# R2 – HW RR – 1AC

### 1AC - FWK

#### The standard is maximizing expected wellbeing.

#### Prefer:

#### 1 - Pleasure and pain are intrinsic value and disvalue – everything else regresses – robust neuroscience.

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**Pleasure** is not only one of the three primary reward functions but it also **defines reward.** As homeostasis explains the functions of only a limited number of rewards, the principal reason why particular stimuli, objects, events, situations, and activities are rewarding may be due to pleasure. This applies first of all to sex and to the primary homeostatic rewards of food and liquid and extends to money, taste, beauty, social encounters and nonmaterial, internally set, and intrinsic rewards. Pleasure, as the primary effect of rewards, drives the prime reward functions of learning, approach behavior, and decision making and provides the **basis for hedonic theories** of reward function. We are attracted by most rewards and exert intense efforts to obtain them, just because they are enjoyable [10].

Pleasure is a passive reaction that derives from the experience or prediction of reward and may lead to a long-lasting state of happiness. The word happiness is difficult to define. In fact, just obtaining physical pleasure may not be enough. One key to happiness involves a network of good friends. However, it is not obvious how the higher forms of satisfaction and pleasure are related to an ice cream cone, or to your team winning a sporting event. Recent multidisciplinary research, using both humans and detailed invasive brain analysis of animals has discovered some critical ways that the brain processes pleasure [14].

Pleasure as a hallmark of reward is sufficient for defining a reward, but it may not be necessary. A reward may generate positive learning and approach behavior simply because it contains substances that are essential for body function. When we are hungry, we may eat bad and unpleasant meals. A monkey who receives hundreds of small drops of water every morning in the laboratory is unlikely to feel a rush of pleasure every time it gets the 0.1 ml. Nevertheless, with these precautions in mind, we may define any stimulus, object, event, activity, or situation that has the potential to produce pleasure as a reward. In the context of reward deficiency or for disorders of addiction, homeostasis pursues pharmacological treatments: drugs to treat drug addiction, obesity, and other compulsive behaviors. The theory of allostasis suggests broader approaches - such as re-expanding the range of possible pleasures and providing opportunities to expend effort in their pursuit. [15]. It is noteworthy, the first animal studies eliciting approach behavior by electrical brain stimulation interpreted their findings as a discovery of the brain’s pleasure centers [16] which were later partly associated with midbrain dopamine neurons [17–19] despite the notorious difficulties of identifying emotions in animals.

Evolutionary theories of pleasure: The love connection BO:D

Charles Darwin and other biological scientists that have examined the biological evolution and its basic principles found various mechanisms that steer behavior and biological development. Besides their theory on natural selection, it was particularly the sexual selection process that gained significance in the latter context over the last century, especially when it comes to the question of what makes us “what we are,” i.e., human. However, the capacity to sexually select and evolve is not at all a human accomplishment alone or a sign of our uniqueness; yet, we humans, as it seems, are ingenious in fooling ourselves and others–when we are in love or desperately search for it.

It is well established that modern biological theory conjectures that **organisms are** the **result of evolutionary competition.** In fact, Richard Dawkins stresses gene survival and propagation as the basic mechanism of life [20]. Only genes that lead to the fittest phenotype will make it. It is noteworthy that the phenotype is selected based on behavior that maximizes gene propagation. To do so, the phenotype must survive and generate offspring, and be better at it than its competitors. Thus, the ultimate, distal function of rewards is to increase evolutionary fitness by ensuring the survival of the organism and reproduction. It is agreed that learning, approach, economic decisions, and positive emotions are the proximal functions through which phenotypes obtain other necessary nutrients for survival, mating, and care for offspring.

Behavioral reward functions have evolved to help individuals to survive and propagate their genes. Apparently, people need to live well and long enough to reproduce. Most would agree that homo-sapiens do so by ingesting the substances that make their bodies function properly. For this reason, foods and drinks are rewards. Additional rewards, including those used for economic exchanges, ensure sufficient palatable food and drink supply. Mating and gene propagation is supported by powerful sexual attraction. Additional properties, like body form, augment the chance to mate and nourish and defend offspring and are therefore also rewards. Care for offspring until they can reproduce themselves helps gene propagation and is rewarding; otherwise, many believe mating is useless. According to David E Comings, as any small edge will ultimately result in evolutionary advantage [21], additional reward mechanisms like novelty seeking and exploration widen the spectrum of available rewards and thus enhance the chance for survival, reproduction, and ultimate gene propagation. These functions may help us to obtain the benefits of distant rewards that are determined by our own interests and not immediately available in the environment. Thus the distal reward function in gene propagation and evolutionary fitness defines the proximal reward functions that we see in everyday behavior. That is why foods, drinks, mates, and offspring are rewarding.

There have been theories linking pleasure as a required component of health benefits salutogenesis, (salugenesis). In essence, under these terms, pleasure is described as a state or feeling of happiness and satisfaction resulting from an experience that one enjoys. Regarding pleasure, it is a double-edged sword, on the one hand, it promotes positive feelings (like mindfulness) and even better cognition, possibly through the release of dopamine [22]. But on the other hand, pleasure simultaneously encourages addiction and other negative behaviors, i.e., motivational toxicity. It is a complex neurobiological phenomenon, relying on reward circuitry or limbic activity. It is important to realize that through the “Brain Reward Cascade” (BRC) endorphin and endogenous morphinergic mechanisms may play a role [23]. While natural rewards are essential for survival and appetitive motivation leading to beneficial biological behaviors like eating, sex, and reproduction, crucial social interactions seem to further facilitate the positive effects exerted by pleasurable experiences. Indeed, experimentation with addictive drugs is capable of directly acting on reward pathways and causing deterioration of these systems promoting hypodopaminergia [24]. Most would agree that pleasurable activities can stimulate personal growth and may help to induce healthy behavioral changes, including stress management [25]. The work of Esch and Stefano [26] concerning the link between compassion and love implicate the brain reward system, and pleasure induction suggests that social contact in general, i.e., love, attachment, and compassion, can be highly effective in stress reduction, survival, and overall health.

Understanding the role of neurotransmission and pleasurable states both positive and negative have been adequately studied over many decades [26–37], but comparative anatomical and neurobiological function between animals and homo sapiens appear to be required and seem to be in an infancy stage.

Finding happiness is different between apes and humans

As stated earlier in this expert opinion one key to happiness involves a network of good friends [38]. However, it is not entirely clear exactly how the higher forms of satisfaction and pleasure are related to a sugar rush, winning a sports event or even sky diving, all of which augment dopamine release at the reward brain site. Recent multidisciplinary research, using both humans and detailed invasive brain analysis of animals has discovered some critical ways that the brain processes pleasure.

Remarkably, there are pathways for ordinary liking and pleasure, which are limited in scope as described above in this commentary. However, there are **many brain regions**, often termed hot and cold spots, that significantly **modulate** (increase or decrease) our **pleasure or** even produce **the opposite** of pleasure— that is disgust and fear [39]. One specific region of the nucleus accumbens is organized like a computer keyboard, with particular stimulus triggers in rows— producing an increase and decrease of pleasure and disgust. Moreover, the cortex has unique roles in the cognitive evaluation of our feelings of pleasure [40]. Importantly, the interplay of these multiple triggers and the higher brain centers in the prefrontal cortex are very intricate and are just being uncovered.

Desire and reward centers

It is surprising that many different sources of pleasure activate the same circuits between the mesocorticolimbic regions (Figure 1). Reward and desire are two aspects pleasure induction and have a very widespread, large circuit. Some part of this circuit distinguishes between desire and dread. The so-called pleasure circuitry called “REWARD” involves a well-known dopamine pathway in the mesolimbic system that can influence both pleasure and motivation.

In simplest terms, the well-established mesolimbic system is a dopamine circuit for reward. It starts in the ventral tegmental area (VTA) of the midbrain and travels to the nucleus accumbens (Figure 2). It is the cornerstone target to all addictions. The VTA is encompassed with neurons using glutamate, GABA, and dopamine. The nucleus accumbens (NAc) is located within the ventral striatum and is divided into two sub-regions—the motor and limbic regions associated with its core and shell, respectively. The NAc has spiny neurons that receive dopamine from the VTA and glutamate (a dopamine driver) from the hippocampus, amygdala and medial prefrontal cortex. Subsequently, the NAc projects GABA signals to an area termed the ventral pallidum (VP). The region is a relay station in the limbic loop of the basal ganglia, critical for motivation, behavior, emotions and the “Feel Good” response. This defined system of the brain is involved in all addictions –substance, and non –substance related. In 1995, our laboratory coined the term “Reward Deficiency Syndrome” (RDS) to describe genetic and epigenetic induced hypodopaminergia in the “Brain Reward Cascade” that contribute to addiction and compulsive behaviors [3,6,41].

Furthermore, ordinary “liking” of something, or pure pleasure, is represented by small regions mainly in the limbic system (old reptilian part of the brain). These may be part of larger neural circuits. In Latin, hedus is the term for “sweet”; and in Greek, hodone is the term for “pleasure.” Thus, the word Hedonic is now referring to various subcomponents of pleasure: some associated with purely sensory and others with more complex emotions involving morals, aesthetics, and social interactions. The capacity to have pleasure is part of being healthy and may even extend life, especially if linked to optimism as a dopaminergic response [42].

Psychiatric illness often includes symptoms of an abnormal inability to experience pleasure, referred to as anhedonia. A negative feeling state is called dysphoria, which can consist of many emotions such as pain, depression, anxiety, fear, and disgust. Previously many scientists used animal research to uncover the complex mechanisms of pleasure, liking, motivation and even emotions like panic and fear, as discussed above [43]. However, as a significant amount of related research about the specific brain regions of pleasure/reward circuitry has been derived from invasive studies of animals, these cannot be directly compared with subjective states experienced by humans.

In an attempt to resolve the controversy regarding the causal contributions of mesolimbic dopamine systems to reward, we have previously evaluated the three-main competing explanatory categories: “liking,” “learning,” and “wanting” [3]. That is, dopamine may mediate (a) liking: the hedonic impact of reward, (b) learning: learned predictions about rewarding effects, or (c) wanting: the pursuit of rewards by attributing incentive salience to reward-related stimuli [44]. We have evaluated these hypotheses, especially as they relate to the RDS, and we find that the incentive salience or “wanting” hypothesis of dopaminergic functioning is supported by a majority of the scientific evidence. Various neuroimaging studies have shown that anticipated behaviors such as sex and gaming, delicious foods and drugs of abuse all affect brain regions associated with reward networks, and may not be unidirectional. Drugs of abuse enhance dopamine signaling which sensitizes mesolimbic brain mechanisms that apparently evolved explicitly to attribute incentive salience to various rewards [45].

Addictive substances are voluntarily self-administered, and they enhance (directly or indirectly) dopaminergic synaptic function in the NAc. This activation of the brain reward networks (producing the ecstatic “high” that users seek). Although these circuits were initially thought to encode a set point of hedonic tone, it is now being considered to be far more complicated in function, also encoding attention, reward expectancy, disconfirmation of reward expectancy, and incentive motivation [46]. The argument about addiction as a disease may be confused with a predisposition to substance and nonsubstance rewards relative to the extreme effect of drugs of abuse on brain neurochemistry. The former sets up an individual to be at high risk through both genetic polymorphisms in reward genes as well as harmful epigenetic insult. Some Psychologists, even with all the data, still infer that addiction is not a disease [47]. Elevated stress levels, together with polymorphisms (genetic variations) of various dopaminergic genes and the genes related to other neurotransmitters (and their genetic variants), and may have an additive effect on vulnerability to various addictions [48]. In this regard, Vanyukov, et al. [48] suggested based on review that whereas the gateway hypothesis does not specify mechanistic connections between “stages,” and does not extend to the risks for addictions the concept of common liability to addictions may be more parsimonious. The latter theory is grounded in genetic theory and supported by data identifying common sources of variation in the risk for specific addictions (e.g., RDS). This commonality has identifiable neurobiological substrate and plausible evolutionary explanations.

Over many years the controversy of dopamine involvement in especially “pleasure” has led to confusion concerning separating motivation from actual pleasure (wanting versus liking) [49]. We take the position that animal studies cannot provide real clinical information as described by self-reports in humans. As mentioned earlier and in the abstract, on November 23rd, 2017, evidence for our concerns was discovered [50]

In essence, although nonhuman primate brains are similar to our own, the disparity between other primates and those of human cognitive abilities tells us that surface similarity is not the whole story. Sousa et al. [50] small case found various differentially expressed genes, to associate with pleasure related systems. Furthermore, the dopaminergic interneurons located in the human neocortex were absent from the neocortex of nonhuman African apes. Such differences in neuronal transcriptional programs may underlie a variety of neurodevelopmental disorders.

In simpler terms, the system controls the production of dopamine, a chemical messenger that plays a significant role in pleasure and rewards. The senior author, Dr. Nenad Sestan from Yale, stated: “Humans have evolved a dopamine system that is different than the one in chimpanzees.” This may explain why the behavior of humans is so unique from that of non-human primates, even though our brains are so surprisingly similar, Sestan said: “It might also shed light on why people are vulnerable to mental disorders such as autism (possibly even addiction).” Remarkably, this research finding emerged from an extensive, multicenter collaboration to compare the brains across several species. These researchers examined 247 specimens of neural tissue from six humans, five chimpanzees, and five macaque monkeys. Moreover, these investigators analyzed which genes were turned on or off in 16 regions of the brain. While the differences among species were subtle, **there was** a **remarkable contrast in** the **neocortices**, specifically in an area of the brain that is much more developed in humans than in chimpanzees. In fact, these researchers found that a gene called tyrosine hydroxylase (TH) for the enzyme, responsible for the production of dopamine, was expressed in the neocortex of humans, but not chimpanzees. As discussed earlier, dopamine is best known for its essential role within the brain’s reward system; the very system that responds to everything from sex, to gambling, to food, and to addictive drugs. However, dopamine also assists in regulating emotional responses, memory, and movement. Notably, abnormal dopamine levels have been linked to disorders including Parkinson’s, schizophrenia and spectrum disorders such as autism and addiction or RDS.

