful across a range of industries. Temper foam, the material used in memory-foam pillows, was developed for NASA for seat covers. As more companies pursue their own space goals, more innovations will likely come from the commercial sector. **Outer space is not just a catalyst for technological development. Satellite constellations and their unique line-of-sight vantage point can provide new perspectives to old industries**. Deploying satellites into low-Earth orbit, as Facebook wants to do, can connect large, previously-unreached swathes of 22 humanity to the Internet. Remote sensing technology could change how whole industries operate, such as crop monitoring, herd management, crisis response, and land evaluation, among others. 23 While satellites cannot provide all essential information for some of these industries, they can fill in some useful gaps and work as part of a wider system of tools. **Space infrastructure, in helping to change how people connect and perceive Earth, could help spark innovations on the ground as well. These innovations, changes to global networks, and new opportunities could lead to wider economic growth.**

#### short innovation cycles mean each contract is crucial

Klein, 19 (Dr. John J. Klein, he is a senior fellow and strategist at Falcon Research Inc. and adjunct professor at the George Washington University Space Policy Institute, “Rethinking Requirements and Risk in the New Space Age”, Center for a New American Security, January 15, 2019, https://www.cnas.org/publications/reports/rethinking-requirements-and-risk-in-the-new-space-age)//AO

Leveraging the 18-month Innovation Cycle

Unlike the ten-plus-year development cycle for many major defense acquisition programs (MDAPs), the **commercial space sector often follows an 18-month technology and innovation cycle**. Indeed, this cycle is common to numerous technology-focused companies because they use many high technology and computer-based components. When considering technology cycles, Moore’s Law frequently comes to mind. In a 1965 paper, Gordon Moore postulated that technologies improve exponentially with time. From his research and the work of others, **analysts commonly view the innovation cycle as meaning computing power doubles every 18 months.**[9](https://www.cnas.org/publications/reports/rethinking-requirements-and-risk-in-the-new-space-age#fn9) Yet some researchers suggest that Theodore Wright’s Law, which stems from his 1936 paper, is more **useful in forecasting technological progress**.[10](https://www.cnas.org/publications/reports/rethinking-requirements-and-risk-in-the-new-space-age#fn10) Based on the aviation industry in the early 1900s, Wright’s Law theorizes that the cost of a unit decreases as cumulative production increases, which economists and businesses today refer to as economies of scale. When considering both Wright’s and Moore’s Laws in forecasting technological progress, it is understood that capability increases and cost decreases as a function of production and time.[11](https://www.cnas.org/publications/reports/rethinking-requirements-and-risk-in-the-new-space-age#fn11) Therefore, while DoD’s development cycle can take more than 10 years, the commercial sector’s cycle is routinely only 18 months. Unfortunately, **these variances in models between the MDAP’s lengthy development cycle and the commercial space sector’s 18-month innovation cycle are a result of stark differences in thinking about requirements and risk.** Requirements and risk for MDAPs commonly focus on ensuring critical mission capabilities at a given cost. In contrast, **the commercial space sector tends to focus more on providing innovation quickly using economies of scale**. The commercial sector understands that time dynamically shapes decisions related to requirements and risk **because of the relatively short innovation cycle**. In a highly competitive space sector with tight profit margins, **those unable to innovate quickly will likely be out of business soon.** Alternatively, space systems with mission assurance requirements – where failures are detrimental to national security and military operations – often drive DoD’s timelines. Program managers of critical national security space systems commonly require additional time to test and verify that satellites can perform missions with a very low probability of failure.[[1]](#footnote-1)

#### US tech leadership is key to prevent a laundry list of scenarios for great power war, diplomacy alone isn’t enough

Economist, 18 (1/25/18, The Leaders, “The Next War; The growing danger of great-power conflict; How shifts in technology and geopolitics are renewing the threat,” <https://www.economist.com/leaders/2018/01/25/the-growing-danger-of-great-power-conflict>, accessed on 6/11/18, JMP)

