# Harvard Round 5

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#### The US commercial space industry is booming – private space companies are driving innovation

**Lindzon 2/23** [(Jared Lindzon, A FREELANCE JOURNALIST AND PUBLIC SPEAKER BORN, RAISED AND BASED IN TORONTO, CANADA. LINDZON'S WRITING FOCUSES ON THE FUTURE OF WORK AND TALENT AS IT RELATES TO TECHNOLOGICAL INNOVATION) "How Jeff Bezos and Elon Musk are ushering in a new era of space startups," Fast Company, 2/23/21, https://www.fastcompany.com/90606811/jeff-bezos-blue-origin-elon-musk-spaces-space] TDI

In early February, Jeff Bezos, the founder of Amazon and one of the planet’s wealthiest entrepreneurs, dropped the bombshell announcement that he would be stepping down as CEO to free up more time for his other passions. Though Bezos listed a few targets for his creativity and energy—The Washington Post and philanthropy through the Bezos Earth Fund and Bezos Day One Fund—one of the highest-potential areas is his renewed commitment and focus on his suborbital spaceflight project, Blue Origin. Before space became a frontier for innovation and development for privately held companies, opportunities were limited to nation states and the private defense contractors who supported them. In recent years, however, billionaires such as Bezos, Elon Musk, and Richard Branson have lowered the barrier to entry. Since the launch of its first rocket, Falcon 1, in September of 2008, Musk’s commercial space transportation company SpaceX has gradually but significantly reduced the cost and complexity of innovation beyond the Earth’s atmosphere. With Bezos’s announcement, many in the space sector are excited by the prospect of those barriers being lowered even further, creating a new wave of innovation in its wake. “What I want to achieve with Blue Origin is to build the heavy-lifting infrastructure that allows for the kind of dynamic, entrepreneurial explosion of thousands of companies in space that I have witnessed over the last 21 years on the internet,” Bezos said during the Vanity Fair New Establishment Summit in 2016. During the event, Bezos explained how the creation of Amazon was only possible thanks to the billions of dollars spent on critical infrastructure—such as the postal service, electronic payment systems, and the internet itself—in the decades prior. “On the internet today, two kids in their dorm room can reinvent an industry, because the heavy-lifting infrastructure is in place for that,” he continued. “Two kids in their dorm room can’t do anything interesting in space. . . . I’m using my Amazon winnings to do a new piece of heavy-lifting infrastructure, which is low-cost access to space.” In the less than 20 years since the launch of SpaceX’s first rocket, space has gone from a domain reserved for nation states and the world’s wealthiest individuals to everyday innovators and entrepreneurs. Today, building a space startup isn’t rocket science. THE NEXT FRONTIER FOR ENTREPRENEURSHIP According to the latest Space Investment Quarterly report published by Space Capital, the fourth quarter of 2020 saw a record $5.7 billion invested into 80 space-related companies, bringing the year’s total capital investments in space innovation to more than $25 billion. Overall, more than $177 billion of equity investments have been made in 1,343 individual companies in the space economy over the past 10 years. “It’s kind of crazy how quickly things have picked up; 10 years ago when SpaceX launched their first customer they removed the barriers to entry, and we’ve seen all this innovation and capital flood in,” says Chad Anderson, the managing partner of Space Capital. “We’re on an exponential curve here. Every week that goes by we’re picking up the pace.”

#### The plan creates a restriction that encourages companies to move their operations to states with lower standards

Albert 14 [(Caley Albert, J.D. Loyola Marymount University) “Liability in International Law and the Ramifications on Commercial Space Launches and Space Tourism,” Loyola of Los Angeles International and Comparative Law Review, 11/1/14, <https://digitalcommons.lmu.edu/cgi/viewcontent.cgi?article=1708&context=ilr>] TDI

A parallel can be drawn here between the commercial space industry and the maritime law concept of the Flag of Convenience. The term has evolved over time, but in this day and age, it is commonly used to mean the owner of a vessel does not want to create an obligation with a country with stricter standards for registry; hence, the owner will register strictly for economic reasons with a country that has a more convenient registry.133 By flying a Flag of Convenience, ship owners are able to avoid taxation on earnings of ships registered under these flags, and in some cases, they can also receive relief from stricter crew standards and corresponding operating costs.134 A Flag of Convenience is flown by a vessel that is registered in one state, which the vessel has little if any connection to, when in reality the vessel is owned and operated from another state.135 This way the vessel avoids any unfavorable economic requirements from its true home state.136 In this sense, “flag shopping” is similar to “launch forum shopping,” similar in that Flags of Convenience are utilized for economic reasons, such as to avoid high taxes and compliance with certain restrictive international conventions, commercial space companies will forum shop when choosing which country to launch from. As of today, there has yet to be a catastrophic commercial launch incident, so for now commercial space companies do not have an incentive to forum shop, but if there is, the indemnification policies described above may lead companies to seek out countries that provide more coverage so they pay less in the event something goes wrong. This comparison to Flags of Convenience brings up two separate yet equally important issues. First, launch companies may try to follow the Flags of Convenience model and soon catch on to the wisdom of their maritime predecessors by “registering” in countries with more favorable conditions. Of course, in this case the concern is not with registration so much as launching. If launch companies follow the Flags of Convenience model, they will seek out the most convenient state for launch, most likely the state that provides the most liability coverage and has the least safety precautions. Launching from states with low safety standards increases the potential for catastrophic launch events. This, in turn, will place states that are potentially incapable of paying for damages from launch disasters in a position they would not normally assume if these commercial companies had not been drawn to their shores with the promise of more favorable regulations. Second, launch customers may also seek out companies located in states with lower cost liability regimes (lower insurance policy limits) since those companies will presumably charge less to launch their payloads. In this scenario, instead of the launch companies seeking out states with lower liability caps and softer regulations, the launch customers themselves will seek companies located in states with lowcost liability regimes. Here, the effect will be the same as above. Under the Liability Convention, the launching state will be liable for any damage caused by a vehicle launched from within its borders; hence, if customers start engaging in “launch forum shopping,” states will be incentivized to put in place low-cost liability regimes, which in turn will increase the states’ potential payout in the event of a catastrophic launch incident. Looking at the indemnification program the United States has in place in comparison to other countries, it is possible to see how either launch companies or launch customers could engage in “launch forum shopping” when a catastrophic launch incident ever occur. It is also important to keep in mind that various factors go into where a company or customer decides to launch from. A state’s indemnification program is just one factor in this decision. With this in mind, it is clear that if a launch incident did occur in the United States, the commercial launch company would be liable for much more than it would in another country. For instance, why would a commercial space company launch in the United States, where it would be liable up to $500 million and the additional costs that the government would not cover? The argument can be made that a catastrophic space incident has yet to occur, and even if it did, it is unlikely to cost above the $2.7 billion covered by the United States government. Other states like Russia or France, which has the two-tier liability system, would simply cover all claims above the initial insurance, which is much lower than the $500 million mark required by the United States. In that case, the commercial company would never have to pay more than the initial liability insurance. If there ever is a catastrophic commercial space incident in the future, it is easy to see why commercial companies or launch customers might be drawn to “launch forum shop” outside the United States.

#### Maintaining US space dominance requires a homegrown commercial space industry – private companies offshoring gives China the advantage they need

**Cahan and Sadat 1/6** [(Bruce Cahan, J.D) (Dr. Mir Sadat, ) "US Space Policies for the New Space Age: Competing on the Final Economic Frontier," based on Proceedings from State of the Space Industrial Base 2020 Sponsored by United States Space Force, Defense Innovation Unit, United States Air Force Research Laboratory, 1/6/21, https://www.politico.com/f/?id=00000177-9349-d713-a777-d7cfce4b0000] TDI