Nora Volkow, the director of NIDA, pointed out that one alluring possibility is that the neurotransmitter dopamine plays a substantial role in humans’ ability to pursue various rewards that are perhaps months or even years away in the future. This same idea has been suggested by Dr. Robert Sapolsky, a professor of biology and neurology at Stanford University. Dr. Sapolsky cited evidence that dopamine levels rise dramatically in humans when we anticipate potential rewards that are uncertain and even far off in our futures, such as retirement or even the possible alterlife. This may explain what often motivates people to work for things that have no apparent short-term benefit [51]. In similar work, Volkow and Bale [52] proposed a model in which dopamine can favor NOW processes through phasic signaling in reward circuits or LATER processes through tonic signaling in control circuits. Specifically, they suggest that through its modulation of the orbitofrontal cortex, which processes salience attribution, dopamine also enables shilting from NOW to LATER, while its modulation of the insula, which processes interoceptive information, influences the probability of selecting NOW versus LATER actions based on an individual’s physiological state. This hypothesis further supports the concept that disruptions along these circuits contribute to diverse pathologies, including obesity and addiction or RDS.

#### 2 - Death is bad and outweighs –

#### A - agents can’t act if they fear for their bodily security which constrains every ethical theory.

#### B - it destroys the subject itself – kills any ability to achieve value in ethics since life is a prerequisite which means it’s a side constraint since we can’t reach the end goal of ethics without life.

#### 3 - Actor spec—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.

### 1AC – Advantage

#### Plan - The appropriation of outer space by private entities in the People’s Republic of China is unjust.

#### Advantage 1 – Dominance

#### The US has overlooked private sector capabilities in China – opens the floodgates for Chinese space development.

**Fernandez 21**, Ray. “China Opens Space and Unleashes The Power Of Its Private Sector.” ScreenRant, 27 Nov. 2021, https://screenrant.com/chinese-companies-boost-space-development/. //JQ

In a new move to boost space development, China has opened up space to private companies. China's space program is heavily linked with the military and wrapped up in secrecy. However, recent Chinese space accomplishments, rovers on the Moon and Mars, new satellites and [new space stations](https://screenrant.com/china-space-station-mission-astronauts/) were primarily developed by government efforts.

The U.S. brought in the private sector as a strategy to boost its space program and develop expensive and ambitious new projects. Now China is doing the same. The last time China used national private companies to increase development was when it declared Artificial Intelligence a national priority. Fast forward a few years, [Chinese AI dominates globally](https://screenrant.com/microsoft-exchange-hack-china-motive/).

[At the 7th China (International) Commercial Aerospace Forum](https://ccaf.casicloud.com/en/index.html), national private companies presented many new and ambitious projects, including spaceplanes, space resources, a [massive constellation of satellites](https://screenrant.com/starlink-global-worldwide-internet-availability-august-elon-musk/) and more. One of the companies at the event was the space giant China Aerospace Science and Industry Corp. (CASIC). The Ministry of Science and Technology, China National Space Administration, and other government arms sponsored and supervised the event.

Hundreds Of New Companies Driving Space Ambitions

[CASIC said that the Xingyun constellation](https://spacenews.com/chinese-space-firms-present-big-ambitions-at-commercial-space-forum/) — made up of 80 satellites is moving full speed ahead. The corporation announced that the intelligent space satellite production factory was operating. They are now launching rockets from their own rocket park in the city of Wuhan. Today the rocket park and smart sat factory produce 20 solid-fuel launches and 100 satellites per year but plans to increase capacities are on their way. CASIC is also working on the Tengyun [spaceplane](https://screenrant.com/military-spacecraft-shuttle-top-secret-mission/), recently flight-testing an advanced turbine-based combined cycle engine in the Gobi desert.

CASIC is not the only private company developing space planes in China. The China Aerospace Science and Technology Corp. and iSpace also presented their plans for space planes and space crafts. iSpace has designed two missions to the Moon, which they assure will be the first commercial missions to the natural satellite. China is getting some inspiration from U.S. companies. Local companies in China are looking into space tourism with suborbital and orbital flights. And Deep Blue Aerospace is developing a reusable launcher that looks very much like the [Heavy Falcon of SpaceX](https://screenrant.com/gears-war-hammer-dawn-spacex-falcon-launch/).

The event's main themes were IoT space networks, multi-purpose satellite constellations, space resources (mining) and taking the Chinese space sector to a new level with private participation. While the U.S. has its eye on Chinese military space vehicles, it may have overlooked and underestimated the impact that the Chinese private sector will have. Hundreds of new companies have responded to the government's call to "[start a new journey](https://screenrant.com/china-spacecraft-miles-long-project-longer-iss/) for commercial aerospace" in China. It is only a matter of time until their full power and capabilities are unleashed into space.

#### Surging commercial space industry in China ready to overcome US lead – manufacturing and international collaboration locks in national power.

**Patel 21**, Neel. (I’m the space reporter for MIT Technology Review, and I also write The Airlock newsletter, your number one source for everything happening off this planet. Before joining, I worked as a freelance science and technology journalist, contributing stories to Popular Science, The Daily Beast, Slate, Wired, the Verge, and elsewhere. Prior to that, I was an associate editor for Inverse, where I grew and led the website’s space coverage.) “China's Surging Private Space Industry Is out to Challenge the US.” MIT Technology Review, MIT Technology Review, 28 Jan. 2021, https://www.technologyreview.com/2021/01/21/1016513/china-private-commercial-space-industry-dominance/. //JQ

The rivalry between the US and China, whose space program has surged over the last two decades, is what most people mean when they refer to the 21st-century's space race. China is set to build a new space station later this year and will likely attempt to send its taikonauts to the moon before the decade ends. But these big-picture projects represent just one aspect of the country’s space ambitions. Increasingly, the focus is now on the commercial space industry as well. The nation's growing private space business is less focused on bringing prestige and glory to the nation and more concerned with reducing the cost of spaceflight, increasing its international influence—and making money.

“The state is really great at large, ambitious projects like going to the moon or developing a large reconnaissance satellite,” says Lincoln Hines, a Cornell University researcher who focuses on Chinese foreign policy. “But it’s not responsive to meeting market needs”—one big way to encourage rapid technological growth and innovation. “I think the government thinks its commercial space sector can be complementary to the state,” he says.

What are the market needs that Hines is referring to? Satellites, and rockets that can launch them into orbit. The space industry is undergoing a renaissance thanks to two big trends spurred by the commercial industry: we can make satellites for less money by making them smaller and using off-the-shelf hardware; and we can also make rockets for less money, by using less costly materials or reusing boosters after they’ve already flown (which SpaceX pioneered with its Falcon 9). These trends mean it is now cheaper to send stuff into space, and the services and data that satellites can offer have come down in price accordingly.

China has seen an opportunity. A [2017 report by Bank of America Merrill Lynch](https://www.cnbc.com/2017/10/31/the-space-industry-will-be-worth-nearly-3-trillion-in-30-years-bank-of-america-predicts.html) estimates that the space industry could be worth up to $2.7 trillion by 2030. Setting foot on the moon and establishing a lunar colony might be a statement of national power, but securing a share of such a highly lucrative business is perhaps even more important to the country’s future.

“In the future, there will be tens of thousands of satellites waiting to launch, which is a major opportunity for Galactic Energy” says Wu Yue, a company spokesperson.

The problem is, China has to make up decades’ worth of ground lost to the West.

How did China get here—and why?

Until recently, China’s space activity has been overwhelmingly dominated by two state-owned enterprises: the China Aerospace Science & Industry Corporation Limited (CASIC) and the China Aerospace Science and Technology Corporation (CASC). A few private space firms have been allowed to operate in the country for a while: for example, there’s the China Great Wall Industry Corporation Limited (in reality a subsidiary of CASC), which has provided commercial launches since it was established in 1980. But for the most part, China’s commercial space industry has been nonexistent. Satellites were expensive to build and launch, and they were too heavy and large for anything but the biggest rockets to actually deliver to orbit. The costs involved were too much for anything but national budgets to handle.

That all changed this past decade as the costs of making satellites and launching rockets plunged. In 2014, a year after Xi Jinping took over as the new leader of China, the Chinese government decided to treat civil space development as a key area of innovation, as it had already begun doing with AI and solar power. It issued a policy directive called [Document 60](http://www.cpppc.org/en/zy/994006.jhtml) that year to enable large private investment in companies interested in participating in the space industry.

“Xi’s goal was that if China has to become a critical player in technology, including in civil space and aerospace, it was critical to develop a space ecosystem that includes the private sector,” says Namrata Goswami, a geopolitics expert based in Montgomery, Alabama, who’s been studying China’s space program for many years. “He was taking a cue from the American private sector to encourage innovation from a talent pool that extended beyond state-funded organizations.”

As a result, there are now 78 commercial space companies operating in China, according to a[2019 report by the Institute for Defense Analyses](https://www.ida.org/-/media/feature/publications/e/ev/evaluation-of-chinas-commercial-space-sector/d-10873.ashx). More than half have been founded since 2014, and the vast majority focus on satellite manufacturing and launch services.

For example, Galactic Energy, founded in February 2018, is building its Ceres rocket to offer rapid launch service for single payloads, while its Pallas rocket is being built to deploy entire constellations. Rival company i-Space, formed in 2016, became the first commercial Chinese company to make it to space with its Hyperbola-1 in July 2019. It wants to pursue reusable first-stage boosters that can land vertically, like those from SpaceX. So does LinkSpace (founded in 2014), although it also hopes to use rockets to deliver packages from one terrestrial location to another.

Spacety, founded in 2016, wants to turn around customer orders to build and launch its small satellites in just six months. In December it launched a miniaturized version of a satellite that uses 2D radar images to build 3D reconstructions of terrestrial landscapes. Weeks later, it [released the first images taken by the satellite](https://spacenews.com/spacety-releases-first-sar-images/), Hisea-1, featuring three-meter resolution. Spacety wants to launch a constellation of these satellites to offer high-quality imaging at low cost.

To a large extent, China is following the same blueprint drawn up by the US: using government contracts and subsidies to give these companies a foot up. US firms like SpaceX benefited greatly from NASA contracts that paid out millions to build and test rockets and space vehicles for delivering cargo to the International Space Station. With that experience under its belt, SpaceX was able to attract more customers with greater confidence.

Venture capital is another tried-and-true route. The IDA report estimates that VC funding for Chinese space companies was up to $516 million in 2018—far shy of the $2.2 billion American companies raised, but nothing to scoff at for an industry that really only began seven years ago. At least 42 companies had no known government funding.

And much of the government support these companies do receive doesn’t have a federal origin, but a provincial one. “[These companies] are drawing high-tech development to these local communities,” says Hines. “And in return, they’re given more autonomy by the local government.” While most have headquarters in Beijing, many keep facilities in Shenzhen, Chongqing, and other areas that might draw talent from local universities.

There’s also one advantage specific to China: manufacturing. “What is the best country to trust for manufacturing needs?” asks James Zheng, the CEO of Spacety’s Luxembourg headquarters. “It’s China. It’s the manufacturing center of the world.” Zheng believes the country is in a better position than any other to take advantage of the space industry’s new need for mass production of satellites and rockets alike.

Making friends

The most critical strategic reason to encourage a private space sector is to create opportunities for international collaboration—particularly to attract customers wary of being seen to mix with the Chinese government. (US agencies and government contractors, for example, are barred from working with any groups the regime funds.) Document 60 and others issued by China’s National Development and Reform Commission were aimed not just at promoting technological innovation, but also at drawing in foreign investment and maximizing a customer base beyond Chinese borders.

“China realizes there are certain things they cannot get on their own,” says Frans von der Dunk, a space policy expert at the University of Nebraska–Lincoln. Chinese companies like LandSpace and MinoSpace have worked to accrue funding through foreign investment, escaping dependence on state subsidies. And by avoiding state funding, a company can also avoid an array of restrictions on what it can and can’t do (such as constraints on talking with the media). Foreign investment also makes it easier to compete on a global scale: you’re taking on clients around the world, launching from other countries, and bringing talent from outside China.

#### China’s private space industry is key to tighten the grip on mining of space resources – reinforces lead on REE extraction and space domination over the US.

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A slew of activities amongst China’s private and state-owned aerospace companies this year are a testament to China’s growing ambitions for economic and [military domination](https://www.defensenews.com/congress/2021/04/14/china-aims-to-weaponize-space-says-intel-community-report/) of space. On October 19, the Academy of Aerospace Solid Propulsion Technology (AASPT) – which belongs to the China Aerospace Science and Technology Corporation (CASC) – test fired “the [most powerful solid rocket motor](https://www.space.com/china-tests-giant-solid-fueled-rocket) with the largest thrust in the world so far.” The 500 tons of thrust is designed to propel the next iteration of China’s heavy-lift rockets, which would meet various demands for space missions like crewed Moon landings, deep space exploration, and off-world resource extraction.

Exploration of space-based natural resources are on the Chinese policy makers’ mind. The question is, what Joe Biden thinks?

In April of this year, China’s Shenzen [Origin Space](https://www.washingtontimes.com/news/2020/oct/1/china-determined-to-dominate-future-mining-with-or/) Technology Co. Ltd. [launched the NEO-1](https://origin.space/#/detail?id=27), the first commercial spacecraft dedicated to the mining of space resources – from asteroids to the lunar surface.

Falling costs of space launches and spacecraft technology alongside existing infrastructure provides a unique opportunity to explore extraterrestrial resource extraction. Current technologies are equipped to analyze and categorize asteroids within our solar system with a limited degree of certainty. One of the accompanying payloads to the NEO-1 was the Yuanwang-1, or “little hubble” satellite, which searches the stars for possible asteroid mining targets.

The NEO-1 launch marks another milestone in private satellite development, adding a new player to space based companies which include Japan’s [Astroscale](https://astroscale.com/space-debris_/" \t "_blank" \o "https://astroscale.com/space-debris_/). Private asteroid identification via the Sentinel Space Telescope was [supported by NASA until 2015](https://b612foundation.org/b612-official-statement-nasa-following-canceled-space-agreement-act/). As private investment in space grows, the end goal is to be capable of harvesting resources to bring to Earth.