IN THE past 25 years war has claimed too many lives. Yet even as civil and religious strife have raged in Syria, central Africa, Afghanistan and Iraq, a devastating clash between the world’s great powers has remained almost unimaginable. No longer. Last week the Pentagon issued a new national defence strategy that put China and Russia above jihadism as the main threat to America. This week the chief of Britain’s general staff warned of a Russian attack. Even now America and North Korea are perilously close to a conflict that risks dragging in China or escalating into nuclear catastrophe. As our special report this week on the future of war argues, powerful, long-term shifts in geopolitics and the proliferation of new technologies are eroding the extraordinary military dominance that America and its allies have enjoyed. Conflict on a scale and intensity not seen since the second world war is once again plausible. The world is not prepared. The pity of war The pressing danger is of war on the Korean peninsula, perhaps this year. Donald Trump has vowed to prevent Kim Jong Un, North Korea’s leader, from being able to strike America with nuclear-armed ballistic missiles, a capability that recent tests suggest he may have within months, if not already. Among many contingency plans, the Pentagon is considering a disabling pre-emptive strike against the North’s nuclear sites. Despite low confidence in the success of such a strike, it must be prepared to carry out the president’s order should he give it. Even a limited attack could trigger all-out war. Analysts reckon that North Korean artillery can bombard Seoul, the South Korean capital, with 10,000 rounds a minute. Drones, midget submarines and tunnelling commandos could deploy biological, chemical and even nuclear weapons. Tens of thousands of people would perish; many more if nukes were used. This newspaper has argued that the prospect of such horror means that, if diplomacy fails, North Korea should be contained and deterred instead. Although we stand by our argument, war is a real possibility (see article). Mr Trump and his advisers may conclude that a nuclear North would be so reckless, and so likely to cause nuclear proliferation, that it is better to risk war on the Korean peninsula today than a nuclear strike on an American city tomorrow. Even if China stays out of a second Korean war, both it and Russia are entering into a renewal of great-power competition with the West. Their ambitions will be even harder to deal with than North Korea’s. Three decades of unprecedented economic growth have provided China with the wealth to transform its armed forces, and given its leaders the sense that their moment has come. Russia, paradoxically, needs to assert itself now because it is in long-term decline. Its leaders have spent heavily to restore Russia’s hard power, and they are willing to take risks to prove they deserve respect and a seat at the table. Both countries have benefited from the international order that America did most to establish and guarantee. But they see its pillars—universal human rights, democracy and the rule of law—as an imposition that excuses foreign meddling and undermines their own legitimacy. They are now revisionist states that want to challenge the status quo and look at their regions as spheres of influence to be dominated. For China, that means East Asia; for Russia, eastern Europe and Central Asia. Neither China nor Russia wants a direct military confrontation with America that they would surely lose. But they are using their growing hard power in other ways, in particular by exploiting a “grey zone” where aggression and coercion work just below the level that would risk military confrontation with the West. In Ukraine Russia has blended force, misinformation, infiltration, cyberwar and economic blackmail in ways that democratic societies cannot copy and find hard to rebuff. China is more cautious, but it has claimed, occupied and garrisoned reefs and shoals in disputed waters. China and Russia have harnessed military technologies invented by America, such as long-range precision-strike and electromagnetic-spectrum warfare, to raise the cost of intervention against them dramatically. Both have used asymmetric-warfare strategies to create “anti-access/area denial” networks. China aims to push American naval forces far out into the Pacific where they can no longer safely project power into the East and South China Seas. Russia wants the world to know that, from the Arctic to the Black Sea, it can call on greater firepower than its foes—and that it will not hesitate to do so. If America allows China and Russia to establish regional hegemonies, either consciously or because its politics are too dysfunctional to muster a response, it will have given them a green light to pursue their interests by brute force. When that was last tried, the result was the first world war. Nuclear weapons, largely a source of stability since 1945, may add to the danger. Their command-and-control systems are becoming vulnerable to hacking by new cyber-weapons or “blinding” of the satellites they depend on. A country under such an attack could find itself under pressure to choose between losing control of its nuclear weapons or using them. Vain citadels What should America do? Almost 20 years of strategic drift has played into the hands of Russia and China. George W. Bush’s unsuccessful wars were a distraction and sapped support at home for America’s global role. Barack Obama pursued a foreign policy of retrenchment, and was openly sceptical about the value of hard power. Today, Mr Trump says he wants to make America great again, but is going about it in exactly the wrong way. He shuns multilateral organisations, treats alliances as unwanted baggage and openly admires the authoritarian leaders of America’s adversaries. It is as if Mr Trump wants America to give up defending the system it created and to join Russia and China as just another truculent revisionist power instead. America needs to accept that it is a prime beneficiary of the international system and that it is the only power with the ability and the resources to protect it from sustained attack. The soft power of patient and consistent diplomacy is vital, but must be backed by the hard power that China and Russia respect. America retains plenty of that hard power, but it is fast losing the edge in military technology that inspired confidence in its allies and fear in its foes. To match its diplomacy, America needs to invest in new systems based on robotics, artificial intelligence, big data and directed-energy weapons. Belatedly, Mr Obama realised that America required a concerted effort to regain its technological lead, yet there is no guarantee that it will be the first to innovate. Mr Trump and his successors need to redouble the effort. The best guarantor of world peace is a strong America. Fortunately, it still enjoys advantages. It has rich and capable allies, still by far the world’s most powerful armed forces, unrivalled war-fighting experience, the best systems engineers and the world’s leading tech firms. Yet those advantages could all too easily be squandered. Without America’s commitment to the international order and the hard power to defend it against determined and able challengers, the dangers will grow. If they do, the future of war could be closer than you think.

1. [↑](#footnote-ref-1)