Today, China’s commercial space sector is in its infancy but is set to grow with continued national and provincial support, which have been rapidly increasing over the past three years.64 Since 2004, the United States and China accounted for 74% of the $135.2 billion venture capital (VC) invested in commercial space. 65 The early 2020s are pivotal, as it would be far cheaper for China and Chinese commercial space firms to acquire space technologies from the United States or allied nation companies seeking revenues or facing cashflow constraints, than to build the companies and their teams and technologies from scratch in China. The tight coupling of Chinese military goals and an economy organized to achieve those goals magnifies the economic threats and market disruptions that the United States must immediately address, in order for DoD and national security operations to rely on US commercial space capabilities. 3. ISSUES AND CHALLENGES Peaceful Uses of Space and Space Exploration Space has been primarily a shared, not a warfighting, domain.67 With each passing second of Planck time,68 space enables a modern way of life, provides instantaneous global imagery, assures telecommunications, and captures humanity’s imagination for civil space exploration. As a result, space is a burgeoning marketplace and territory for commercial ventures and investors. Strengthening the US commercial space industrial base is vital to and beyond US national security. Civil space activities are a source of US “soft power” in global commerce, cooperation, and investment. 69 The civil space sector, led by NASA, is fundamental to America’s national security. 70 NASA is on an ambitious critical path to return to the Moon by 2024,71 along with developing the capabilities and infrastructure for a sustained lunar presence. NASA’s lunar plans provide a lunar staging area for missions to Mars and beyond. They offer a strategic and economic presence for the United States on the Moon. Congress, the White House, DoD, and NASA must recognize that economic and strategic dominance in service of national security requires catalyzing and accelerating growth of a vibrant, private US industrial and cultural expansion into the Solar System. Human visitation and eventual settlement beyond the Earth require sustaining visionary leaders, aided by, and aiding, US national security. A recurring theme in US policy is “maintaining and advancing United States dominance and strategic leadership in space” because US global competitors and adversaries are competent and capable of outpacing American space capabilities. 72 The stakes are high: At this historic moment, there is a real race for dominance over cislunar access and resources. Regulations Should Foster US Commercial Space as a National Asset Leveraging the reimagination and disruption of terrestrial industries, the US commercial space industry is pushing the frontiers of the United States and global space economics and capabilities. A pre-COVID19 assessment by the US Chamber of Commerce projected that the US space market will increase from approximately $385 billion in 2020, to at least $1.5 trillion by 2040. 73 This projection represents a seven percent (7%) annual compound average growth rate (CAGR), driven largely by expanded business opportunities in Low Earth Orbit (LEO). Total addressable market (TAM) for US commercial space companies could be far larger were they to have federal and financial support for initiating cislunar space operations and opportunities. Recent advancements in commercial space technologies and business models have driven down costs and unlocked new areas of economic growth and space capabilities that outpace and de-risk acquiring capabilities through traditional US government economic development, research and development (R&D), procurement and regulatory policies and processes. US regulations must ensure that US companies lead in commercial space. In specific, technological advances that lower access costs and expand space mission capabilities, content, continuity, and redundancies must be fully supported by or incorporated into US government programs, budgets, requirements, and acquisition processes. Until commercial space offerings are fully incorporated, and federal acquisition policies and personnel commit to innovation, US government fiscal buying power, intelligence and program support will lag and remain inadequate in comparison to US private sector companies and the nation’s global competitors and adversaries in space. Addressing COVID-19’s Impact on US Commercial Space The COVID-19 pandemic damaged and still challenges the US space industrial base. US domestic investors’ funding of space R&D remains inconsistent across the lifecycle of New Space companies and the spectrum of technologies necessary to grow the space economy. To date, public R&D, government procurements and visionary space entrepreneurs have played a major role in establishing and funding the New Space industrial base. In the last five years, $11 billion of private capital has been invested.74 Traditional private investors may become reluctant to fund space technologies due to perceptions of higher risk over longer time horizons before receiving profitable returns on their capital. Institutional and long-horizon investors who manage patient capital have an appetite for illiquid, but higher yielding, terrestrial alternative asset investments such as commodities, private equity limited partnerships and real estate.75 The COVID-19 pandemic has created economic uncertainties making the New Space’s funding model unreliable. COVID-19 significantly impacted venture capital (VC)-backed companies: the pace of VC space investments fell 85% between April - June, as compared to January – March, in 2020. 76 Pre-COVID-19, the New Space industrial base confronted multiple challenges in raising later stages of venture capital such as (1) the lag between having an early-stage startup with an idea and commercializing a viable revenue-generating product, (2) the lack of market liquidity for founder and private equity space investments to attract and retain talented teams, and (3) the lack of a market to re-sell contracts for space goods and services when customers buy more capacity than needed. Even prior to the COVID-19 pandemic, federal financing of US R&D was at a historically minor level, as compared to businesses and universities.77 US government support for basic research has steadily declined as a percent of GDP. The federal government will experience near- to medium-term budget constraints.78 The vibrant venture community in the United States has taken up a portion of this slack by increasing R&D investment in later-stage and applied research. However, founding teams and VC financing rely on government to fund earlier R&D for basic science and engineering. Therefore, government must resume the sustainable and impactful past levels of support for basic research, an essential role in the space economy’s public-private partnership that ensures US leadership in space. Space as Existential Terrain for National Security In this Digital Era, space integrates and drives all elements of US national security. The Cold War may be over, but since the early 2010s, a renewed era of great power competition has emerged across terrestrial land, air, sea, and cyber domains. This competition extends into space, where a great game ensues.79 Space is no longer an uncontested or sanctuary domain. Competent and capable global competitors and peer adversaries are challenging US military, commercial, and civil space interests. The United States, along with its allies and partners, has had to accept and anticipate that space may be a warfighting domain, as suggested primarily by Russian and Chinese counter-space capabilities, military operations, and declarative statements. On December 20, 2019, the bipartisan National Defense Authorization Act (NDAA) for Fiscal Year 202080 authorized the creation of the US Space Force, under the Department of the Air Force, to secure US national interests in an increasingly contested domain.81 Back in October 1775, the Continental Congress established the US Navy to ensure that commercial and government fleets could freely navigate the Atlantic coastline - today, that includes the South China Sea. Likewise, the USSF’s mission is to ensure unfettered access to and the freedom to operate in space. The 2017 National Security Strategy considers space to be a “priority domain.”82 Freedom of navigation is a sovereign right that nations have fought to achieve and defend. 83 The USSF’s main role is to organize, train and equip, as well as to protecting US space interests and supporting terrestrial and joint warfighters (e.g., US Space Command). Thus, USSF must secure US national interests in space, whether military, commercial, scientific, civil, or enhancing US competitiveness for cislunar leadership.

#### US space dominance prevents global war

**Zubrin 15** [(Robert Zubrin, president of Pioneer Energy, a senior fellow with the Center for Security Policy) “US Space Supremacy is Now Critical,” Space News, 1/22/15, <https://spacenews.com/op-ed-u-s-space-supremacy-now-critical/>] TDI

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.

## 2

#### Space is an intrinsic part of India’s soft power expansion and they’re set to rapidly scale now.

Sarthak Kathayat, Sarthak Kathayat is a student at Jamia Millia Islamia, India., NIICE NEPAL, 11-1-2020, "Soft Power and India’s Space Diplomacy," https://niice.org.np/archives/6420 TDI