According to Shenzen [Origin Space](https://www.washingtontimes.com/news/2020/oct/1/china-determined-to-dominate-future-mining-with-or/) Technology company website:

“Through the development and launch of the spacecraft, Origin Space is able to carry out low-Earth orbit space junk cleanup and prototype technology verification for space resource acquisition, and at the same time demonstrate future asteroid defense related technologies.” In the end, it will come down to progressively lowering the cost of launched unit of weight and booster rocket reliability – before fundamentally new engines may drive the launch costs even further down.

The April launch demonstrates that China is already succeeding while the West is spinning its wheels. The much touted Planetary Resources and Deep Space Industries (DSI) [DSI](https://www.forbes.com/investment-funds/dsi/) [+0.1%](https://www.forbes.com/investment-funds/dsi/)were [supposed to be](https://www.technologyreview.com/2019/06/26/134510/asteroid-mining-bubble-burst-history/) the vanguard of extra-terrestrial resource acquisition with major backers including Google’s [GOOG](https://www.forbes.com/companies/google) [+0.3%](https://www.forbes.com/companies/google)Larry Page. But both have since been acquired, the former by block chain company [ConsenSys](https://consensys.net/" \t "_blank" \o "https://consensys.net/) and the latter by [Bradford Space](https://www.bradford-space.com/), neither of which are prioritizing asteroid mining.

This is too bad, given that that supply chain crunches here on Earth – coupled with the global green energy transition – are spiking demand for strategic minerals that are increasingly hard to come by on our environmentally stressed planet. And here China currently [holds a monopoly](https://www.fpri.org/article/2021/06/americas-critical-strategic-vulnerability-rare-earth-elements/) on rare earth element (REE) extraction and processing to the tune of 90%. REE’s 17 minerals essential for modern computing and manufacturing technologies for everything from solar panels to semi-conductors.

Resource-hungry China also has major involvement in global critical mineral supply chains, which include cobalt, tungsten, and lithium. As [I’ve written before](https://www.forbes.com/sites/arielcohen/2021/06/02/chinas-journey-to-the-center-of-the-earth/?sh=673812a9131f), the Chinese hold of upstream and downstream markets is staggering. Possessing 30% of the global mined ore, 80% of the global processing facilities, and an ever increasing list of high dollar investments around the world, China boasts over $36 billion invested in mining projects in Africa alone.

Beijing’s space program clearly indicates that the Chinese would also like to tighten their grip on space-based resources as well. According to research, it is estimated that a small asteroid roughly 200 meters in length that is rich in platinum could be worth up to $300 million. Merrill Lynch predicts the space industry — including extraterrestrial mining industry – to value [$2.7 trillion](https://www.cnbc.com/2017/10/31/the-space-industry-will-be-worth-nearly-3-trillion-in-30-years-bank-of-america-predicts.html) in the next three decades. REEs are fairly common in the solar system, but to what degree remains unknown. The most sought after are M-type asteroids which are mostly metal and hundreds of cubic meters. While these are not the most common, the 27,115 Near Earth asteroids are bound to contain a few. This – and military applications – are no doubt a driving factor of China’s ever increasing space ambitions.

A new goldrush in space based resource extraction has sparked a new age of miners looking to find their fortunes. In reality, the industry cannot get off the ground without further innovation in deep space observation, on-board power, extraction processes, and logistical support in low earth and high earth orbit.

As Uberization of space looms closer, the prices of space launches are falling rapidly. Privately funded satellites like the NEO-1 or Sentinel are the first of many novel economic ventures deploying technologies essential to the viability of solar system mining projects. Private launches by [SpaceX](https://www.spacex.com/) and [Blue Origin](https://www.blueorigin.com/)will provide low cost satellite deployment for further testing craft and classification telescopes.

Right now, the cost to capture and process asteroids is far greater than traditional mining techniques. This is changing, but like in traditional mining and rare earths refining, China is far ahead of the U.S. in terms of industrial policy and new investments. China is cognizant of the riches in space, while the U.S. fails to support both their public and private space missions. The United States cannot afford to cede this industry – like it has so many others – to its peer competitors. If we do, the joke is on U.S., and it will not be funny.

#### US domination of the commercial space industry is crucial to dominance over China – controlling the market secures every competitive advantage.

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America Is Losing the Second Space Race to China The private sector can give the United States a much-needed rocket boost. The current U.S. space defense strategy is inadequate and on a path to failure. President Donald Trump’s vision for a Space Force is big enough. As he said on June 18, “It is not enough to merely have an American presence in space. We must have American dominance in space.” But the Air Force is not matching this vision. Instead, the leadership is currently focused on incremental improvements to existing equipment and organizational structures. Dominating the vast and dynamic environment of space will require revolutionary capabilities and resources far deeper than traditional Department of Defense thinking can fund, manage, or even conceive of. Success depends on a much more active partnership with the commercial space industry— and its disruptive capabilities. U.S. military space planners are preparing to repeat a conflict they imagined back in the 1980s, which never actually occurred, against a vanished Soviet empire. Meanwhile, China is executing a winning strategy in the world of today. It is burning hard toward domination of the future space markets that will define the next century. They are planning infrastructure in space that will control 21st-century telecommunications, energy, transportation, and manufacturing. In doing so, they will acquire trillion-dollar revenues as well as the deep capabilities that come from continuous operational experience in space. This will deliver space dominance and global hegemony to China’s authoritarian rulers. Despite the fact that many in the policy and intelligence communities understand exactly what China is doing and have been trying to alert leadership, Air Force leadership has convinced the White House to fund only a slightly better satellite command with the same leadership, while sticking a new label onto their outmoded thinking. A U.S. Space Force or Corps with a satellite command will never fulfill Trump’s call to dominate space. Air Force leadership is demonstrating the same hubris that Gen. George Custer used in convincing Congress, over President Ulysses S. Grant’s better experience intuition, that he could overtake the Black Hills with repeating rifles and artillery. That strategy of technological overconfidence inflamed conflict rather than subduing it, and the 7th Cavalry were wiped out at the Battle of the Little Bighorn. The West was actually won by the settlers, ranchers, miners, and railroad barons who were able to convert the wealth of the territory itself into the means of holding it. They laid the groundwork that made the 20th century the American Century and delivered freedom to millions of people in Europe and Asia. Of course, they also trampled the indigenous people of the American West in their wake—but empty space comes with no such bloody cost. The very emptiness and wealth of this new, if not quite final, frontier, however, means that competition for resources and strategic locations in cislunar space (between the Earth and moon) will be intense over the next two decades. The outcome of this competition will determine the fate of humanity in the next century. China’s impending dominance will neutralize U.S. geopolitical power by allowing Beijing to control global information flows from the high ground of space. Imagine a school in Bolivia or a farmer in Kenya choosing between paying for a U.S. satellite internet or image provider or receiving those services for free as a “gift of the Chinese people.” It will be of little concern to global consumers that the news they receive is slanted or that searches for “free speech” link to articles about corruption in Western democracies. Nor will they care if concentration camps in Tibet and the Uighur areas of western China are obscured, or if U.S. military action is presented as tyranny and Chinese expansion is described as peacekeeping or liberation. China’s aggressive investment in space solar power will allow it to provide cheap, clean power to the world, displacing U.S. energy firms while placing a second yoke around the developing world. Significantly, such orbital power stations have dual use potential and, if properly designed, could serve as powerful offensive weapons platforms. China’s first step in this process is to conquer the growing small space launch market. Beijing is providing nominally commercial firms with government-manufactured, mobile intercontinental ballistic missiles they can use to dump launch services on the market below cost. These start-ups are already undercutting U.S. pricing by 80 percent. Based on its previous success in using dumping to take out U.S. developed industries such as solar power modules and drones, China will quickly move upstream to attack the leading U.S. launch providers and secure a global commercial monopoly. Owning the launch market will give them an unsurmountable advantage against U.S. competitors in satellite internet, imaging, and power. The United States can still build a strategy to win. At this moment, it holds the competitive advantage in every critical space technology and has the finest set of commercial space firms in the world. It has pockets of innovative military thinkers within groups like the Defense Innovation Unit, under Mike Griffin, the Pentagon’s top research and development official. If the United States simply protects the intellectual property its creative minds unleash and defend its truly free markets from strategic mercantilist attack, it will not lose this new space race. The United States has done this before. It beat Germany to the nuclear bomb, it beat the Soviet Union to the nuclear triad, and it won the first space race.

#### Space leadership is the biggest internal link to heg.

**Zubrin 15** (Robert Zubrin is president of Pioneer Energy, a senior fellow with the Center for Security Policy <https://spacenews.com/op-ed-u-s-space-supremacy-now-critical/>, 1-22)

The United States needs a new national security policy. For the first time in more than 60 years, we face the real possibility of a large-scale conventional war, and we are woefully unprepared. Eastern and Central Europe is now so weakly defended as to **virtually invite invasion.** The United States is not about to go to nuclear war to **defend any foreign country**. **So deterrence is dead**, and, with the German army cut from 12 divisions to three, the British gone from the continent, and American forces down to a 30,000-troop tankless remnant, the only serious and committed ground force that stands between Russia and the **Rhine is the Polish army.** It’s not enough. Meanwhile, in Asia, the powerful growth of the Chinese economy promises that nation eventual **overwhelming numerical force superiority** in the region. How can we restore the balance, creating a sufficiently powerful conventional force to **deter aggression**? It won’t be by matching potential adversaries tank for tank, division for division, replacement for replacement. Rather, the United States **must seek to totally outgun them by obtaining a radical technological advantage. This can be done by achieving space supremacy.** To grasp the importance of space power, some historical perspective is required. Wars are fought for control of territory. Yet for thousands of years, victory on land has frequently been determined by dominance at sea. In the 20th century, victory on both land and sea almost invariably went to the power that controlled the air. In the 21st century, victory on land, sea or in the air will go to the power that controls space. The critical military importance of space has been obscured by the fact that in the period since the United States has had space assets, all of our wars have been fought **against minor powers** that we could have defeated without them. Desert Storm has been called the first space war, because the allied forces made extensive use of GPS navigation satellites. However, if they had no such technology at their disposal, the end result would have been just the same. This has given some the impression that space forces are just a frill to real military power — a useful and convenient frill perhaps, but a frill nevertheless. But consider how history might have changed had the Axis of World War II possessed reconnaissance satellites — merely one of many of today’s space-based assets — without the Allies having a matching capability. In that case, the Battle of the Atlantic would have gone to the U-boats, as they would have had infallible intelligence on the location of every convoy. Cut off from oil and other supplies, Britain would have fallen. On the Eastern front, every Soviet tank concentration would have been spotted in advance and wiped out by German air power, as would any surviving British ships or tanks in the Mediterranean and North Africa. In the Pacific, the battle of Midway would have gone very much the other way, as the Japanese would not have wasted their first deadly airstrike on the unsinkable island, but sunk the American carriers instead. With these gone, the remaining cruisers and destroyers in Adm. Frank Jack Fletcher’s fleet would have lacked air cover, and every one of them would have been hunted down and sunk by unopposed and omniscient Japanese air power. With the same certain fate awaiting any American ships that dared venture forth from the West Coast, Hawaii, Australia and New Zealand would then have fallen, and eventually China and India as well. With a monopoly of just one element of space power, the Axis would have won the war. But modern space power involves far more than just reconnaissance satellites. The use of space-based GPS can endow munitions with 100 times greater accuracy, while space-based communications provide an unmatched capability of command and control of forces. Knock out the enemy’s reconnaissance satellites and he is effectively blind. Knock out his comsats and he is deaf. Knock out his navsats and he loses his aim. In any serious future conventional conflict, even between opponents as mismatched as Japan was against the United States — or Poland (with 1,000 tanks) is currently against Russia (with 12,000) — **it is space power that will prove decisive. Not only Europe, but the defense of the entire free world hangs upon this matter.** For the past 70 years, U.S. Navy carrier task forces have controlled the world’s oceans, first making and then keeping the Pax Americana, which has done so much to secure and advance the human condition over the postwar period. But should there ever be another major conflict, an adversary possessing the ability to locate and target those carriers from space would be able to wipe them out with the push of a button. For this reason, it is imperative that the United States possess space capabilities that are so robust as to not only assure our own ability to operate in and through space, but also be able to comprehensively deny it to others. Space superiority means having better space assets than an opponent. Space supremacy means being able to **assert a complete monopoly** of such capabilities. **The latter is what we must have**. If the United States can gain space supremacy, then the capability of any American ally can be **multiplied by orders of magnitude**, and with the support of the similarly multiplied striking power of our own land- and sea-based air and missile forces be made so formidable as to **render any conventional attack unthinkable**. On the other hand, should we fail to do so, **we will remain so vulnerable as to increasingly invite aggression by ever-more-emboldened revanchist powers.** This battle for space supremacy is one we can win. Neither Russia nor China, nor any other potential adversary, **can match us in this area if we put our minds to it.** We can and must develop ever-more-advanced satellite systems, anti-satellite systems and truly robust space launch and logistics capabilities. Then the next time an aggressor commits an act of war against the United States or a country we are pledged to defend, instead of impotently threatening to limit his tourist visas, we can respond by taking out his satellites, effectively informing him in advance the certainty of defeat should he persist. **If we desire peace on Earth, we need to prepare for war in space**.

#### US hegemony is key to prevent regional conflicts from going nuclear – China is uniquely destabilizing.

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Our specific findings are outlined in the text. But at the outset, we wish to underscore the central theme of this report: There is a need for extraordinary urgency in addressing the crisis of national defense. We believe that the NDS is a broadly constructive document that identifies most of the right objectives and challenges. Yet we are deeply concerned that the Department of Defense and the nation as a whole have not yet addressed crucial issues such as force sizing, developing innovative op- erational concepts, readiness, and resources with the degree of urgency, persistence, and analytic depth that an increasingly dangerous world demands. Put bluntly, the American people and their elected representatives must understand that U.S. military superiority is not guaranteed, that many global trends are adverse and threatening, and that the nation has reached a pivotal moment regarding its ability to defend its vital interests and preserve a world in which the United States and other like-minded nations can thrive. The choices we make today and in the immediate future will have profound and potentially lasting consequences for American security and influence. If we do not square up to the challenge now, we will surely regret it.1 Chapter 1 The Purpose of American Military Power and the Crisis of National Defense Any defense strategy must protect the fundamental interests of the United States. Since the inception of the Republic, America’s most vital interests have remained constant. They include the physical security of the United States and its citizens; the promotion of a strong, innovative, and growing U.S. economy; and the protection of the nation’s democratic freedoms and domestic institutions. These interests were enshrined in the Declaration of Independence as “life, liberty, and the pursuit of happiness,” and collectively, they represent the pole star toward which any American strategy must be oriented. Since the mid-20th century, there has been a bipartisan consensus that America should take an international leadership role to secure these interests. The events of the 1930s and 1940s showed that the United States could not remain prosperous in a world ravaged by global depression, nor could it remain safe in a world convulsed by instability and war. Moreover, these events illustrated to Americans the danger that their own free institutions might not survive in a world ruled by hostile autocracies. As a result, Americans and their elected leaders concluded that the United States must use its unmatched power to foster a larger global environment in which America could thrive. This endeavor has often been referred to as building the “liberal international order,” but it simply reflects the common-sense idea that America will be most secure, prosperous, and free in a world that is itself secure, prosperous, and free. This straightforward judgment has underpinned the sustained global leadership the United States has exercised since the 1940s. America has anchored an open global economy in which trade and investment flow freely and Americans can see their creative energies rewarded. It has built international institutions that facilitate problem-solving and cooperation on important global issues. It has defended democratic values and human rights abroad in order to enhance U.S. influence and safeguard democratic values and human rights at home. It has sought to uphold favorable balances of power in key regions and concluded military alliances and security partnerships with dozens of like-minded countries— not as a matter of charity, but as a way of deterring aggression and preventing conflicts that could pose a serious threat to U.S. national security and prosperity. These have not been Republican policies or Democratic policies; they have been American policies, meant to create a world conducive to American interests and values. The role of alliances and partnerships deserves special emphasis here. U.S. alliances and partnerships are sometimes mischaracterized as arrangements that squander American resources on behalf of free-riding foreign countries. In reality, U.S. alliances and partnerships have been deeply rooted in American self-interest. They have served as force-multipliers for U.S. influence, by promoting institutionalized cooperation between America and like-minded nations. They have allowed America to call on the aid of its friends in every major conflict it has waged since World War II. They have buttressed the concept of international order that the United States seeks to preserve, by enlisting other nations in the promotion of a world favorable to American interests. They have provided intelligence support, regional expertise, and other critical assistance. In short, alliances and partnerships rooted in shared interests and mutual respect have reduced the price America pays for global leadership and enhanced the advantages America enjoys over any geopolitical rival. And although these alliances and partnerships—like all of America’s postwar policies—have required the persistent use of diplomacy, economic power, and other tools of statecraft, they have ultimately rested on a foundation of military strength. Since World War II, America has had a military second to none. After the Cold War, it possessed military power far greater than that of any rival or group of rivals. This position of unmatched strength has provided for the defense and security of the United States, American citizens overseas, and American allies and partners. It has been crucial to deterring and, if necessary, defeating aggression by hostile powers, whether the Soviet Union and its allies during the Cold War or al-Qaeda and Islamic State in Iraq and al-Sham (ISIS) more recently. It has preserved stability in key regions from Europe to East Asia and beyond, and ensured the freedom of the global commons on which U.S. and international prosperity depends. It has prevented America from being coerced or intimidated, or once again finding itself the situation of the early 1940s, when democracy itself was endangered because aggressive authoritarian powers were on the verge of dominating the globe. It has given the United States unrivaled influence on a wide range of global issues. America’s leadership role has never been inexpensive or easy to play, and today many Americans are questioning whether it is worth the cost. But by any reasonable standard, U.S. global engagement has been a great investment. U.S. leadership has prevented a recurrence of the devastating world wars that marked the first half of the 20th century and required repeated U.S. interventions at a cost of hundreds of thousands of American lives. That leadership has also fostered an unprecedented growth in human freedom, with the number of democracies rising from roughly a dozen during World War II to 120 in the early 21st century. And as democracies displaced dictatorships, America itself became more secure and influential. The growth of prosperity has been even more astounding. According to World Bank data, inflation-adjusted U.S. gross domestic product has increased nearly six-fold since 1960. Both U.S. and global per capita income have also increased roughly three-fold (also in inflation-adjusted terms) over the same period. To be clear, the evolution of the economy in recent decades has left too many of our citizens behind, and it is essential that all benefit from our national prosperity. On the whole, however, both the United States and the world are far richer than they would have been absent the open international economy America has fostered. Here, too, American policy has been successful in what it has avoided as well as what it has achieved: the world has not suffered another global depression that would cause rampant poverty, political radicalism, and international aggression, and that would surely lead to catastrophic effects for the United States. Decades of experience have taught that American leadership is not a fool’s errand or a matter of altruism, but a pragmatic approach to advancing American security and wellbeing. There is little reason to think the situation has changed today. The fundamental lesson of the 1930s and 1940s—that no country is an island— remains as relevant as ever. If anything, as the world becomes increasingly interdependent, the security and prosperity of the United States are becoming ever more closely linked to the health of the larger international environment. And although the United States has many powerful allies, none of them can fill the singular role America has played in providing the international peace, stability, and prosperity in which the United States itself has flourished. U.S. leadership of a stable and open international environment remains as profoundly in the country’s own national interests as it was more than seven decades ago. Unfortunately, in recent years changes at home and abroad have eroded American military advantages and threatening U.S. interests. The Changing Strategic Environment After the Cold War, the United States faced a relatively benign security environment. There remained dangerous challenges to U.S. interests and—as shown by the terrorist attacks of September 11, 2001—the American homeland. Yet tensions between the world’s major powers were historically low, and the actors that threatened the United States, from so-called rogue states to jihadist terror organizations, were compar- atively weak. Today, however, the international landscape is more ominous. The United States confronts the most challenging security environment in decades. Six trends are particularly worthy of note. First, and most important, is the rise of major-power competition and conflict. The world America shaped has brought great security and prosperity to many countries. Yet today, powerful authoritarian rivals— China and Russia—see U.S. leadership as a barrier to their ambitions. These countries seek to overturn existing regional balances of power and re-create spheres of influence in which they can dominate their neighbors’ economic, diplomatic, and security choices. They are also seeking to project power and exert influence beyond their peripheries. They are pursuing their agendas, moreover, through the use of coercion, intimidation, and in some cases outright aggression, all backed by major military buildups that specifically target U.S. military advantages and alliance commitments and relationships. The challenge China presents is particularly daunting. It is natural for China to exert greater influence as its power grows, and the rise of China would present challenges for America and the world even if Beijing pursued its interests through entirely legitimate means. Unfortunately, China is increasingly exerting influence in illegitimate and destabilizing ways. China is using military, paramilitary, and diplomatic measures to coerce U.S. allies and partners from Japan to India; contest international law and freedom of navigation in crucial waterways such as the South China Sea; undermine the U.S. position in East and Southeast Asia; and other- wise seek a position of geopolitical dominance. It is using predatory economic statecraft to weaken its rivals, including the United States, and give it decisive strategic leverage over its neighbors. Meanwhile, China is reaping the fruits of a multi-decade military buildup. Beijing has invested in systems designed to counter American power-projection and thereby prevent the United States from protecting its allies, partners, and economic interests. China is also modernizing its nuclear forces, developing sophisticated power-projection capabilities, and undertaking the most thoroughgoing military reforms since the founding of the People’s Republic. China already presents a severe test of U.S. interests in the Indo-Pacific and beyond and is on a path to become, by mid-century, a military challenger the likes of which America has not encountered since the Cold War-era Soviet Union. Russia, too, is pursuing regional hegemony and global influence in destabilizing ways. Moscow has invaded and dismembered neighboring states, used cyberwarfare and other tactics to attack democratic nations’ political systems, and employed measures from military intimidation to information warfare to undermine and weaken NATO and the European Union. Russia has intervened militarily in Syria to bolster Bashar al-Assad’s brutal regime and restore lost influence in the Middle East, while supporting many other authoritarian governments. Across these in- itiatives, the Putin regime has demonstrated a propensity for risk-taking backed up by enhanced military power. Moscow has developed ad- vanced conventional capabilities meant to prevent America from project- ing power and aiding its allies along Russia’s periphery and to project its own power farther afield. Russia is also conducting a comprehensive nuclear modernization, including sustainment and modernization of a large number of non-strategic nuclear weapons and the development of a ground-launched cruise missile that violates the Intermediate-Range Nuclear Forces Treaty. These developments are accompanied by Russian doctrinal writings that emphasize the prospect of using limited nuclear escalation to control the trajectory of a potential conflict against the United States and NATO. Russia is seeking to create situations of military strength vis-à-vis America and its allies, and despite its limited resource base, it is having considerable success. Second, aggressive regional challengers—notably North Korea and Iran—are expanding their military capabilities consistent with their geopolitical ambitions. The United States and its allies have faced threats from a brutal, erratic, and aggressive North Korea for decades, but never before has Pyongyang possessed such destructive power. North Korea may already have the capability to detonate a nuclear weapon over a major American city; the regime also continues to develop biological, chemical, and conventional capabilities as a way of guaranteeing its sur- vival and coercing adversaries. Today, Kim Jong Un’s military can threaten America more directly than his father or grandfather. He can also exert great pressure on U.S. alliances with South Korea and Japan, sowing doubt about whether America would defend those allies in a cri- sis. This Commission hopes that ongoing negotiations will lead to the complete, verifiable, and irreversible denuclearization of North Korea, but the history of U.S.-North Korean negotiations give little cause for optimism. Even successful negotiations would leave America facing sig- nificant security challenges on the Korean Peninsula and in East Asia, most significantly the robust ballistic missile threat posed to our allies, Japan and the Republic of Korea. The threat from Iran, another longtime U.S. adversary and the world’s foremost state sponsor of terrorism, has also worsened. Iran has skillfully utilized asymmetric tactics including terrorism, the weaponization of sectarianism, support for insurgent groups, and a reliance on proxy and special operations forces to weaken U.S. influence and pursue hegemony in the Middle East. Iranian military capabilities are growing in areas such as unmanned aerial vehicles and explosive boats, advanced naval mines and submarines, more sophisticated cyber forces, and anti-ship and land- attack cruise missiles. Iran is also expanding what is already the largest ballistic missile force in the region. In a conflict with the United States, Iran could use these capabilities to obstruct freedom of navigation in regional waterways, target U.S. military facilities and critical infrastructure in the Persian Gulf, and otherwise inflict substantial costs on America and its partners. The challenges of major power conflict and aggressive regional challengers are linked by a third, which is the growing prevalence of aggression and conflict in the gray zone—the space between war and peace. The means of gray-zone conflict include everything from strong-arm diplomacy and economic coercion, to media manipulation and cyber- attacks, to use of paramilitaries and proxy forces. Singly or in combination, such tactics confound or gradually weaken an adversary’s positions or resolve without provoking a military response. Gray-zone conflict is often shrouded in deception or misinformation, making attribution diffi-ult and discouraging a strong response. Although coercive challenges of this sort are not new, they have become the tool of choice for those who do not wish to confront U.S. military power directly. China’s island-building and maritime coercion in the South China Sea, Iran’s sponsorship of Hezbollah and other militias as tools of influence and subversion in the Middle East, Russia’s use of unacknowledged military and proxy forces in Ukraine, and Moscow’s information warfare campaigns meant to inflame social tensions and in- fluence political processes in the United States and Europe all represent examples of gray-zone aggression today. Because gray-zone challenges combine military and paramilitary measures with economic statecraft, political warfare, information operations, and other tools, they often occur in the “seams” between DOD and other U.S. departments and agencies, making them all the more difficult to address. Fourth, the threat from radical jihadist groups has evolved and intensified. Groups such as ISIS, al-Qaeda, and their affiliates pose ongoing threats to the United States and its allies and partners, from Western Africa to the Philippines. That threat is not new, but it is expanding. There are more jihadists in more countries today than at any time since the birth of the modern jihadist movement in 1979, and there are more groups capable of mounting major attacks. The most sophisticated groups have developed state-like military capabilities, conquered (how- ever briefly) large swaths of territory, shown continued interest in acquiring weapons of mass destruction, and commanded or inspired deadly attacks around the globe. Assisted by poor governance, sectarian con- flict, and regional instability, these groups—or their successors—will threaten U.S. and international security for generations to come. Fifth, and compounding these challenges, the proliferation of advanced technology is eroding U.S. advantages and creating new vulnerabilities. The spread of weapons of mass destruction, ballistic and cruise missiles, precision-strike assets, advanced air defenses, antisatellite and cyberwarfare capabilities, and unmanned systems has given weaker actors the ability to threaten America and its allies in more dangerous ways. In some cases, we are behind, or falling behind, in critical technologies. U.S. competitors are making enormous investments in hypersonic delivery vehicles, artificial intelligence (AI), and other advanced technol- ogies. With respect to hypersonics in particular, the United States finds itself trailing China and perhaps Russia as well. All this raises the possi- bility that America may find itself at a technological disadvantage in future conflicts. Because the American way of war has long relied on technological supremacy, this could have profoundly negative implica- tions for U.S. military effectiveness. The United States thus confronts more numerous—and more severe— threats than at any time in decades. America must address the threats posed by major-power rivals, dangerous regional challengers, and terrorists simultaneously; it must deal with geopolitical conflict, gray-zone aggression, and instability from one end of Eurasia to the other. It must also prepare for the prospect that the U.S. military might be called into action in a country, region, or contingency that is not currently envisioned. The dangers posed by these and other troubling trends have been compounded by a final problem, of America’s own making: budgetary insta- bility and disinvestment in defense. Because of decisions made by both major parties—especially the enactment of the Budget Control Act (BCA) of 2011—constant-dollar defense spending (in estimated 2018 dollars) fell from $794 billion in Fiscal Year (FY) 2010 to $586 billion in FY2015, according to U.S. government statistics. In percentage terms, this constituted the fastest drawdown since the years following the Korean War. Excluding overseas contingency operations accounts— funding for wars in Iraq and Afghanistan—the inflation-adjusted decline was from $612 billion to $541 billion. This defense austerity was exacer- bated by political gridlock, which forced the Pentagon to operate on short-term continuing resolutions, and which triggered the crippling, across-the-board cuts associated with the sequester mechanism in 2013. The effects of these resource challenges have been devastating. By 2017, all of the military services were at or near post-World War II lows in terms of end-strength, and all were confronting severe readiness crises and enormous deferred modernization costs (see Figure 1). A series of temporary budget increases provided for by the Bipartisan Budget Acts of 2013, 2015, and 2018 provided welcome but insufficient relief. As the world has become more threatening, America has weakened its own defense. The Crisis of American Military Power and Its Consequences Collectively, these trends add up to a perilous situation. In 2010, the Quadrennial Defense Review Independent Panel warned of a coming “train wreck” if America did not retain adequate military capabilities in an increasingly competitive world. In 2014, the National Defense Panel warned that the U.S. military had become “inadequate given the future strategic and operational environment.” In 2018, this Commission believes that America has reached the point of a full-blown national security crisis. The U.S. military remains the strongest in the world, but the number and geographic diversity of security challenges, the technical so- phistication of U.S. rivals and adversaries, and other factors mean that America’s military capabilities are insufficient to address the growing dangers the country faces. America is courting unacceptable risk to its own national security, and to the stability and prosperity of the global en- vironment from which it has benefitted so much. Across multiple regions, adverse military trends and gray-zone aggres- sion are undermining U.S. influence and damaging U.S. interests. In the Western Pacific, the regional military balance has shifted dramatically because of China’s ongoing buildup and coercive activities. In Eastern Europe, Russian military modernization has left U.S. and NATO forces with severe vulnerabilities on the alliance’s eastern frontier. In the Mid- dle East, Tehran’s arsenal of asymmetric and anti-access/area denial ca- pabilities, along with its network of proxy forces, can create significant challenges for U.S. forces and influence, as Russia’s renewed regional military presence further inhibits American freedom of action. Looking beyond these regions, U.S. competitors and adversaries—particularly Russia and China—are increasingly contesting American control of the maritime, space, and cyber commons and improving their ability to strike the U.S. homeland (see Figure 2). The consequences of these shifts are profound. Because the military balance casts its shadow over international diplomacy, the erosion of U.S. military advantage is weakening the norms and principles for which America has traditionally stood. It is no coincidence that threats to freedom of navigation in the South China Sea—through which one-third of global shipping transits—have increased as the military balance has dete- riorated. Similarly, the credibility of American alliances—the bedrock of geopolitical stability in key areas—will be weakened as allies question whether the United States can defend them; American rivals and adversaries will be emboldened to push harder. From the Taiwan Strait to the Baltic region, peace and deterrence have long rested on the perception that the United States can decisively defeat military challenges. As that perception fades, deterrence weakens and war becomes more likely. Should war occur, American forces will face harder fights and greater losses than at any time in decades. It is worth recalling that during the Falklands War, a decidedly inferior opponent—Argentina—crippled and sank a major British warship by striking it with a single guided missile. The amount of destruction a major state adversary could inflict on U.S. forces today might be orders of magnitude higher. A war on the Korean Peninsula, for instance, would expose U.S. and allied citizens and forces in the region to intense conventional warfare and likely chemical and biological warfare. There would be a real possibility of North Korean nuclear strikes against allied countries in Northeast Asia and perhaps even against U.S. territory. If the United States had to fight Russia in a Baltic contingency or China in a war over Taiwan (see Vignette 1), Americans could face a decisive military defeat. These two nations possess precision-strike capabilities, integrated air defenses, cruise and ballistic missiles, advanced cyberwarfare and anti-satellite capabilities, significant air and naval forces, and nuclear weapons—a suite of advanced capabilities heretofore possessed only by the United States. The U.S. military would face daunting challenges in establishing air superiority or sea control and retaking territory lost early in a conflict. Against an enemy equipped with ad- vanced anti-access/area denial capabilities, attrition of U.S. capital assets—ships, planes, tanks—could be enormous. The prolonged, delib- erate buildup of overwhelming force in theater that has traditionally been the hallmark of American expeditionary warfare would be vastly more difficult and costly, if it were possible at all. Put bluntly, the U.S. military could lose the next state-versus-state war it fights.