In international relations, soft power is the ability of any country to persuade other countries to do what it wants without the use of force. According to Joseph Nye Jr., soft power is – getting others to want the outcomes that you want – co-opts people rather than coerces them. As compared to hard power, soft power takes relatively longer to built as its intangible resources develop over a long time. Soft power tends to change other party’s attitude to the end where she acts voluntarily in a way which is different to her usual behaviour. Several characteristics of the current world order like globalisation driven economic interdependence, rise of transnational actors, resurgence of nationalism in weak states, the spread of military technology and the changed nature of international political problems have significantly reduced the effectiveness of hard power strategies. The most noteworthy example of a foreign policy misadventure based solely on hard power strategies is the 2003 US invasion of Iraq. Soft power also has its own weakness. However, the ineffectiveness of soft power strategies is an exception. In longer-term, soft power strategies appear to be more effective in the contemporary world order than the hard power. One such tool of soft power is the space technology and space diplomacy. Space technology are increasingly viewed as a crucial instrument of soft power as states have now understood the direct relation between the technological feats and global prestige that follows. Expertise in rocket science puts a state on a higher pedestal than the countries who are still struggling in the domain. Moreover, expertise in rocket science ensues significant strategic implications. The output delivered has noteworthy social and economic relevance with a massive growth potential. In a broadening concept of security that encompasses other dimensions such as economic, environmental and political, Indian space programme has been distinctive and lucid in the way it simultaneously addresses the requirements of the Indian citizenry and the state collectively in all the dimensions. Despite being challenged by numerous embargoes and technology denial regimes during Cold War, Indian space programme has emerged as the most cost-effective and successful space programme in the world. India’s space programme has been a tremendous achievement for a developing country which despite being faced with many challenges used space as a crucial mechanism to lift its people out of poverty through education, social and economic programmes. With the course of time, India’s space policy has become an intrinsic part of India’s foreign policy to strengthen India’s position as a dominant power in South Asia. Indian Space Programme India’s space programme has been seen making efforts in projecting soft power which is especially evident through its new commitment to planetary exploration and human spaceflight. The Chandrayaan-1 and Mangalyaan-1 mission cleared the fact that India now looks at space as a standard of global standing. India’s soft power has witnessed a progression with an increasingly successful participation in global space economy through ISRO’s commercial arm, Antrix Corporation. India’s growing influence on the global space economy has been an indication of its changing stature in international arena. India has also been involved in capacity building initiatives. It has successfully established itself as a leader in terms of healthcare provisions through satellite-based telemedicine. India hosts the largest telemedicine network in South Asia which has also expanded to the African continent. A non-profit Indian organisation named Apollo Telemedicine Networking Foundation has been involved in telemedicine services with dedicated centres in Iraq, Yemen, Kazakhstan and Myanmar. India’s Space Diplomacy Further using space for diplomacy in order to project its soft power across the globe, India has assisted countries like Colombia in launching its satellite which boosted India-Colombia relations. Many Latin American countries are often dependent on the US for space and military matters. However, after the launch, many countries like Argentina, Bolivia, Brazil, Chile, Ecuador, Mexico, Nicaragua and Venezuela have reached out to ISRO for launching or developing satellites. Similarly, India’s PSLV also launched Israel’s TecSar satellite in 2008 for remote sensing purposes. The launch boosted the political and strategic relations with Israel. Once a recipient of space technology from developed countries, India has demonstrated the robustness of its own space programmes by setting up joint projects and even providing assistance at the time of disaster to a number of countries. ISRO’s Oceansat-2 satellite played a pertinent role in monitoring Hurricane Sandy and helping the authorities to implement timely disaster mitigation and rescue strategies. Adding more feathers to its hat, ISRO has also launched dozens of satellites for US, Europe and Britain based companies. The recent launches of British reconnaissance satellites, NovaSAR and S1-4 are a sign of what could come next. Britain is one of the EU’s biggest spender in space sector. After Brexit, the dispute over Britain’s continued access to the European Union’s Galileo satellite navigation project will inevitably lead Britain look for alternatives and India’s space ambitions could offer a tempting proposition within the ambit of wider bilateral cooperation. As a part of India’s efforts in space diplomacy, ISRO undertook another capacity building initiative ‘Unispace Nanosatellite Assembly and Training (UNNATI)’. Under UNNATI, ISRO planned to train 45 countries in making Nano-satellites. Closer to home, India proposed a SAARC satellite in 2014 for the overall development of the region. The proposal was welcomed by SAARC nations but unfortunately the proposal couldn’t materialise as envisioned initially due to Pakistan’s backing out from the project. However, three years later, in 2017, ISRO launched the South Asia satellite or GSAT-9 to help India’s neighbouring countries in space communication. The idea of South Asia satellite ensured no political impediment as with the case of SAARC satellite. The positive spill over effect of the satellite’s launch on India’s “neighbourhood first” diplomacy was well demonstrated by the warm responses given by the leaders of South Asian countries. India’s space diplomacy with neighbours also extends on a bilateral basis. For instance, in Afghanistan, India included remote sensing satellite transmitters for acquiring space-based data in a USD 1.2 billion aid package. It is evident that soft power strategies are more relevant than the hard power strategies, especially in the contemporary world order. The rise of China as an emerging superpower is backed with its economic and military might leave less avenues for other developing nations such as India to contest China. However, soft power strategies open up another dimension for the interaction of the nations. India has utilised space as a tool of its soft power effectively in order to expand its clout. That space being an intrinsic part of India’s foreign policy has brought numerous achievements to the country, and is expected to remain an essential element for future course of India’s foreign policy.

#### Private sector key to Indian space efforts.

Raghu Krishnan, Raghu Krishnan is the technology editor for the Economic Times. In the over two decades of reporting and managing teams, he has seen the Indian IT industry grow from $ 1 billion to nearly $ 191 billion. He has a deep understanding of the shifts the Indian IT industry has undergone over the years. He has also covered science and India's aerospace R&D industry., 12-7-2020, "New space policy may take local companies global: Sivan," Economic Times, https://economictimes.indiatimes.com/news/science/new-space-policy-may-take-local-companies-global-sivan/articleshow/79599874.cms?from=mdr TDI

Bengaluru: India will draft a new space policy aimed at increasing private investments in the country’s space sector to build companies that are global in scale, Indian Space Research Organisation (Isro) chairman K Sivan told ET. The proposed regulations will be in addition to specific policies planned for launch vehicles, satellite navigation, human space mission and deep space exploration. “We want to create competition and get multiple companies in the space sector that can grow as global leaders,” Sivan said. Over 23 Indian and overseas companies have approached Isro since August seeking to harness assets built over six decades including rockets, satellites, ground stations and satellite imagery. The nodal agency is looking to transfer critical technologies through its commercial arm — New Space India Ltd (NSIL NSE -0.45 %) — to these companies at lower costs. “Space technology is costly. We want to make it viable for Indian industries and help them commercialise these technologies,” said Sivan. “We want to make the technology transfer a very simple and low-cost affair.” Last week, NSIL signed a pact to share technology as well as to allow testing facilities with Chennai-based startup Aggnikul Cosmos to build a small rocket that can hurl 100 kg satellites to low-earth orbit. Bengaluru-based Pixxel, which is building India’s first private fleet of earth observation satellites, will launch its first satellite atop the homegrown polar satellite launch vehicle (PSLV) in 2021. So far, the department of space has released drafts of technology transfer policy, remote sensing and satellite communication policy for public comments. These draft policies state that Indian companies can now own and operate satellites, build rockets and launch them from Indian soil and offer satellite-based applications to consumers. The policies also define how sensitive dual-use technologies are to be utilised and stresses on the need for adherence to national and international laws. “The industry players are able to see the sea change (in our policies). They are asking for clarifications on some of them,” said Sivan. He added the policies will be notified after consultations. India is adopting the model of the US space agency National Aeronautics and Space Administration (NASA), which allowed private firms such as SpaceX to get access to its technology and facilities to build reusable rockets that have carried humans to space this year. NASA also allows startups to compete and build vehicles and solutions for its programmes, including deep space missions. The policies are also designed to make India a global hub for satellite manufacturing and launches and providing satellite-based services for global customers. Hyderabad-based Aerospace firm Ananth Technologies is setting up a joint venture with US satellite operator Saturn Satellites, through which it will first build two communication satellites and launch them locally on an Indian rocket. Ananth is the first Indian private company to tap the global market after India opened up its space sector, which allows private firms to build satellites and rockets and offer space services from the country. “Earlier, when IITs produced aero-space engineers, there was not a strong domestic industrial ecosystem to employ them. Today, with our historic reforms in the space sector, the last frontier before humanity has opened up to Indian talent,” Prime Minister Narendra Modi told a Pan IIT conference on Friday. India has nearly 50 space startups in the sector and over 1,000 companies — both small and medium enterprises (SMEs) and large enterprises such as Larsen & Toubro, Godrej Aerospace, Tata Advanced Systems and Hindustan Aeronautics, which have been vendors to Isro, building systems and subsystems for the space programme. After opening the space sector to private firms in August, the department of space formed Indian National Space Promotion and Authorisation Centre (IN-SPACe), a new body that will act as a regulator whose rulings would apply to the space agency as well as private firms in the country. Sivan said an independent board is being set up and an approval is expected from the government by the end of December.

**India has led multiple non-proliferation movements and their benign perception is k2 maintaining US-China Relations**

**Pethiyagoda 14** [Kadira Pethiyagoda, a former diplomat whose PhD and upcoming book investigated Indian foreign policy. He was a visiting scholar at the University of Oxford, “India’s Soft Power Advantage,” The Diplomat, 9/17/14, <https://thediplomat.com/2014/09/indias-soft-power-advantage/>] TDI