#### Precedent of success in key sectors like space reinforces China rise - causes nuclear war and destabilizing expansion.

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Using the occasion of the Shangri-La Dialogue in Singapore this month, Chinese Minister of National Defense and State Councilor Gen. Wei Fenghe, delivered a sharp message to the United States, which may be termed the “Xi Doctrine” on China’s use of force, after Chinese premier Xi Jinping. Wei declaring both China’s resolve to aggress to advance its interests and a rationalization for the use of force. Wei’s de facto threat of war should not be lost in his nuances, deliberate ambiguity, or in translation. His remarks were so bellicose that the world has noticed, as was certainly intended by the leadership of the Chinese Communist Party (CCP). Empirical evidence of China’s aggression is increasingly common, from its attempt to dominate the South China Sea, the neo-imperialist effort to gain control of states through the Belt and Road Initiative, to its technological imperialism to control 5G and artificial intelligence technologies. What is rather less frequent are statements from high-level Chinese officials proclaiming the country’s intent to be aggressive and offering an attempted legitimizing principle justifying that aggression. While much of the content of Wei’s remarks were in keeping with the gossamer pronouncements on China’s peaceful intentions, as well as a paean to Xi Jinping’s leadership, they still conveyed that China is ready and willing to resort to war if the United States stands in its way of global expansion; and they made clear that China must go to war, or even a nuclear war, to occupy Taiwan. Specifically, there are four elements that comprise the Xi Doctrine and are indications of China’s signaling its willingness to use force. The first component is a new and alarming proclamation of the undisguised threats to use force or wage an unlimited war. China is becoming bolder as its military power grows. This is evidenced in Wei’s muscular remarks on the People’s Republic of China’s approach against Taiwan, his explicit statement that China does not renounce the use of force against Taiwan, and his effort to deter the United States and its allies from intervention should an attack occur. Wei forcefully stated: “If anyone dares to separate Taiwan from China, the Chinese military has no choice but must go to war, and must fight for the reunification of the motherland at all costs.” “At all cost” means that China will not hesitate to use nuclear weapons or launching another Pearl Harbor to take over Taiwan. This is a clear warning of an invasion. Second, the Xi Doctrine legitimizes territorial expansion. Through his remarks, Wei sought to convince the rest of the world that China’s seizure of most of the South China Sea is an accomplished fact that cannot be overturned. He made bogus accusations, which included blaming the United States for “raking in profits by stirring up troubles” in the region. He insisted that only ASEAN and China must resolve the issue. He claimed that China’s militarization on South China Sea islands and reefs were an act of self-defense. Should this be allowed to stand, then the Xi Doctrine will set a perilous precedent of successful territorial expansion, which will further entice China and jeopardize the peace of the region. Third, the doctrine targets the United States as a cause of the world’s major problems and envisions a powerful China evicting the United States from the region. Wei obliquely identified the United States as the cause wars, conflicts, and unrest, and sought to convey that the United States will abandon the states of the South China Sea (SCS) when it is confronted by Chinese power, a typical divide and conquer strategy used by the CCP regime. The Xi Doctrine’s fourth element is the mendacity regarding China’s historical use of force and current actions. While the distortions of history were numerous, there were three major lies that should be alarming for the states of the region and the global community. First, Wei said that China had never invaded another country, which is a claim so transparently false it can only be a measure of the contempt he held for the audience. China has a long history of aggression, including against the Tibetans and Vietnamese, and perhaps soon against the Taiwanese. Second, Wei argued that hegemony does not conform to China’s values when, in fact, China proudly was Asia’s hegemon for most of the last two thousand years. Lastly, he claimed that the situation in the SCS is moving toward stability—from China’s perspective this stability is caused by its successful seizure of territory. In fact, the SCS is far less stable as a result of China’s actions. Efforts to counter this grab are denounced by Wei as destabilizing, which is a bit like a thief accusing you of a crime for wanting your property returned. Wei’s belligerent rhetoric is an indication that the CCP regime faces deep external and internal crises. Externally, the Trump administration has shocked the CCP with the three major steps it has taken. First, it has shifted the focus of the U.S. national-security strategy and now identifies China explicitly as its primary rival—abandoning the far more muted policies of previous administrations. Second, Trump has acted on this peer competitive threat by advancing tangible measures, such as arms sales to allies and the ban of Huawei. Third, the administration has made credible commitments to assure partners and allies to counter China’s aggression and bullying. These have unbalanced the CCP regime, and its natural reaction is to bully its way out. Additionally, the CCP regime has perceived that the world today has begun to consider the negative implications of China’s rise, and the United States is determined to prevent what heretofore had been considered China’s unstoppable rise. From the perspective of CCP, conflict is increasingly seen as inevitable and perhaps even imminent. Wei’s bellicosity should be seen in this light, and the PLA is tasked with fighting and winning the war. Internally, Xi’s anti-corruption campaign that selectively targets his political rivalries, and his abandoning the established rules such as term limited of presidency, have introduced deep cleavages into the unity of the regime unity. China’s economic slowdown, made worse by the U.S. trade war, is a fundamental challenge to the regime’s legitimacy. Xi’s repression and suppression of the Chinese people, particularly human-rights defenders, Christians, Kazakhs, Uighurs, and other minorities, have miscarried. Drawing from the pages of unfortunate history, in a classic social-imperialist move, the regime wants to direct these internal tensions outward. At the same time, the nationalistic fervor advanced by the CCP’s propaganda and by the rapid military modernization have made many young militant officers in the PLA overconfident. This is infrequently noticed in the West. They can hardly wait to fight an ultimate war to defeat the arch-enemy. This plainly dangerous mentality echoes the Japanese military’s beliefs before Pearl Harbor. The bellicosity evinced in Wei’s speech is serious and is not bluster intended to deter. The United States cannot meet China’s threat with half-measures, which are likely to further encourage China’s aggressive behavior. The United States must respond to China’s belligerence with greater strength, adamantine determination, and more vigorous diplomatic and military measures. With the Xi Doctrine, China has proclaimed and rationalized its aggression. A Trump Doctrine forged in response has to reveal to all global audiences, most importantly the CCP leadership, the recklessness of the Xi Doctrine and the supreme folly of aggression.

#### Transition is devastating and an impact magnifier – shift back to unipolarity is key.

Keck 14 Zachary Keck is Managing Editor of The Diplomat, The Diplomat, January 24, 2014, “America’s Relative Decline: Should We Panic?”, http://thediplomat.com/2014/01/americas-relative-decline-should-we-panic/

Regardless of your opinion on U.S. global leadership over the last two decades, however, there is good reason to fear its relative decline compared with China and other emerging nations. To begin with, hegemonic transition periods have historically been the most destabilizing eras in history. This is not only because of the malign intentions of the rising and established power(s). Even if all the parties have benign, peaceful intentions, the rise of new global powers necessitates revisions to the “rules of the road.” This is nearly impossible to do in any organized fashion given the anarchic nature of the international system, where there is no central authority that can govern interactions between states. We are already starting to see the potential dangers of hegemonic transition periods in the Asia-Pacific (and arguably the Middle East). As China grows more economically and militarily powerful, it has unsurprisingly sought to expand its influence in East Asia. This necessarily has to come at the expense of other powers, which so far has primarily meant the U.S., Japan, Vietnam and the Philippines. Naturally, these powers have sought to resist Chinese encroachments on their territory and influence, and the situation grows more tense with each passing day. Should China eventually emerge as a global power, or should nations in other regions enjoy a similar rise as Kenny suggests, this situation will play itself out elsewhere in the years and decades ahead. All of this highlights some of the advantages of a unipolar system. Namely, although the U.S. has asserted military force quite frequently in the post-Cold War era, it has only fought weak powers and thus its wars have been fairly limited in terms of the number of casualties involved. At the same time, America’s preponderance of power has prevented a great power war, and even restrained major regional powers from coming to blows. For instance, the past 25 years haven’t seen any conflicts on par with the Israeli-Arab or Iran-Iraq wars of the Cold War. As the unipolar era comes to a close, the possibility of great power conflict and especially major regional wars rises dramatically. The world will also have to contend with conventionally inferior powers like Japan acquiring nuclear weapons to protect their interests against their newly empowered rivals. But even if the transitions caused by China’s and potentially other nations’ rises are managed successfully, there are still likely to be significant negative effects on international relations. In today’s “globalized” world, it is commonly asserted that many of the defining challenges of our era can only be solved through multilateral cooperation. Examples of this include climate change, health pandemics, organized crime and terrorism, global financial crises, and the proliferation of weapons of mass destruction, among many others. A unipolar system, for all its limitations, is uniquely suited for organizing effective global action on these transnational issues. This is because there is a clear global leader who can take the initiative and, to some degree, compel others to fall in line. In addition, the unipole’s preponderance of power lessens the intensity of competition among the global players involved. Thus, while there are no shortages of complaints about the limitations of global governance today, there is no question that global governance has been many times more effective in the last 25 years than it was during the Cold War.