During [Prime Minister Tony Abbott’s recent visit to India](https://thediplomat.com/2014/09/australian-pm-visits-india-signs-nuclear-deal/), he was asked to justify Australia’s signing of a deal to sell uranium to the country. In response, the [prime minister said](http://www.smh.com.au/federal-politics/political-news/australia-to-power-indias-energy-market-as-tony-abbott-settles-terms-for-uranium-trade-20140905-10cq6y.html), “India threatens no one” and “is the friend to many.” This was no mere diplomatic nicety, but a carefully chosen answer based on India’s international image. It is an image that is rare amongst great powers of India’s size and strength, and will give Delhi a unique soft power advantage in the future multipolar world. Much of the globe sees India as a relatively non-violent, tolerant and pluralistic democracy with a benign international influence. Its values are seen as largely positive. The U.S., with its Indo-U.S. nuclear deal, accorded India special treatment in nuclear cooperation. The deal provided benefits usually reserved for Non-Proliferation Treaty (NPT) signatories. Washington justified cooperation with India by highlighting Delhi’s impeccable non-proliferation record. This stance was replicated by other states, including the Nuclear Suppliers Group (NSG) member states who allowed India’s participation in international nuclear commerce and supported the Indo-U.S. deal. The NSG decided to re-engage with India following an India-specific safeguards agreement with the International Atomic Energy Agency (IAEA). The IAEA’s Board of Governors endorsed a nuclear safeguards agreement with India by consensus that would permit Delhi to add more nuclear facilities to be placed under the IAEA safeguards framework. India did not have to have an Additional Protocol like the non-nuclear weapons states who are NPT signatories. India also received favorable treatment from Canada (which agreed to supply “dual-use items” that can be used for civilian and military applications), Japan and South Korea. This cooperation was not merely driven by these states’ strategic relationships with the U.S. Russia has long cooperated with India on nuclear technology. Even China, as a member of the NSG, did not oppose the group’s decision on India. Today, India is the only known nuclear weapons state that is not part of the NPT but is still permitted to engage in nuclear commerce globally. India’s reputation extends beyond its nuclear posture. Since independence, the country has been viewed as a neutral and harmless power by most foreign audiences, particularly in Africa, the Middle East, South America and Southeast Asia. This is in part due to its prominent role in the Non-Aligned movement. Whilst Delhi’s reputation in its own neighborhood is quite different, South Asian states do not see India as a threat in the way that many of Russia or China’s neighbors view those powers. Even long-time nemesis Pakistan is unlikely to have been as adventurous in its dealings with its much larger and more powerful neighbor had it not had firsthand experience of Delhi’s restraint – even before Islamabad had nuclear capability. So what is behind India’s benign image? In part, it is self-created. For 60-plus years Delhi has favored cultivating the impression of a non-violent India. This is particularly clear in the realm of nuclear posture. Despite having tested weapons in 1974 and 1998 and being a non-signatory to the NPT and Comprehensive Test Ban Treaty, India has been one of the most vocal advocates for global disarmament. It has arguably been the most passionate anti-nuclear campaigner amongst the world’s nine known or suspected nuclear weapons states, with one of the world’s most notable pleas for global disarmament made by Prime Minister Rajiv Gandhi at the U.N. in 1988. The pursuit of this image continued a decade later, even after the Pokhran II nuclear tests. BJP Prime Minister Vajpayee stated that the tests were not a repudiation of the disarmament goal. In the Draft Report on Indian Nuclear Doctrine, the very first sentence of the first paragraph [describes](https://www.armscontrol.org/print/514) the use of nuclear weapons as the “gravest threat to humanity and to peace and stability.” The paragraph goes on to criticize the virtual abandonment by states of the goal of disarmament. Delhi sought to avoid labels of hypocrisy by positioning itself as the “[reluctant nuclear power](http://www.rediff.com/news/2004/mar/22ram.htm).” India argued that the bomb was a last resort in a world of threatening nuclear states who make no pledges to refrain from first strikes and the use of nukes against non-nuclear states. Somewhat legitimately, Indian leaders asserted that the country’s nuclear weapons could act as bargaining chips to support its global disarmament agenda. India was said to have more credibility as a nuclear weapons state with itself having something to sacrifice in order to usher in global disarmament. India declared that its security would be enhanced and not diminished in a nuclear free world. Delhi also sought to project an image of non-violence in other areas of foreign policy. In relation to the norm of “Responsibility to Protect,” India voiced support for those aspects of R2P that encouraged and supported states to protect their own populations, and expressed extreme caution at R2P’s coercive side. When some of the world’s greatest debates over intervention occurred at the U.N., Indian ambassadors drenched their speeches with the language of non-violence. This preciously guarded national image is not merely a strategic ploy to [increase India’s soft power](https://thediplomat.com/2011/09/indias-central-asia-soft-power/). Policymakers wish the country to be seen as non-violent, pluralistic and tolerant, because India genuinely holds these values. Within the nuclear realm the influence of non-violence is seen through the foot-dragging in relation to integrating nuclear weapons into military strategy and in relation to serial production of weapons. A further sign of this influence is the long public debate before going nuclear – a rarity amongst nuclear powers. We have seen repeatedly that India’s leaders find it morally inconceivable that nukes could ever be useable tools of war. Delhi’s disarmament pleas were not merely PR: they consumed valuable diplomatic resources including precious stage-time in international forums. More broadly, non-violence affected for India’s relatively restrained conduct in several conflicts with Pakistan. When it came to humanitarian intervention, over the last 25 years India’s opposition or support was directly related to the level of intrastate violence entailed in intervening. This was true regardless of who was intervening in whom, for what reason, and whether there were strategic gains in it for Delhi. This included interventions in Iraq, Libya and [Syria](https://thediplomat.com/2013/11/indias-syria-juggling-act/). India’s opposition to intervention was compounded by its pluralistic worldview, with acceptance of all regime types. It would seem that India’s values of non-violence, pluralism and tolerance stem from the independence era, when the country’s foreign policy and modern identity was crafted. Mahatma Gandhi made India’s independence movement synonymous with non-violence. First Prime Minister Jawaharlal Nehru imbued morals into his external relations. But if the values influencing India’s foreign policy took shape only then, they would have fizzled when Congress lost power. Instead the values have remained, as has the resultant global persona. This is because the values that help guide Indian foreign policy and underpin its image are rooted deep in the country’s cultural history. These values attained dominance during the formative stage of Indian civilization – the period between the Vedic era and medieval times when the greatest empires arose. India and China are the only modern great powers that have held a largely continuous culture for several millennia. Ancient India’s cultural connection to its present-day manifestation is far stronger than ancient Greek, Roman or Anglo-Celtic culture is to present-day Western states, or the ancient Middle Eastern civilizations are to today’s Arab world. It remains to be seen how India’s international reputation will fare as its strategic interests [expand throughout the Indo-Pacific](https://thediplomat.com/2013/09/india-and-the-rise-of-the-indo-pacific/) and beyond. With some diplomatic craftsmanship, Delhi can convert its somewhat ethereal values-based soft power advantage into hard strategic and economic gains. Modi’s government seems to have recognized this and is building on Congress’ initiatives to enhance India’s public diplomacy toolkit. India’s soft power has rare characteristics when compared with the other great powers of the emerging multipolar world: U.S., China, Russia, Japan and Europe (as a unified entity). Its relatively neutral, non-threatening image will make India a uniquely attractive great-power partner for countries looking to hedge against future fallout between the U.S. and China, and not wanting to antagonize either superpower. Australia has chosen a wise time to solidify ties with one of the world’s most dynamic rising powers.

**Risk of US-China military confrontation in flashpoints inevitably go nuclear due to intermingled forces**

**Talmadge 18** [Caitlin Talmadge, Associate Professor of Security Studies at the Edmund A. Walsh School of Foreign Service at Georgetown University, “Beijing’s Nuclear Option, Why a U.S.-Chinese War Could Spiral Out of Control,” Foreign Affairs, <https://www.foreignaffairs.com/articles/china/2018-10-15/beijings-nuclear-option>, 10/15/18] TDI

As China’s power has grown in recent years, so, too, has the risk of war with the United States. Under President Xi Jinping, China has increased its political and economic [pressure](https://archive.is/o/fHOWC/https:/www.foreignaffairs.com/articles/taiwan/2017-04-13/how-beijing-could-squeeze-taiwan) on Taiwan and built [military installations](https://archive.is/o/fHOWC/https:/www.foreignaffairs.com/articles/asia/2017-05-18/adrift-south-china-sea) on coral reefs in the South China Sea, fueling Washington’s fears that Chinese expansionism will threaten U.S. allies and influence in the region. U.S. destroyers have transited the Taiwan Strait, to loud protests from Beijing. American policymakers have wondered aloud whether they should send an aircraft carrier through the strait as well. Chinese fighter jets have intercepted U.S. aircraft in the skies above the South China Sea. Meanwhile, U.S. President Donald Trump has brought long-simmering economic disputes to a rolling boil. A war between the two countries remains unlikely, but the prospect of a military confrontation—resulting, for example, from a Chinese campaign against Taiwan—no longer seems as implausible as it once did. And the odds of such a confrontation going nuclear are higher than most policymakers and analysts think. Members of China’s strategic com­munity tend to dismiss such concerns. Likewise, U.S. studies of a potential war with China often exclude nuclear weapons from the analysis entirely, treating them as basically irrelevant to the course of a conflict. Asked about the issue in 2015, Dennis Blair, the former commander of U.S. forces in the Indo-Pacific, estimated the likelihood of a U.S.-Chinese nuclear crisis as “[somewhere between nil and zero](https://archive.is/o/fHOWC/carnegieendowment.org/files/240315carnegieManaging.pdf).” This assurance is misguided. If deployed against China, the Pentagon’s preferred style of conventional warfare would be a potential recipe for nuclear escalation. Since the end of the Cold War, the United States’ signature approach to war has been simple: punch deep into enemy territory in order to rapidly knock out the opponent’s key military assets at minimal cost. But the Pentagon developed this formula in wars against Afghanistan, Iraq, Libya, and Serbia, none of which was a nuclear power. If deployed against China, the Pentagon’s preferred style of conventional warfare would be a potential recipe for nuclear escalation. China, by contrast, not only has nuclear weapons; it has also intermingled them with its conventional military forces, making it difficult to attack one without attacking the other. This means that a major U.S. military campaign targeting China’s conventional forces would likely also threaten its nuclear arsenal. Faced with such a threat, Chinese leaders could decide to use their nuclear weapons while they were still able to. As U.S. and Chinese leaders navigate a relationship fraught with mutual suspicion, they must come to grips with the fact that a conventional war could skid into a nuclear confrontation. Although this risk is not high in absolute terms, its consequences for the region and the world would be devastating. As long as the United States and China continue to pursue their current grand strategies, the risk is likely to endure. This means that leaders on both sides should dispense with the illusion that they can easily fight a limited war. They should focus instead on managing or resolving the political, economic, and military tensions that might lead to a conflict in the first place. There are some reasons for optimism. For one, China has long stood out for its nonaggressive nuclear doctrine. After its first nuclear test, in 1964, China largely avoided the Cold War arms race, building a much smaller and simpler nuclear arsenal than its resources would have allowed. Chinese leaders have consistently characterized nuclear weapons as useful only for deterring nuclear aggression and coercion. Historically, this narrow purpose required only a handful of nuclear weapons that could ensure Chinese retaliation in the event of an attack. To this day, China maintains a “[no first use](https://archive.is/o/fHOWC/https:/www.foreignaffairs.com/articles/1972-07-01/no-first-use-nuclear-weapons)” pledge, promising that it will never be the first to use nuclear weapons. The prospect of a nuclear conflict can also seem like a relic of the Cold War. Back then, the United States and its allies lived in fear of a Warsaw Pact offensive rapidly overrunning Europe. NATO stood ready to use nuclear weapons first to stalemate such an attack. Both Washington and Moscow also consistently worried that their nuclear forces could be taken out in a bolt-from-the-blue nuclear strike by the other side. This mutual fear increased the risk that one superpower might rush to launch in the erroneous belief that it was already under attack. Initially, the danger of unauthorized strikes also loomed large. In the 1950s, lax safety procedures for U.S. nuclear weapons stationed on NATO soil, as well as minimal civilian oversight of U.S. military commanders, raised a serious risk that nuclear escalation could have occurred without explicit orders from the U.S. president. The good news is that these Cold War worries have little bearing on U.S.-Chinese relations today. Neither country could rapidly overrun the other’s territory in a conventional war. Neither seems worried about a nuclear bolt from the blue. And civilian political control of nuclear weapons is relatively strong in both countries. What remains, in theory, is the comforting logic of mutual deterrence: in a war between two nuclear powers, neither side will launch a nuclear strike for fear that its enemy will respond in kind. The bad news is that one other trigger remains: a conventional war that threatens China’s nuclear arsenal. Conventional forces can threaten nuclear forces in ways that generate pressures to escalate—especially when ever more capable U.S. conventional forces face adversaries with relatively small and fragile nuclear arsenals, such as China. If U.S. operations endangered or damaged China’s nuclear forces, Chinese leaders might come to think that Washington had aims beyond winning the conventional war—that it might be seeking to disable or destroy China’s nuclear arsenal outright, perhaps as a prelude to regime change. In the fog of war, Beijing might reluctantly conclude that limited nuclear escalation—an initial strike small enough that it could avoid full-scale U.S. retaliation—was a viable option to defend itself. The most worrisome flash point for a U.S.-Chinese war is Taiwan. Beijing’s long-term objective of reunifying the island with mainland China is clearly in conflict with Washington’s longstanding desire to maintain the status quo in the strait. It is not difficult to imagine how this might lead to war. For example, China could decide that the political or military window for regaining control over the island was closing and launch an attack, using air and naval forces to blockade Taiwanese harbors or bombard the island. Although U.S. law does not require Washington to intervene in such a scenario, the Taiwan Relations Act [states](https://archive.is/o/fHOWC/uscode.house.gov/view.xhtml?req=granuleid:USC-prelim-title22-section3301&num=0&edition=prelim) that the United States will “consider any effort to determine the future of Taiwan by other than peaceful means, including by boycotts or embargoes, a threat to the peace and security of the Western Pacific area and of grave concern to the United States.” Were Washington to intervene on Taipei’s behalf, the world’s sole superpower and its rising competitor would find themselves in the first great-power war of the twenty-first century. In the course of such a war, U.S. conventional military operations would likely threaten, disable, or outright eliminate some Chinese nuclear capabilities—whether doing so was Washington’s stated objective or not. In fact, if the United States engaged in the style of warfare it has practiced over the last 30 years, this outcome would be all but guaranteed.  The most worrisome flash point for a U.S.-Chinese war is Taiwan. Consider submarine warfare. China could use its conventionally armed attack submarines to blockade Taiwanese harbors or bomb the island, or to attack U.S. and allied forces in the region. If that happened, the U.S. Navy would almost certainly undertake an antisubmarine campaign, which would likely threaten China’s “boomers,” the four nuclear-armed ballistic missile submarines that form its naval nuclear deterrent. China’s conventionally armed and nuclear-armed submarines share the same shore-based communications system; a U.S. attack on these transmitters would thus not only disrupt the activities of China’s attack submarine force but also cut off its boomers from contact with Beijing, leaving Chinese leaders unsure of the fate of their naval nuclear force. In addition, nuclear ballistic missile submarines depend on attack submarines for protection, just as lumbering bomber aircraft rely on nimble fighter jets. If the United States started sinking Chinese attack submarines, it would be sinking the very force that protects China’s ballistic missile submarines, leaving the latter dramatically more vulnerable. Even more dangerous, U.S. forces hunting Chinese attack submarines could inadvertently sink a Chinese boomer instead. After all, at least some Chinese attack submarines might be escorting ballistic missile submarines, especially in wartime, when China might flush its boomers from their ports and try to send them within range of the continental United States. Since correctly identifying targets remains one of the trickiest challenges of undersea warfare, a U.S. submarine crew might come within shooting range of a Chinese submarine without being sure of its type, especially in a crowded, noisy environment like the Taiwan Strait. Platitudes about caution are easy in peacetime. In wartime, when Chinese attack submarines might already have launched deadly strikes, the U.S. crew might decide to shoot first and ask questions later. Adding to China’s sense of vulnerability, the small size of its nuclear-armed submarine force means that just two such incidents would eliminate half of its sea-based deterrent. Meanwhile, any Chinese boomers that escaped this fate would likely be cut off from communication with onshore commanders, left without an escort force, and unable to return to destroyed ports. If that happened, China would essentially have no naval nuclear deterrent. Platitudes about caution are easy in peacetime. In wartime, U.S. forces might decide to shoot first and ask questions later. The situation is similar onshore, where any U.S. military campaign would have to contend with China’s growing land-based conventional ballistic missile force. Much of this force is within range of Taiwan, ready to launch ballistic missiles against the island or at any allies coming to its aid. Once again, U.S. victory would hinge on the ability to degrade this conventional ballistic missile