#### Nuke war causes extinction AND outweighs other existential risks.

PND 16. internally citing Zbigniew Brzezinski, Council of Foreign Relations and former national security adviser to President Carter, Toon and Robock’s 2012 study on nuclear winter in the Bulletin of Atomic Scientists, Gareth Evans’ International Commission on Nuclear Non-proliferation and Disarmament Report, Congressional EMP studies, studies on nuclear winter by Seth Baum of the Global Catastrophic Risk Institute and Martin Hellman of Stanford University, and U.S. and Russian former Defense Secretaries and former heads of nuclear missile forces, brief submitted to the United Nations General Assembly, Open-Ended Working Group on nuclear risks. A/AC.286/NGO/13. 05-03-2016. <http://www.reachingcriticalwill.org/images/documents/Disarmament-fora/OEWG/2016/Documents/NGO13.pdf> //Re-cut by Elmer

Consequences human survival 12. Even if the 'other' side does NOT launch in response the smoke from 'their' burning cities (incinerated by 'us') will still make 'our' country (and the rest of the world) uninhabitable, potentially inducing global famine lasting up to decades. Toon and Robock note in ‘Self Assured Destruction’, in the Bulletin of Atomic Scientists 68/5, 2012, that: 13. “A nuclear war between Russia and the United States, even after the arsenal reductions planned under New START, could produce a nuclear winter. Hence, an attack by either side could be suicidal, resulting in self assured destruction. Even a 'small' nuclear war between India and Pakistan, with each country detonating 50 Hiroshima-size atom bombs--only about 0.03 percent of the global nuclear arsenal's explosive power--as air bursts in urban areas, could produce so much smoke that temperatures would fall below those of the Little Ice Age of the fourteenth to nineteenth centuries, shortening the growing season around the world and threatening the global food supply. Furthermore, there would be massive ozone depletion, allowing more ultraviolet radiation to reach Earth's surface. Recent studies predict that agricultural production in parts of the United States and China would decline by about **20 percent** for four years, and by 10 percent for a decade.” 14. A conflagration involving USA/NATO forces and those of Russian federation would most likely cause the deaths of most/nearly all/all humans (and severely impact/extinguish other species) as well as destroying the delicate interwoven techno-structure on which latter-day 'civilization' has come to depend. Temperatures would drop to below those of the last ice-age for up to 30 years as a result of the lofting of up to 180 million tonnes of very black soot into the stratosphere where it would remain for decades. 15. Though human ingenuity and resilience shouldn't be underestimated, human survival itself is arguably problematic, to put it mildly, under a 2000+ warhead USA/Russian federation scenario. 16. The Joint Statement on Catastrophic Humanitarian Consequences signed October 2013 by 146 governments mentioned 'Human Survival' no less than 5 times. The most recent (December 2014) one gives it a highly prominent place. Gareth Evans’ ICNND (International Commission on Nuclear Non-proliferation and Disarmament) Report made it clear that it saw the threat posed by nuclear weapons use as one that at least threatens what we now call 'civilization' and that potentially threatens human survival with an immediacy that even climate change does not, though we can see the results of climate change here and now and of course the immediate post-nuclear results for Hiroshima and Nagasaki as well.

#### Advantage 2 – Space War

#### Space is the pinnacle of great power competition – China is set to take advantage – investment in state based launching and military capabilities leaves the US in the dust.

**Zivitski 20**, Liane. (Maj. Liane Zivitski Chief, Operations Branch, J32 American Military University Masters - Strategic Intelligence Intelligence Officer for USAF) “China Wants to Dominate Space, and the US Must Take Countermeasures.” Defense News, Defense News, 23 June 2020, https://www.defensenews.com/opinion/commentary/2020/06/23/china-wants-to-dominate-space-and-the-us-must-take-countermeasures/. //JQ

China is determined to replace the U.S. as the dominant power in space. While proclaiming its peaceful intentions, Beijing’s doctrine considers space a military domain, and it is investing heavily in space infrastructure designed to [secure](https://www.c4isrnet.com/battlefield-tech/space/2019/11/15/chinas-space-silk-road-could-pose-a-challenge-to-the-us/) both economic and military advantages. To ensure that it continues to compete from a position of strength, the U.S. must [invest sufficient resources](https://www.c4isrnet.com/battlefield-tech/space/2020/06/17/pentagon-releases-defense-space-strategy-to-counter-russia-and-china/) in preparing its new Space Force to defend America’s national interests and security in space.

Beijing’s [rapidly improving capabilities](https://www.c4isrnet.com/battlefield-tech/space/2020/06/23/china-launches-final-satellite-in-gps-like-beidou-system/) are clear to see. On May 5, China successfully [launched](https://www.popularmechanics.com/space/rockets/a32383927/china-rocket-launch-long-march-5b/) the Long March-5B rocket designed to eventually transport astronauts into space. This was the first successful launch of any Long March rocket this year after failed attempts to launch the [Long March-3B](https://www.space.com/china-long-march-3b-rocket-launch-failure.html) in April and [Long March-7A](https://www.space.com/china-long-march-7a-rocket-launch-failure.html) in March.

Three weeks later, China completed back-to-back launches from two separate launch facilities placing Earth-imaging and technology demonstration satellites into orbit. China plans to launch more than 60 spacecraft in over 40 launches in 2020, and has led global launches over the past two years.

Currently, China is second only to the U.S. in the number of operational satellites in orbit, with 363 as of March 31, 2020.

These capabilities are a cause for concern because of Beijing’s concurrent investment in space weapons. The Pentagon recently warned China has developed and fielded ground- and space-based anti-satellite, directed-energy, and electronic warfare capabilities that place the peaceful use of international space at risk.

Evidence suggests China could be developing up to three different anti-satellite systems. China launched its first successful ground-based direct ascent anti-satellite missile, [the SC-19](https://www.globalsecurity.org/space/world/china/sc-19-asat.htm), in 2007, and spent the last decade improving follow-on versions. In 2018, the People’s Liberation Army formed military units that began initial operational training with anti-satellite missiles. The SC-19 is now assessed operational and capable of targeting low-Earth orbit satellites.

China also fielded sophisticated on-orbit capabilities, such as satellites with [robotic arm technology](https://aerospace.csis.org/wp-content/uploads/2020/03/Harrison_SpaceThreatAssessment20_WEB_FINAL-min.pdf) for inspection and repair, which the U.S. Defense Intelligence Agency [assesses](https://www.dia.mil/Portals/27/Documents/News/Military%20Power%20Publications/Space_Threat_V14_020119_sm.pdf) could also function as a weapon.

Because destruction of assets using anti-satellite technology is easily attributable, China is also pursuing a broad range of nondestructive directed-energy and electronic warfare weapons like lasers for blinding commercial and military imaging satellites. It is also working on radio frequency-jamming technologies capable of degrading or denying satellite communications and global navigation satellite systems like GPS.

China’s counter-space efforts have forced the U.S. to take measures to protect itself against what Secretary of Defense Mark Esper accurately labeled the weaponization of space. The 2020 National Defense Authorization Act established the United States Space Force as the sixth independent branch of the military to meet the threat posed to American space-based assets by potential enemies. U.S. Space Command, the Defense Department’s 11th combatant command, recently finalized its campaign plan with a new mission statement emphasizing “defending against and deterring threats.”

However, China is launching capabilities into space at a pace that is becoming increasingly difficult for the U.S. to match amid the current pandemic. Despite the recent success of the SpaceX launch from U.S. soil to the International Space Station, the U.S. has delayed several launches due to COVID-19.

In March, California-based Rocket Lab postponed the launch of three U.S. intelligence payloads from its launch complex [in New Zealand](https://www.c4isrnet.com/battlefield-tech/space/2020/06/18/us-to-continue-launching-spy-satellites-from-new-zealand-in-2021/). In April, the U.S. Space Force delayed a GPS satellite launch to no earlier than June 30 in order to minimize personnel from [COVID-19 exposure](https://www.c4isrnet.com/battlefield-tech/space/2020/04/07/space-force-delays-gps-launch-to-minimize-covid-19-exposure/). And delays caused by the novel coronavirus also ensured the first launch of NASA’s Artemis program will not happen until late 2021.

Meanwhile, China is already [preparing](https://spacenews.com/rocket-arrives-as-china-targets-july-for-tianwen-1-mars-mission-launch/) for its next launch, the Tianwen-1 Mars mission, scheduled for July.

Space is the new high ground in great power competition, and the U.S. must secure and maintain its superiority there. It would be less expensive to rely on multilateral organizations and international norms to prevent aggression in space, Beijing’s track record of deviation from international norms leaves the U.S. no choice but to prepare to defend itself. The fiscal 2021 U.S. Space Force budget request for $15.4 billion is a critical first step to combat emerging threats, especially from China.

#### Misperception means it goes nuclear.

Rovner 17 – Professor of Political Science, SMU (Joshua, “Two kinds of catastrophe: nuclear escalation and protracted war in Asia,” Journal of Strategic Studies, <http://www.tandfonline.com/doi/abs/10.1080/01402390.2017.1293532?journalCode=fjss20>)

This clash of great power interests has led to concerns that a US–China war may be over the horizon. Such a war is not inevitable, of course, and both sides have obvious reasons to avoid any military conflict. But neither has shown much willingness to back down from the political issues at stake, some of which are infused with nationalism. As long as these issues remain unresolved, and as long as the United States remains committed to the allies who are at loggerheads with Beijing, then conflict will remain a possibility. The fact that both sides possess nuclear weapons raises the danger of a nuclear exchange, even over crises that begin over what to be relatively minor disputes.1 In the event of a war, both China and the United States would seek a quick decisive victory. Any war is likely to exact high costs in blood and treasure. Their high level of trade and financial interdependence, and the centrality of the United States and China to the global economy, means that a prolonged war would be an economic calamity. Chinese military doctrine increasingly stresses the importance of winning quickly, and it puts a premium on seizing the initiative and controlling the pace of combat under what it calls “informatized conditions.” The examples of the US wars in Iraq, Kosovo, and Afghanistan convinced Chinese thinkers that high-intensity conventional combat is no longer a question of relative industrial power. Instead, it is a competition for control of communications. In future conflicts, long-range attacks coupled with aggressive information operations will sew confusion and allow China to dictate the crucial opening stages. The 2001 edition of the Science of Military Strategy (SMS) states that China envisions precision strikes in order to “paralyze the enemy in one stroke.” 2 Organizational changes in the years that followed gave the People’s Liberation Army Air Force (PLAAF) more autonomy and responsibility for long-range strike. In addition, the 2013 edition of SMS called for the PLAAF to develop information operations capable of “effective suppression and destruction” of enemy’s information systems alongside an “information protection capability.” 3 Chinese leaders have committed to the PLA’s military space and counter-space capabilities, investing in more missions, more launches, and more satellites. Finally, the PLA has deliberately merged electronic warfare with psychological operations, based on the idea that confusing the enemy by undermining its communications will force it into operational sclerosis and have a profound psychological effect. The goal is to win fast. The PLA must “seize and control the battlefield initiative, paralyze and destroy the enemy’s operational system of systems, and shock the enemy’s will for war.” 4 This approach closely resembles the US model, which relies on prompt attacks on communications and intelligence networks, which will make it safe for follow-on forces to surge into theater and dictate the scope and pace of combat. American officers have become accustomed to short conventional clashes since the first Gulf War, and their basic operational concept remains largely unchanged. Doctrine continues to emphasize the importance of seizing the initiative, confusing the enemy, and establishing control. The standing joint publication on operations provides a neat summary of the US approach: As operations commence, the (joint force commander) needs to exploit friendly advantages and capabilities to shock, demoralize, and disrupt the enemy immediately. The JFC seeks decisive advantage through the use of all available elements of combat power to seize and maintain the initiative, deny the enemy the opportunity to achieve its objectives, and generate in the enemy a sense of inevitable failure and defeat.5 Rapid attacks cause physical destruction and psychological damage, turning dangerous adversaries into helpless, disorganized, and vulnerable targets. Under these conditions, enemies have neither the ability nor the desire to fight on, and the United States can consolidate its initial gains with additional forces who face little or no resistance. In sum, China and the United States are preparing for a kind of highintensity warfare that requires executing rapid and complex operations while simultaneously disrupting the enemy’s command and control. Both sides believe this operational concept can lead to victory at a reasonably low cost, and are tailoring military doctrine to achieve specific political objectives without risking national disaster. What if both sides are wrong? Great powers often exaggerate their capabilities and minimize the importance of contingency and chance in war. Sometimes they launch campaigns with the false belief that war will be brief and painless, only to learn the opposite. Combat against a thinking adversary reveals the limits of existing capabilities in ways that are impossible to know before the fact. Strategic interaction during war plays havoc with prewar expectations, because the combatants do their utmost to undermine the other. Ambiguous information may not allow either side to judge whether it is succeeding, or, indeed, whether its forces are actually carrying out operations as intended. Great power wars rarely go according to plan. Good strategies thus contain a reasonable margin of error, and good strategists learn to think about what might go wrong. Contingency planning is especially important in cases where nuclear weapons may come into play This article discusses the relationship between conventional and nuclear weapons in a hypothetical war between the United States and China. Both countries have spent lavishly on new conventional military capabilities. Beijing is developing “anti-access” systems to make operations dangerous for US forces in the region, and Washington has responded by refining its operational approach. In the nuclear realm, China is undergoing a modernization of its arsenal and has revised its posture, while the United States has invested in increasingly accurate missiles, lethal warheads, and remote sensing technologies that enable rapid precision strikes. These trends may have important and troubling effects on the dynamics of a potential conventional military confrontation. While optimists imagine a quick and decisive victory, the presence of nuclear weapons opens the possibility of unexpected scenarios that neither side can fully control. The following discussion describes two such scenarios. The first section discusses the prospects for nuclear use. The second section discusses the opposite scenario by looking at the prospects for a protracted conventional war. While escalation concerns have attracted a great deal of scrutiny, scholars have paid much less attention to the possibility of a drawn-out fight. The third section evaluates which scenario is more likely in a US–China conflict. The conclusion discusses the political and military trade-offs leaders will face in a future crisis. Efforts to win quickly will increase the risk of nuclear use. Efforts to reduce the risk of escalation, on the other hand, will increase the risk of a prolonged war. Escalation What would cause leaders to cross the nuclear threshold? In some cases, the choice may be a conscious decision to marry conventional and nuclear doctrine and incorporate escalatory moves in prewar plans. This would be the case if they believe they can execute a preemptive first strike and disable or destroy the adversary’s arsenal. Preemptive attacks are particularly appealing against states with incautious or irrational leaders, especially if they possess small and vulnerable forces. Deliberate escalation is also possible if leaders believe that they must signal resolve by indicating their control at all levels of violence. Preparations for conventional war would transparently include plans for nuclear use in the case of certain contingencies. According to this logic, a clear signal of “escalation dominance” is necessary to convince the enemy that the risks are overwhelming and the prospects of victory are slim. If demonstrations of dominance fail, however, then the stronger state can simply execute its plan in order to defeat the enemy. US leaders in the Cold War invested in capabilities to enable attacks on enemy nuclear weapons and associated systems.6 If this was the case in the Cold War, when the United States faced a superpower adversary with a sprawling nuclear weapons complex, then leaders today probably remain interested in counterforce. Open-source analyses of US technology, along with some telling statements from US leaders, reveal an ongoing program for building and deploying weapons to preempt enemy escalation during a conventional conflict.7 They are also concerned with adversary innovations that complicate counterforce strikes.8 But suppose that leaders have no intention of using nuclear weapons. It is one thing to develop impressive technologies, but quite another to use them, and policymakers may blanch at the real prospect of authorizing first use. Even in these cases, there are several theoretical pathways to escalation. The first is psychological. Cognitive biases may cause leaders to misperceive rival intentions, mistaking signals of restraint for signs of danger. Prewar expectations strongly influence how individuals interpret new information, and they will ignore or reframe dissonant information so it fits into their existing beliefs. Misperceptions intensify after the shooting starts, when information is ambiguous and incomplete. Carl von Clausewitz dwelt on the problem in the aftermath of the Napoleonic Wars, noting that intelligence reports were often contradictory and unreliable “in the thick of fighting.” Despite advances in intelligence and communications, the fog of war remains an enduring problem. Organized violence is an iterative process, and each side has incentives to hide its actions and deceive its adversary. Violence also unleashes intense emotions that obscure the material effects of battle. Commanders may not understand whether they are winning or losing, and in lieu of reliable intelligence they are likely to let passion overtake good judgment. “In short,” Clausewitz concluded, “most intelligence is false, and the effect of fear is to multiply lies and inaccuracies.” 9 Wartime leaders are prone to attribution bias, or the belief that their counterparts are inherently evil. Leaders in conflict are likely to assume the worst about their rivals or else they would not have picked a fight in the first place. Attribution bias causes them disregard the notion that their enemies have limited goals and are willing to accept partial victories. They are also prone to reject peace overtures as meaningless gestures at best, or as efforts to lull them into passivity before escalating the conflict.10 Finally, prospect theory tells us that individuals will fight harder to avoid losing a possession than they will to gain something new. If leaders equate settling with losing, then they will be tempted to risk escalation. All of these psychological pressures are exacerbated under stress and tight time constraints.11 Domestic pressures might lead to escalation if one or both governments fear that regime change will be the political penalty for battlefield failure. Escalation is also possible if the issues at stake are wrapped up in nationalism or ideologies that inflate the value of the object. Leaders will be hard pressed to accept defeat in such cases, especially if military outcome is particularly lopsided and humiliating. Leaders who depend on particularly hawkish constituencies to remain in power are especially likely to take new risks even against long odds. Rather than negotiating an end to the war, they might gamble for resurrection by escalating to the nuclear level.12 Such a move would not necessarily be irrational. Instead, resurrection succeeds by shifting the war towards the balance of interests rather than the balance of capabilities. A retreating combatant, battered in the early stages of a conflict, may still affect the enemy’s calculation by taking extraordinary risks. Escalation signals a willingness to fight to the finish and a reminder that it has powerful interests at stake. Such a strategy is admittedly risky, but it may be effective, especially if the escalating state is fighting to defend its own territory against a distant rival. Transforming a conflict into a test of resolve makes sense when a state is failing the test of arms.13 Finally, inadvertent escalation may occur when conventional attacks put the adversary’s nuclear force at risk. Under these conditions, the target state might reasonably worry that the attack is only the first phase of a larger war. There may be no way to offer credible reassurances that it is not. Fearing the destruction or incapacitation of its nuclear deterrent, the target state might face a “use it or lose it” dilemma. Inadvertent escalation is especially likely if key command and control nodes are vulnerable or if conventional and nuclear target sets are indistinguishable. The danger also increases if military organizations indulge organizational preferences for offensive action. This encourages planners to err on the side of attacking all available targets. While it might sense to allow the adversary to retain some capabilities in order to reduce the incentives for escalation, planners may bridle at the thought of consciously allowing the enemy to retain the capacity for attack.14 In recent years, China has invested heavily in capabilities that will complicate US maritime operations and threaten US bases in Japan and Guam. Equipped with a range of anti-access capabilities, China may be able to deter the United States from intervening in the case of a regional war. If it does intervene, China may attempt to damage or destroy US assets or force carrier groups to operate at prohibitively long distances from the mainland.

#### Beijing and Moscow commercial partnership uses dual-use disguise to weaponize space and destroy US nuclear communication and defense.

**Bowman**, Bradley, **and** Jared **Thompson 21**. (Bradley Bowman is the senior director of the Center on Military and Political Power at the Foundation for Defense of Democracies and a former advisor to members of the Senate Armed Services and Foreign Relations committees.) (Jared Thompson is a U.S. Air Force major and visiting military analyst at the Foundation for Defense of Democracies.) “Russia and China Seek to Tie America's Hands in Space.” Foreign Policy, 31 Mar. 2021, https://foreignpolicy.com/2021/03/31/russia-china-space-war-treaty-demilitarization-satellites/. recut

Consider the actions of the United States’ two great-power adversaries when it comes to anti-satellite weapons. China and Russia have [sprinted](https://thedispatch.com/p/we-must-work-to-prevent-a-space-pearl) to develop and deploy both ground-based and space-based weapons targeting satellites while simultaneously pushing the United States to sign a treaty banning such weapons.

To protect its vital space-based military capabilities—including communications, intelligence, and missile defense satellites—and effectively deter authoritarian aggression, Washington should avoid being drawn into suspect international treaties on space that China and Russia have no intention of honoring.

The Treaty on the Prevention of the Placement of Weapons in Outer Space and of the Threat or Use of Force Against Outer Space Objects (PPWT), which Beijing and [Moscow](https://undocs.org/en/CD/2181) have submitted at the United Nations, is a perfect example. PPWT signatories [commit](https://undocs.org/pdf?symbol=en/CD/1985) “not to place any weapons in outer space.” It also says parties to the treaty may not “resort to the threat or use of force against outer space objects” or engage in activities “inconsistent” with the purpose of the treaty.

On the surface, that sounds innocuous. Who, after all, wants an arms race in space?

The reality, however, is that China and Russia are already racing to field anti-satellite weapons and have been for quite some time. “The space domain is competitive, congested, and contested,” Gen. James Dickinson, the head of U.S. Space Command, [said](https://www.defense.gov/Explore/News/Article/Article/2483340/commander-lists-5-tasks-to-ensuring-continued-space-superiority/) in January. “Our competitors, most notably China and Russia, have militarized this domain.”

Beijing already has an [operational ground-based anti-satellite missile capability](https://www.dia.mil/Portals/27/Documents/News/Military%20Power%20Publications/Space_Threat_V14_020119_sm.pdf#page=3). People’s Liberation Army units are training with the missiles, and the U.S. Defense Department [believes](https://media.defense.gov/2020/Sep/01/2002488689/-1/-1/1/2020-DOD-CHINA-MILITARY-POWER-REPORT-FINAL.PDF#page=90) Beijing “probably intends to pursue additional [anti-satellite] weapons capable of destroying satellites up to geosynchronous Earth orbit.” That is where America’s most sensitive nuclear communication and missile defense satellites orbit and keep watch.

Similarly, Moscow [tested](https://www.spacecom.mil/News/Article-Display/Article/2448334/russia-tests-direct-ascent-anti-satellite-missile/) a ground-based anti-satellite weapon in December that could destroy U.S. or allied satellites in orbit. That attack capability augments a ground-based laser weapon that Russian President Vladimir Putin [heralded](https://tass.com/defense/1034344) in 2018. In a moment of candor, Russia’s defense ministry admitted the system was designed to “fight satellites.”

To make matters worse, both countries are also working to deploy space-based—or so-called “[on-orbit](https://www.dia.mil/Portals/27/Documents/News/Military%20Power%20Publications/Space_Threat_V14_020119_sm.pdf#page=3)”—capabilities to attack satellites.

Meanwhile, at the United Nations and other international forums, China and Russia are pushing the PPWT and advocating for a “[no first placement](https://2017-2021.state.gov/whither-arms-control-in-outer-space-space-threats-space-hypocrisy-and-the-hope-of-space-norms/index.html)” resolution—saying all governments should commit not to be the first to put weapons in space.

Yet more than two years ago, the U.S. Defense Intelligence Agency [noted](https://www.dia.mil/Portals/27/Documents/News/Military%20Power%20Publications/Space_Threat_V14_020119_sm.pdf) that both China and Russia were already putting in space capabilities that could be used as weapons. The PPWT would thus protect their weapons while tying Washington’s hands.

In a thinly veiled attempt to mask their intentions, the two countries claim that their on-orbit capabilities are simply for peaceful purposes—for assessing the condition of broken satellites and conducting repairs as needed. This “dual-use” disguise permits Beijing and Moscow to put into orbit ostensibly peaceful or commercial capabilities that those countries can actually use to disable or destroy U.S. military and intelligence satellites.

China, for example, has tested several so-called [scavenger](https://www.scmp.com/news/china/science/article/3007186/how-chinas-scavenger-satellites-are-being-used-develop-ai) satellites, which use [grappling arms to capture](https://www.uscc.gov/sites/default/files/annual_reports/2015%20Annual%20Report%20to%20Congress.PDF#page=307) other satellites. China has also demonstrated the capability to [maneuver a satellite](https://breakingdefense.com/2018/04/china-satellite-sj-17-friendly-wanderer/) around the geosynchronous belt, allowing its satellites to sidle up to other satellites in space.

Not to be outdone, Russia deployed a pair of “nesting doll” satellites that [shadowed](https://time.com/5779315/russian-spacecraft-spy-satellite-space-force/) a U.S. satellite in space. One Russian satellite birthed another, with Russia’s defense ministry [claiming](https://tass.ru/armiya-i-opk/7285111) its purpose was to assess the “technical condition of domestic satellites.”

But later, the second satellite conducted a weapons test, [firing](https://www.spacecom.mil/MEDIA/NEWS-ARTICLES/Article/2285098/russia-conducts-space-based-anti-satellite-weapons-test/) what appeared to be a [space torpedo](https://spacewatch.global/2020/12/spacewatchgl-opinion-2020-in-review-a-space-security-perspective/). The Kremlin never explained how a fast-moving one-time projectile provided superior inspection benefits compared with the other Russian satellite flying persistently nearby.

#### Dual-use capability destroys early warning, navigation, and communication – causes miscalculation that escalates to nuclear use.

**Kelley**, Brandon, **and** Brian **Chow 21**. (Brian Chow - Independent policy analyst (Ph.D. physics, MBA with Distinction, Ph.D. finance) with over 160 publications in space and other national security policies) “China's Anti-Satellite Weapons Could Conquer Taiwan-or Start a War.” The National Interest, The Center for the National Interest, 21 Aug. 2021, https://nationalinterest.org/feature/china%E2%80%99s-anti-satellite-weapons-could-conquer-taiwan%E2%80%94or-start-war-192135. / recut

If current trends hold, then China’s[Strategic Support Force](https://ndupress.ndu.edu/Portals/68/Documents/stratperspective/china/china-perspectives_13.pdf) will be capable by the late 2020s of holding key U.S. space assets at risk. [Chinese military doctrine](https://nationalinterest.org/blog/reboot/nowhere-earth-will-be-safe-us-china-war-172523), statements by senior officials, and past behavior all suggest that China may well believe threatening such assets to be an effective means of deterring U.S. intervention. If so, then the United States would face a type of “Sophie’s Choice”: decline to intervene, potentially leading allies to follow suit and Taiwan to succumb without a fight, thereby enabling Xi to achieve his goal of “peacefully” snuffing out Taiwanese independence; or start a war that would at best be long and bloody and might well even cross the nuclear threshold.

This emerging crisis has been three decades in the making. In 1991, China watched from afar as the United States used space-enabled capabilities to obliterate the Iraqi military from a distance in the first Gulf War. The People’s Liberation Army quickly set to work developing capabilities targeted at a perceived Achilles’ heel of this new [American way of war](https://nationalinterest.org/feature/secrets-and-lies-role-truth-great-power-information-warfare-170579): reliance on vulnerable space systems.

This project came to fruition with a direct ascent[ASAT weapons test](https://fas.org/sgp/crs/row/RS22652.pdf) in 2007, but the test was limited in two key respects. First, it only reached low Earth orbit. Second, it generated thousands of pieces of long-lasting space junk, provoking immense[international ire](https://spacenews.com/u-s-official-china-turned-to-debris-free-asat-tests-following-2007-outcry/). This backlash appears to have taken China by surprise, driving it to seek new, more usable ASAT types with minimal debris production. Now, one such ASAT is nearing operational status: spacecraft capable of rendezvous and proximity operations (RPOs).

Such spacecraft are[inevitable](https://www.airuniversity.af.edu/Portals/10/SSQ/documents/Volume-12_Issue-2/Chow.pdf#page=22) and cannot realistically be limited. The United States, European Union, China, and others are developing them to provide a range of satellite services essential to the[new space economy](https://www.morganstanley.com/ideas/space-economy-themes-2021), such as in situ repairs and refueling of satellites and active removal of space debris. But RPO capabilities are dual-use: if a satellite can grapple space objects for servicing, then it might well be capable of grappling an adversary’s satellite to move it out of its servicing orbit. Perhaps it could degrade or disable it by bending or disconnecting its solar panels and antennas all while producing minimal debris.

This is [a serious threat](https://nationalinterest.org/feature/can-america-lose-china-189020), primarily because no international rules presently exist to limit close approaches in space. Left unaddressed, this lacuna in international law and space policy could enable a prospective attacker to pre-position, during peacetime, as many spacecraft as they wish as close as they wish to as many high-value targets as they wish. The result would be an ever-present possibility of sudden, bolt-from-the-blue attacks on vital space assets—and worse, on many of them at once.

China has conducted at least[half a dozen tests of RPO](https://swfound.org/media/207179/swf_chinese_rpo_fact_sheet_apr2021.pdf#page=3) capabilities in space since 2008, two of which went on for years. Influential space experts have noted that these tests have plausible peaceful purposes and are in many cases similar to those conducted by the United States. This, however, does not make it any less important to establish effective legal, policy, and technical counters to their offensive use. Even if it were certain that these capabilities are intended purely for peaceful applications—and it is not at all clear that that is the case—China (or any other country) could at any time decide to repurpose these capabilities for ASAT use.

There is still time to get out ahead of this threat, but likely not for much longer. China’s RPO capabilities have, thus far, lagged about five years behind those of the United States. There are reasons to believe this gap may close, but even assuming that it holds, we should expect to see China demonstrate an operational dual-use rendezvous spacecraft by around 2025. (The first instance of a U.S. commercial satellite docking with another satellite to change its orbit occurred in[February 2020](https://news.northropgrumman.com/news/releases/northrop-grumman-successfully-completes-historic-first-docking-of-mission-extension-vehicle-with-intelsat-901-satellite).)