force. And once again, it would be virtually impossible to do so while leaving China’s nuclear ballistic missile force unscathed. Chinese conventional and nuclear ballistic missiles are often attached to the same base headquarters, meaning that they likely share transportation and supply networks, patrol routes, and other supporting infrastructure. It is also possible that they share some command-and-control networks, or that the United States would be unable to distinguish between the conventional and nuclear networks even if they were physically separate. To add to the challenge, some of China’s ballistic missiles can carry either a conventional or a nuclear warhead, and the two versions are virtually indistinguishable to U.S. aerial surveillance. In a war, targeting the conventional variants would likely mean destroying some nuclear ones in the process. Furthermore, sending manned aircraft to attack Chinese missile launch sites and bases would require at least partial control of the airspace over China, which in turn would require weakening Chinese air defenses. But degrading China’s coastal air defense network in order to fight a conventional war would also leave much of its nuclear force without protection. Once China was under attack, its leaders might come to fear that even intercontinental ballistic missiles located deep in the country’s interior were vulnerable. For years, observers have pointed to the U.S. military’s failed attempts to locate and destroy Iraqi Scud missiles during the 1990–91 Gulf War as evidence that mobile missiles are virtually impervious to attack. Therefore, the thinking goes, China could retain a nuclear deterrent no matter what harm U.S. forces inflicted on its coastal areas. Yet recent research suggests otherwise. Chinese intercontinental ballistic missiles are larger and less mobile than the Iraqi Scuds were, and they are harder to move without detection. The United States is also likely to have been tracking them much more closely in peacetime. As a result, China is unlikely to view a failed Scud hunt in Iraq nearly 30 years ago as reassurance that its residual nuclear force is safe today, especially during an ongoing, high-intensity conventional war. China’s [vehement criticism](https://archive.is/o/fHOWC/https:/www.foreignaffairs.com/articles/united-states/2017-02-15/good-thaad-and-ugly) of a U.S. regional missile defense system designed to guard against a potential North Korean attack already reflects these latent fears. Beijing’s worry is that this system could help Washington block the handful of missiles China might launch in the aftermath of a U.S. attack on its arsenal. That sort of campaign might seem much more plausible in Beijing’s eyes if a conventional war had already begun to seriously undermine other parts of China’s nuclear deterrent. It does not help that China’s real-time awareness of the state of its forces would probably be limited, since blinding the adversary is a standard part of the U.S. military playbook. Put simply, the favored U.S. strategy to ensure a conventional victory would likely endanger much of China’s nuclear arsenal in the process, at sea and on land. Whether the United States actually intended to target all of China’s nuclear weapons would be incidental. All that would matter is that Chinese leaders would consider them threatened. At that point, the question becomes, How will China react? Will it practice restraint and uphold the “no first use” pledge once its nuclear forces appear to be under attack? Or will it use those weapons while it still can, gambling that limited escalation will either halt the U.S. campaign or intimidate Washington into backing down? Chinese writings and statements remain deliberately ambiguous on this point. It is unclear which exact set of capabilities China considers part of its core nuclear deterrent and which it considers less crucial. For example, if China already recognizes that its sea-based nuclear deterrent is relatively small and weak, then losing some of its ballistic missile submarines in a war might not prompt any radical discontinuity in its calculus. The danger lies in wartime developments that could shift China’s assumptions about U.S. intentions. If Beijing interprets the erosion of its sea- and land-based nuclear forces as a deliberate effort to destroy its nuclear deterrent, or perhaps even as a prelude to a nuclear attack, it might see limited nuclear escalation as a way to force an end to the conflict. For example, China could use nuclear weapons to instantaneously destroy the U.S. air bases that posed the biggest threat to its arsenal. It could also launch a nuclear strike with no direct military purpose—on an unpopulated area or at sea—as a way to signal that the United States had crossed a redline. If such escalation appears far-fetched, China’s history suggests otherwise. In 1969, similar dynamics brought China to the brink of nuclear war with the Soviet Union. In early March of that year, Chinese troops ambushed Soviet guards amid rising tensions over a disputed [border area](https://archive.is/o/fHOWC/https:/www.foreignaffairs.com/articles/china/1967-07-01/tension-sino-soviet-border). Less than two weeks later, the two countries were fighting an undeclared border war with heavy artillery and aircraft. The conflict quickly escalated beyond what Chinese leaders had expected, and before the end of March, Moscow was making thinly veiled nuclear threats to pressure China to back down. If nuclear escalation appears far-fetched, China’s history suggests otherwise. Chinese leaders initially dismissed these warnings, only to radically upgrade their threat assessment once they learned that the Soviets had privately discussed nuclear attack plans with other countries. Moscow never intended to follow through on its nuclear threat, archives would later reveal, but Chinese leaders believed otherwise. On three separate occasions, they were convinced that a Soviet nuclear attack was imminent. Once, when Moscow sent representatives to talks in Beijing, China suspected that the plane transporting the delegation was in fact carrying nuclear weapons. Increasingly fearful, China test-fired a thermonuclear weapon in the Lop Nur desert and put its rudimentary nuclear forces on alert—a dangerous step in itself, as it increased the risk of an unauthorized or accidental launch. Only after numerous preparations for Soviet nuclear attacks that never came did Beijing finally agree to negotiations. China is a different country today than it was in the time of Mao Zedong, but the 1969 conflict offers important lessons. China started a war in which it believed nuclear weapons would be irrelevant, even though the Soviet arsenal was several orders of magnitude larger than China’s, just as the U.S. arsenal dwarfs China’s today. Once the conventional war did not go as planned, the Chinese reversed their assessment of the possibility of a nuclear attack to a degree bordering on paranoia. Most worrying, China signaled that it was actually considering using its nuclear weapons, even though it had to expect devastating retaliation. Ambiguous wartime information and worst-case thinking led it to take nuclear risks it would have considered unthinkable only months earlier. This pattern could unfold again today. A U.S. B-2 Spirit bomber, capable of carrying nuclear weapons, in Hawaii, September 2018 Danielle Quilla/U.S. Air Force. Both the United States and China can take some basic measures to reduce these dangers. More extensive dialogue and exchange—formal and informal, high level and working level, military and political—could help build relationships that might allow for backchannel de-escalation during a conflict. The two countries already have a formal military hot line in place, although it does not connect political leaders. A dedicated and tested infrastructure for senior military and political leaders to reliably and easily communicate during wartime would provide at least one off-ramp in the event of a crisis. But better communication can only do so much for a problem that ultimately stems from military doctrine and grand strategy. Given that the United States’ standard wartime playbook is likely to back China into a nuclear corner, it would be logical for Washington to consider alternative strategies that would leave China’s nuclear capabilities untouched. For example, some analysts have proposed coercing China through a distant naval blockade, and others have suggested confining any U.S. campaign to air and naval operations off China’s coast. The goal in both cases would be to avoid attacks on the Chinese mainland, where the bulk of Chinese nuclear forces reside. The problem with these alternatives is that the mainland is also where the bulk of Chinese conventional capabilities are located. The United States is unlikely to voluntarily leave these capabilities intact, given its predilection for reducing its own casualties and rapidly destroying enemy forces. If China is using its mainland bases to lob ballistic missiles at U.S. troops and allies, it is hard to imagine a U.S. president ordering the military to hold back in the interest of de-escalation. U.S. allies are particularly unlikely to accept a cautious approach, as they will be more exposed to Chinese military power the longer it is left intact. No one wants a U.S.-Chinese war to go nuclear, but a U.S. campaign that avoids escalation while letting China’s conventional forces turn Taiwan—not to mention Japan or South Korea—into a smoking ruin would not seem like much of a victory either. Of course, Beijing could also take steps to ameliorate the problem, but this is just as unlikely. China has chosen to mount both conventional and nuclear warheads on the same missiles and to attach both conventional and nuclear launch brigades to the same bases. It likely sees some strategic advantage in these linkages. Precisely because these entanglements raise the prospect of nuclear escalation, Beijing may believe that they contribute to deterrence—that they will make the United States less likely to go to war in the first place. But just as China benefits if the United States believes there is no safe way to fight a war, the United States benefits if China believes that war would result not only in China’s conventional defeat but also in its nuclear disarmament. In fact, the United States might believe that this fear could give it greater leverage during a conflict and perhaps deter China from starting one at all. In short, neither side may see much value in peacetime reassurance. Quite the opposite: they may be courting instability. If this is the case, however, then U.S. and Chinese leaders should recognize the tradeoffs inherent in their chosen policies. The threat of escalation may make war less likely, but it also makes war radically more dangerous if it does break out. This sobering reality should encourage leaders on both sides to find ways of resolving political, economic, and military disputes without resorting to a war that could rapidly turn catastrophic for the region and the world.

**Nuclear proliferation causes nuclear war due to entanglement of conventional and nuclear weapons**

**Acton 19** [James M. Acton, Acton holds the Jessica T. Mathews Chair and is co-director of the Nuclear Policy Program at the Carnegie Endowment for International Peace, “The Weapons Making Nuclear War More Likely,” Carnegie Endowment for International Peace, <https://carnegieendowment.org/2019/02/08/weapons-making-nuclear-war-more-likely-pub-78343>, 2/18/19] TDI

The threat of nuclear war fills people with fear. Yet the increasingly blurred line between nuclear and conventional weapons is heightening the danger. Nuclear and non-nuclear weapons have never been entirely separate from each other. The B-29 bomber, for example, was designed and built to deliver conventional bombs. But on 6 August 1945 one of these aircraft, Enola Gay, dropped a nuclear weapon on the Japanese city of Hiroshima. Seventy-four years later, nine countries now possess thousands of nuclear weapons, which are becoming increasingly entangled with non-nuclear weapons. The global stockpile of nuclear weapons is down from an all-time high of about 64,000 in 1986 - but some contemporary weapons are about 300 times more powerful than the bomb dropped on Hiroshima. Apart from the UK, all nuclear-armed states possess dual-use weapons that can be used to deliver nuclear or conventional warheads. These include missiles of ever-longer ranges.Russia, for example, has recently deployed a new ground-launched cruise missile, the 9M729. The US believes this missile is dual-use and has been tested to distances "well over" 500km (310 miles). The missile is at the heart of US claims Russia breached the terms of a treaty banning the use of medium- and intermediate-range missiles. The US has announced its withdrawal from the pact, raising concerns about **a new arms race**. China, meanwhile, has recently been showing off its newest missile, the DF-26. Capable of travelling more than 2,500km (1,553 miles), it appears to be the world's longest range dual-use missile capable of a precision strike. There are a number of scenarios in which such missiles could inadvertently increase the chance of a nuclear war. The most obvious is that in a conflict, they might be launched with conventional warheads but mistaken for nuclear weapons. This ambiguity could prompt the adversary to launch an immediate nuclear response. It is difficult to know whether it would choose this course of action - or wait until the weapons had detonated and it became clear how they were armed. In practice, the greatest danger with dual-use missiles may lie elsewhere: misidentification before they have even been launched. Imagine that China dispersed lorry-mounted DF-26 missiles loaded with nuclear warheads around its territory. The U.S., wrongly believing them to be conventionally armed, might decide to try to destroy them. By attacking them, it could inadvertently provoke China into launching those nuclear weapons it still had before they could be destroyed. Dual-use missiles are not the only way in which nuclear and non-nuclear weapons are increasingly entangled. For example, all nuclear forces need a communication system - which could include satellites. But, increasingly, these nuclear command-and-control systems are also being used to support non-nuclear operations. The U.S., for example, operates satellites to provide warning of attacks with nuclear-armed or conventionally armed ballistic missiles. In a conflict between Nato and Russia, these could be used to detect short-range conventional ballistic missiles launched by Russia - as the first step towards shooting them down. If this strategy was successful, Russia could decide to attack the US early-warning satellites in response. In fact, the US intelligence community has warned that Russia is developing ground-based laser weapons for that exact purpose. But blinding U.S. early-warning satellites would not simply undermine its ability to spot conventionally armed missiles. It would also compromise the ability of the US to detect nuclear-armed ballistic missiles and could raise fears that Russia was planning a nuclear attack on the US. Indeed, the latest US Nuclear Posture Review - the key official statement of US nuclear policy - explicitly threatens to consider the use of nuclear weapons against any state that attacks its nuclear command-and-control systems. This threat applies whether or not that state has used nuclear weapons first. The governments of nuclear-armed states are presumably aware of the growing entanglement between nuclear and non-nuclear weapons. They are also aware of at least some of the associated dangers. However, working to reduce these risks does not seem to be a priority. The focus remains on enhancing their military capabilities, to deter one another. One option could be for countries to try to agree a ban on weapons that could threaten nuclear command-and-control satellites. But for the moment, governments of nuclear-armed states are reluctant to sit around the same table. As a result, the prospects of such cooperation appear to be bleak.

## 3

#### The Standard is Maximizing Expected Wellbeing – Act Hedonistic Util

#### [1] Extinction first as only a reason to prefer util –

#### a) Turns suffering – mass death causes suffering because people can’t get access to resources and basic necessities

#### b) Moral uncertainty

**Bostrom 12** [(Nick Bostrom, Faculty of Philosophy & Oxford Martin School University of Oxford) “Existential Risk Prevention as Global Priority.” Global Policy, 2012] TDI

These reflections on moral uncertainty suggest an alternative, complementary way of looking at existential risk; they also suggest a new way of thinking about the ideal of sustainability. Let me elaborate. **Our** present **understanding** of axiology **might** well **be confused**. We may not now know — at least not in concrete detail — what outcomes would count as a big win for humanity; we might not even yet be able to imagine the best ends of our journey. **If we are** indeed profoundly **uncertain about our** ultimate aims, **then we should** recognize that there is a great option **value** in preserving — and ideally improving — **our ability to** recognize value and to **steer the future accordingly. Ensuring** that there will be **a future** version **of humanity** with great powers and a propensity to use them wisely is plausibly the best way available to us to increase the probability that the future will contain a lot of value. To do this, **we must prevent any existential catastrophe**.

#### [2] Actor specificity –

#### a) Governments must aggregate since every policy benefit some and harms others, which also means side constraints freeze action.

#### b) No act omission distinction – choosing to omit is an act itself so people psychologically decide not to act.

#### Actor-specificity comes first since different agents have different ethical standings. Takes out util calc indicts since they’re empirically denied, and link turns them because the alt would be no action.

#### [3] Degrees of wrongness – Looking at the consequences is the only way to tell that murdering someone is way worse than stealing their pencil.

#### [4] Ground – Both debaters have ground to engage under util if something has an if it has an external benefit – Aff gets plans, while Neg gets DAs and counterplans. Other fwrks deny 1 side engagement on link and impact level. TJFs outweighs because concerns fairness – outweighs all args concede valid of fairness.

#### [5] Pleasure and pain are the starting point for moral reasoning.

Moen 16, Ole Martin (PhD, Research Fellow in Philosophy at University of Oslo). "An Argument for Hedonism." Journal of Value Inquiry 50.2 (2016): 267. SM

Let us start by observing, empirically, that a widely shared judgment about intrinsic value and disvalue is that pleasure is intrinsically valuable and pain is intrinsically disvaluable. On virtually any proposed list of intrinsic values and disvalues (we will look at some of them below), pleasure is included among the intrinsic values and pain among the intrinsic disvalues. This inclusion makes intuitive sense, moreover, for there is something undeniably good about the way pleasure feels and something undeniably bad about the way pain feels, and neither the goodness of pleasure nor the badness of pain seems to be exhausted by the further effects that these experiences might have. “Pleasure” and “pain” are here understood inclusively, as encompassing anything hedonically positive and anything hedonically negative. 2 The special value statuses of pleasure and pain are manifested in how we treat these experiences in our everyday reasoning about values. If you tell me that you are heading for the convenience store, I might ask: “What for?” This is a reasonable question, for when you go to the convenience store you usually do so, not merely for the sake of going to the convenience store, but for the sake of achieving something further that you deem to be valuable. You might answer, for example: “To buy soda.” This answer makes sense, for soda is a nice thing and you can get it at the convenience store. I might further inquire, however: “What is buying the soda good for?” This further question can also be a reasonable one, for it need not be obvious why you want the soda. You might answer: “Well, I want it for the pleasure of drinking it.” If I then proceed by asking “But what is the pleasure of drinking the soda good for?” the discussion is likely to reach an awkward end. The reason is that the pleasure is not good for anything further; it is simply that for which going to the convenience store and buying the soda is good. 3 As Aristotle observes: “We never ask [a man] what his end is in being pleased, because we assume that pleasure is choice worthy in itself.”4 Presumably, a similar story can be told in the case of pains, for if someone says “This is painful!” we never respond by asking: “And why is that a problem?” We take for granted that if something is painful, we have a sufficient explanation of why it is bad. If we are onto something in our everyday relations that ground Pettit’s theory.

## Case

Ci: the neg debater does not need disclose constructives before the round and does not need to concede the aff framework

on their standards:

idk what my nc is and I need to use CX to get links and stuff

also u violate ur own interp – u gave me this ac without the os stuff which means that the shell is new and I actualy have less time to prep for it so turn that arg

also they have no paradigm issues – don’t grant them the shell.

use reasonability with a brightline of substance education. resolve this shell so we can go back to substance.