At the same time, China is expanding its capacity for rapid spacecraft manufacturing. The[Global Times](https://www.globaltimes.cn/page/202101/1213345.shtml) reported in January that China’s first intelligent mass production line is set to produce 240 small satellites per year. In April,[Andrew Jones](https://spacenews.com/china-is-developing-plans-for-a-13000-satellite-communications-megaconstellation/#:~:text=China%20is%20developing%20plans%20for%20a%2013%2C000%2Dsatellite%20megaconstellation,-by%20Andrew%20Jones&text=HELSINKI%20%E2%80%94%20China%20is%20to%20oversee,the%20country's%20major%20space%20actors.) at SpaceNews reported that China is developing plans to quickly produce and loft a thirteen thousand-satellite national internet megaconstellation. It is not unreasonable to assume that China could manufacture two hundred small rendezvous ASAT spacecraft by 2029, possibly more.

If this happens, and Beijing was to decide in 2029 to launch these two hundred small RPO spacecraft and position them in close proximity to strategically vital assets, then China would be able to simultaneously threaten disablement of the entire constellations of U.S. satellites for missile early warning (about a dozen satellites with spares included); communications in a nuclear-disrupted environment (about a dozen); and positioning, navigation, and timing (about three dozen); along with several dozen key communications, imagery, and meteorology satellites. Losing these assets would severely degrade U.S. deterrence and warfighting capabilities, yet once close pre-positioning has occurred such losses become almost impossible to prevent. For this reason, such pre-positioning could conceivably deter the United States from coming to Taiwan’s aid due to the prospect that intervention would spur China to disable these critical space systems. Without their support, the war would be much bloodier and costlier—a daunting proposition for any president.

Should the United States fail to intervene, the consequences would be disastrous for both Washington and its allies in East Asia, and potentially the credibility of U.S. defense commitments around the globe. Worse yet, however, might be what could happen if China believes that such a threat will succeed but proves to be wrong. History is rife with examples of major wars arising from miscalculations such as this, and there are many pathways by which such a situation could easily escalate out of control to a full-scale conventional conflict or even to nuclear use.

#### Space conflicts go nuclear – the risk is high and there are no breaks on escalation.

Grego 15 [LAURA GREGO is a physicist in the Global Security program at UCS. She is an expert in space weapons and security; ballistic missile proliferation; and ballistic missile defense. "Preventing Space War." https://allthingsnuclear.org/lgrego/preventing-space-war]

So says a very good New York Times editorial “Preventing a Space War” this week. Sounds right, if X-Wing fighters come to mind when you think space conflict. But in reality conflict in space is both more likely than one would think and less likely to be so photogenic. Space as a locus of conflict The Pentagon has known that space could be a flash point at least since the late 1990s when it began including satellites and space weapons in earnest as part of its wargames. The early games revealed some surprises. For example, attacking an adversary’s ground-based anti-satellite weapons before they were used could be the “trip wire” that starts a war: in the one of the first war games, an attack on an enemy’s ground-based lasers was meant to defuse a potential conflict and protect space assets, but instead was interpreted as an act of war and initiated hostilities. The games also revealed that disrupting space-based communication and information flow or “blinding” could rapidly escalate a war, eventually leading to nuclear weapon exchange. The war games have continued over the years with increased sophistication, but continue to find that conflicts can rapidly escalate and become global when space weapons are involved, and that even minor opponents can create big problems. The report back from the 2012 game, which included NATO partners, said these insights have become “virtually axiomatic.” Participants in the most recent Schriever war games found that when space weapons were introduced in a regional crisis, it escalated quickly and was difficult to stop from spreading. The compressed timelines, the global as well as dual-use nature of space assets, the difficulty of attribution and seeing what is happening, and the inherent vulnerability of satellites all contribute to this problem. Satellite vulnerability & solutions Satellites are valuable but, at least on an individual basis, physically vulnerable. Vulnerable in that they are relatively fragile, as launch mass is at a premium and so protective armor is too expensive, and a large number of low-earth-orbiting satellites are no farther from the earth’s surface than the distance from Boston to Washington, DC.

#### Space militarization turns neg DAs. Collapse of R&D, commercial ops, economy, and deterrence – global war is inevitable.

**Gilliard 19**, Alexandra. (Alexandra Gilliard is a Senior Editor and interviewer of international relations experts for the International Affairs Forum. She holds an M.S. in Global Studies and International Relations from Northeastern University, and a B.A. in International Relations from Boston University, with expertise in conflict resolution, arms control, human rights issues, and the MENA region.) “What Are the Consequences of Militarizing Outer Space?” Global Security Review, 10 June 2019, https://globalsecurityreview.com/consequences-militarization-space/. //JQ

Consequences of Armament and Aggression in Space

The consequences of weapons testing and aggression in space could span generations, and current technological advances only increase the urgency for policymakers to pursue a limitations treaty. As it stands, there are three major ramifications of a potential arms race in space:

The destruction of satellites

As both financial and technological barriers to the space services industry have decreased, the number of governmental and private investors with assets in space has inevitably increased. There is now an abundance of satellites in space owned by multiple states and corporations. These satellites are used to not only coordinate military actions, but to perform more mundane tasks, like obtaining weather reports, or managing on-ground communications, and navigation.

Should states begin weapons testing in space, debris could cloud the orbit and make positioning new satellites impossible, disrupting our current way of life. More pressing, however, is that if a country’s satellites are successfully destroyed by an enemy state, military capabilities can be severely hindered or destroyed, leaving the country vulnerable to attack and unable to coordinate its military forces on the ground.

Diminished future use of near space

Whether caused by weapons testing or actual aggression, the subsequent proliferation of debris around the planet would damage our future ability to access space. Not only would debris act as shrapnel to preexisting assets in space, but it would also become much more difficult to launch satellites or rockets, hindering scientific research, space exploration, and commercial operations.

From the past fifty-odd years of activity in space alone, the debris left behind in Earth’s orbital field has already become hazardous to spacecraft — a main reason why the U.S. and the Soviet Union did not continue with ASAT testing during the Cold War. If greater pollution were to occur, space itself could be become unusable, resulting in the collapse of the global economic system, air travel, and various communications.

Power imbalances and proliferation on the ground

Only so many states currently have access to space—which means any militarization be by the few, while other states would be left to fend for themselves. This would establish a clear power imbalance that could breed distrust among nations, resulting in a more insecure world and a veritable power keg primed for war. Additionally, deterrence measures taken by states with access to space would escalate, attempting to build up weapons caches not dissimilar to the nuclear weapons stockpiling activities of the Cold War.

In any arms race, it is inevitable that more advanced weaponry is created. Yet, this does not only pose a risk to assets in space. Should a terrestrial war break out, this weaponry may eventually be deployed on the ground, and space-faring states would be able to capitalize on the power imbalance by using these new developments against states that have not yet broken into the space industry or developed equally-advanced weaponry.

#### The United States and China are locked in a space security dilemma – that makes conflict inevitable unless China’s space innovation comes to a halt.

Fabian 19 [Christopher D. Fabian, MA thesis, B.S. from US Air Force Academy, May 2019. "A Neoclassical Realist's Analysis of Sino-U.S. Space Policy." <https://commons.und.edu/cgi/viewcontent.cgi?article=3456&context=theses>]

B. Summary The confluence of current Sino-U.S. relations and the state of space technology creates a structural security dilemma: the United States is excessively reliant on space support to conduct military operations in East Asia, which incentivizes China to pursue the development of technological and tactical innovations to deprive the U.S. of its operational advantage. This development threatens the U.S.’s conventional deterrent threat in the region, undermining strategic relations with key East Asian allies. The U.S. lacks a symmetrical response to China’s ASAT threat and must develop other means of deterrence, increasing the likelihood of horizontal escalation. Simultaneously, the offense-dominance of the space domain results in the lack of first-strike stability. These factors increase the likelihood that space will serve as a flash-point for a regional conflict in East Asia, and attempts to mitigate this threat are unlikely to succeed due to the inherent dual-use of most space technologies. Cognitive biases further worsen this security dilemma. Furthermore, China’s historic “century of humiliation” and rising technonationalism explain its position of losses seeking gains, making Chinese decision makers more likely to take over-weighted risk in order to overturn the existing status quo. Key cultural differences proliferate conflict between the U.S. and China, further altering leaders’ decision calculus and creating an opportunity for self-fulfilling prophesy. Despite this grim prescription, arms race and conflict between the two nations is not inevitable. The implementation of top-down TCBMs designed to build trust and transparency can direct both nations towards a globally optimal outcome.

### 1AC – Heg Add Ons

**Primacy solves every threat and maintaining dominance is key. Decline causes arms races and land grabs that escalate.**

**Brands 18** [Hal, Henry Kissinger Distinguished Professor at Johns Hopkins University's School of Advanced International Studies and a senior fellow at the Center for Strategic and Budgetary Assessments." American Grand Strategy in the Age of Trump." Page 129-133]

Since World War II, the United States has had a military **second to none**. Since the Cold War, America has **committed** to having **overwhelming military primacy**. The idea, as George W. Bush declared in 2002, that America must possess “strengths beyond challenge” has featured in every major U.S. strategy document for a quarter century; it has also been reflected in concrete terms.6 From the early 1990s, for example, the United States consistently accounted for around 35 to 45 percent of world defense spending and maintained **peerless global power-projection capabilities**.7 Perhaps more important, U.S. primacy was also unrivaled in key overseas **strategic regions**—**Europe, East Asia, the Middle East**. From **thrashing Saddam** Hussein’s million-man Iraqi military during Operation Desert Storm, to deploying—with impunity—two carrier strike groups off Taiwan during the China-Taiwan crisis of 1995– 96, Washington has been able to project military power **superior** to anything a **regional rival** could employ even **on its own geopolitical doorstep.** This **military dominance** has constituted the **hard-power backbone** of an ambitious global strategy. After the Cold War, U.S. policymakers committed to averting a return to the **unstable multipolarity** of earlier eras, and to perpetuating the more favorable unipolar order. They committed to building on the successes of the postwar era by further advancing **liberal political values** and an open international **economy**, and to **suppressing** international scourges such as **rogue states**, **nuclear proliferation**, and catastrophic **terrorism**. And because they recognized that military force remained the ultima ratio regum, they understood the **centrality** of military preponderance. Washington would **need** the **military power** necessary to **underwrite** worldwide **alliance commitments**. It would have to preserve **substantial overmatch** versus any potential **great-power rival.** It must be able to answer the sharpest challenges to the international system, such as Saddam’s invasion of Kuwait in 1990 or jihadist extremism after 9/11. Finally, because prevailing global **norms** generally reflect **hard-power realities**, America would need the superiority to assure that its own **values remained ascendant**. It was impolitic to say that U.S. strategy and the international order required “**strengths beyond challenge**,” but it was not at all inaccurate. American primacy, moreover, was eminently affordable. At the height of the Cold War, the United States spent over 12 percent of GDP on defense. Since the mid-1990s, the number has usually been between 3 and 4 percent.8 In a historically favorable international environment, Washington could enjoy primacy—and its geopolitical fruits—on the cheap. Yet U.S. strategy also heeded, at least until recently, the fact that there was a limit to how cheaply that primacy could be had. The American military did shrink significantly during the 1990s, but U.S. officials understood that if Washington cut back too far, its primacy would erode to a point where it ceased to deliver its geopolitical benefits. **Alliances** would **lose credibility**; the stability of key **regions** would be **eroded**; **rivals would be emboldened**; **international crises would go unaddressed**. American primacy was thus like a **reasonably priced insurance policy**. It required nontrivial expenditures, but protected against far costlier outcomes.9 Washington paid its insurance premiums for two decades after the Cold War. But more recently American primacy and strategic solvency have been imperiled. THE DARKENING HORIZON For most of the post–Cold War era, the international system was— by historical standards—remarkably benign. Dangers existed, and as the terrorist attacks of September 11, 2001, demonstrated, they could manifest with horrific effect. But for two decades after the Soviet collapse, the world was characterized by **remarkably low levels of great-power competition,** high levels of **security** in key theaters such as **Europe** and **East Asia**, and the **comparative weakness** of those “**rogue” actors**—Iran, Iraq, North Korea, al-Qaeda—who most aggressively challenged American power. During the 1990s, some observers even spoke of a “strategic pause,” the idea being that the end of the Cold War had afforded the United States a respite from normal levels of geopolitical danger and competition. Now, however, **the strategic horizon is darkening**, due to four factors. First, **great-power military competition is back**. The world’s two leading authoritarian powers—**China** and **Russia**—are seeking **regional hegemony**, contesting global norms such as nonaggression and freedom of navigation, and developing the **military punch** to underwrite these ambitions. Notwithstanding severe economic and demographic problems, Russia has conducted a major military **modernization** emphasizing **nuclear weapons**, high-end conventional capabilities, and rapid-deployment and special operations forces— and utilized many of these capabilities in conflicts in Ukraine and Syria.10 China, meanwhile, has carried out a **buildup of historic proportions,** with constant-dollar defense outlays rising from US$26 billion in 1995 to US$226 billion in 2016.11 Ominously, these expenditures have funded development of **power-projection** and antiaccess/area denial (**A2/AD) tools** necessary to threaten China’s neighbors and complicate U.S. intervention on their behalf. Washington has grown accustomed to having a generational military lead; Russian and Chinese modernization efforts are now creating a **far more competitive environment.** Second, the **international outlaws** are no longer so **weak**. **North Korea’s** conventional forces have atrophied, but it has amassed a growing **nuclear arsenal** and is developing an intercontinental delivery capability that will soon allow it to threaten not just America’s regional allies but also the **continental United States**.12 **Iran** remains a **nuclear threshold state,** one that continues to develop ballistic missiles and A2/AD capabilities while employing **sectarian** and **proxy forces** across the Middle East. The Islamic State, for its part, is headed for defeat, but has displayed military capabilities **unprecedented** for any **terrorist group**, and shown that **counterterrorism** will continue to place **significant operational demands** on U.S. forces whether in this context or in others.