**Top Level – FRWK**

**[1] Apriori is just definitional knowledge humans have invented to understand the world e.g. we know all bachelors are unmarried males but we can conceive of a world in which all bachelors are married women.**

**[2] Hijack – util contextualizes why we care about violating the categorical imperative. It’s because it causes pain to individuals – otherwise your framework is impact justified.**

**[3] No Intent Foresight Distinction – nc hijacks.**

**Korsgaard 02** (Christine M. Korsgaard Internalism and the Sources of Normativity. Constructions of Practical Reason: Interviews on Moral and Political Philosophy, edited by Herlinde Pauer-Studer (Stanford: Stanford University Press, 2002). [http://www.people.fas.harvard.edu/~korsgaar/CPR.CMK.Interview.pdf) //](http://www.people.fas.harvard.edu/~korsgaar/CPR.CMK.Interview.pdf)%20//) Lex CH

Some philosophers argue that a moral theory has to have at least a consequentialist structure (without being necessarily utilitarian), including a means-end conception of rationality in order to be able to take the consequences of actions into account. It has been a well-known objection (if we think, for example, of Max Weber’s distinction between Gesinnungsethik and Verantwortungsethik) that Kant’s ethic does not take consequences into account. **What do you think of this objection and how does your modified Kantian moral theory answer it?** Certainly I do not think that a moral theory has to have a consequentialist structure. Earlier I mentioned, as a common point between Kant and Aristotle, the view that the unit of moral assessment is the action, the act undertaken for the sake of a certain end, rather than merely the act by itself. Acts may be assessed primarily in terms of their consequential value, but actions, the units of moral value, should not be. **Of course I do not think that it is correct to say that Kantian agents do not care about or are not interested either in the consequences of their acts. It would be impossible even to formulate a maxim without attention to the intended consequences of an act. So, I think, there is in a way a very deep disagreement here about what the unit of assessment is.**

**[4] Actor spec—even if ur phil were true, our aspec argument indicates that moral actions committed by the state are evaluated via consequences based on how the public perceives it—perception outweighs and controls int link to your fw since agency is the basis of your fw**

**AT: Korsgaard 83**

**[1] no internal link—this just means humans are more valuable than objects but it doesn’t warrant why humanity is unconditionally valuable or must always be treated as an end in itself**

**[2] Rarity objection- I could tailor a maxim super specifically to a particular instance so that it wouldn’t fail the test of universalizability when applied to everyone, but would still be bad- there’s no brightline for what constitutes a morally relevant feature of a maxim so reject those arguments**

**AT: Inescapability**

**a] no impact to bindingness even if a fw isn’t binding that doesn’t disprove the normative goodness of it b] util is binding – pleasure and pain are stimulus that guides how individuals take action and what they desire that’s Moen.**

**AT: Aggregation Bad**

**Its inevitable and necessary – governments are inevitability going to have to make tradeoffs when passing policies as there isn’t a perfect that pleases every single person. Our arguments proves why aggregation although may not be perfect is necessary for state actors. Governments aggregate all the time, e.g. eminent domain they know it will hurt people on the land, but the new infrastructure is better for wellbeing.**

**AT: Ideal Theory**

**Non-natural moral facts are epistemically inaccessible – realism determines ethics.**

**Papineau 07** (David [David Papineau is an academic philosopher. He works as Professor of Philosophy of Science at King's College London, having previously taught for several years at Cambridge University and been a fellow of Robinson College, Cambridge], “Naturalism”. [http://plato.stanford.edu/entries/naturalism/](http://plato.stanford.edu/entries/naturalism/)) 2007)

Moore took this argument to show that moral facts comprise a distinct species of non-natural fact. However, any such non-naturalist view of morality faces immediate difficulties, deriving ultimately from the kind of causal closure thesis discussed above. If **all physical effects are due to a limited range of natural causes, and if moral facts lie outside this range, then it follow that moral facts can never make any difference to what happens in the physical world** (Harman, 1986). At first sight **this** may seem tolerable (perhaps moral facts indeed don't have any physical effects). But it **has** **very awkward epistemological consequences.** For beings like us, **knowledge of the spatiotemporal world is mediated by physical processes involving our sense organs and cognitive systems. If moral facts cannot influence the physical world, then it is hard to see how we can have any knowledge of them.**

**Kant**

**Even if u don’t buy util, that’s GUCCI bc**

**Kant actually negates –**

#### 1] Libertarianism mandates a market-oriented approach to space—that negates

Broker 20 [(Tyler, work has been published in the Gonzaga Law Review, the Albany Law Review and the University of Memphis Law Review.) “Space Law Can Only Be Libertarian Minded,” Above the Law, 1-14-20, <https://abovethelaw.com/2020/01/space-law-can-only-be-libertarian-minded/>] TDI

The impact on human daily life from a transition to the virtually unlimited resource reality of space cannot be overstated. However, when it comes to the law, a minimalist, dare I say libertarian, approach appears as the only applicable system. In the words of NASA, “2020 promises to be a big year for space exploration.” Yet, as Rand Simberg points out in Reason magazine, it is actually private American investment that is currently moving space exploration to “a pace unseen since the 1960s.” According to Simberg, due to this increase in private investment “We are now on the verge of getting affordable private access to orbit for large masses of payload and people.” The impact of that type of affordable travel into space might sound sensational to some, but in reality the benefits that space can offer are far greater than any benefit currently attributed to any major policy proposal being discussed at the national level. The sheer amount of resources available within our current reach/capabilities simply speaks for itself. However, although those new realities will, as Simberg says, “bring to the fore a lot of ideological issues that up to now were just theoretical,” I believe it will also eliminate many economic and legal distinctions we currently utilize today. For example, the sheer number of resources we can already obtain in space means that in the rapidly near future, the distinction between a nonpublic good or a public good will be rendered meaningless. In other words, because the resources available within our solar system exist in such quantities, all goods will become nonrivalrous in their consumption and nonexcludable in their distribution. This would mean government engagement in the public provision of a nonpublic good, even at the trivial level, or what Kevin Williamson defines as socialism, is rendered meaningless or impossible. In fact, in space, I fail to see how any government could even try to legally compel collectivism in the way Simberg fears. Similar to many economic distinctions, however, it appears that many laws, both the good and the bad, will also be rendered meaningless as soon as we begin to utilize the resources within our solar system. For example, if every human being is given access to the resources that allows them to replicate anything anyone else has, or replace anything “taken” from them instantly, what would be the point of theft laws? If you had virtually infinite space in which you can build what we would now call luxurious livable quarters, all without exploiting human labor or fragile Earth ecosystems when you do it, what sense would most property, employment, or commercial law make? Again, this is not a pipe dream, no matter how much our population grows for the next several millennia, the amount of resources within our solar system can sustain such an existence for every human being. Rather than panicking about the future, we should try embracing it, or at least meaningfully preparing for it. Currently, the Outer Space Treaty, or as some call it “the Magna Carta of Space,” is silent on the issue of whether private individuals or corporate entities can own territory in space. Regardless of whether governments allow it, however, private citizens are currently obtaining the ability to travel there, and if human history is any indicator, private homesteading will follow, flag or no flag. We Americans know this is how a Wild West starts, where most regulation becomes the impractical pipe dream. But again, this would be a Wild West where the exploitation of human labor and fragile Earth ecosystem makes no economic sense, where every single human can be granted access to resources that even the wealthiest among us now would envy, and where innovation and imagination become the only things we would recognize as currency. Only a libertarian-type system, that guarantees basic individual rights to life, liberty, and the pursuit of happiness could be valued and therefore human fidelity to a set of laws made possible, in such an existence.

#### 2] Property rights in space can be consistent with international law

Simberg 12 [(Rand, MSE in technical management from West Coast University, recognized as an expert in space transportation by the Office of Technology Assessment) “Homesteading the Final Frontier A Practical Proposal for Securing Property Rights in Space,” Competitive Enterprise Institute, April 2012, <https://cei.org/wp-content/uploads/2012/04/Rand-Simberg-Homesteading-the-Final-Frontier.pdf>] TDI

But is it true that any recognition of off-planet property claims is de facto a violation of the Outer Space Treaty? Not necessarily. For instance, one could argue that the existence of the Moon Treaty is in and of itself a refutation of the notion that the Outer Space Treaty outlaws private property in space, or else there would be no need for another treaty that essentially explicitly does so. And there is at least one potential loophole that could be exploited by appropriately worded legislation. There are two key assumptions in the legal argument used by opponents of off-planet property claims: 1) that the recognition by a government would only recognize claims by its own citizens; and 2) that it would defend them by force. That need not necessarily be so. Under the treaty, it would in fact be possible for a government, or group of governments, to recognize the property claims of anyone who met specified conditions, regardless of their citizenship or nationality. Such cooperation would obviate the need for physical force to defend claims. The argument that the treaty permits individual property rights was actually made from the very beginning. In 1969, two years after the treaty went into force, the late distinguished space-law professor, Stephen Gorove, noted that under it, “[A]n individual acting on his own behalf or on behalf of another individual or a private association or an international organization could lawfully appropriate any part of outer space, including the [M]oon and other celestial bodies.”32 This clearly provides support for the concept of individual claims off planet under Article II.

#### 3] Space appropriation and exploration originates from private companies such as Space X and Blue Origin. Preventing such is a restriction on the ability of companies to set and pursue their ends and these companies gain contracts with the government for projects which turns promise breaking offense.