# 1

#### CP: The appropriation of outer space by private entities except worker cooperatives is unjust

Solves the first advantage– the aff is a criticism of the capitalist mindset so socialist alternatives like worker coops solve but do space col in a manageable way

# 2

#### Strong commercial space catalyzes tech innovation – progress at the margins and spinoff tech change global information networks

Joshua Hampson 2017, Security Studies Fellow at the Niskanen Center, 1-25-2017, “The Future of Space Commercialization”, Niskanen Center, https://republicans-science.house.gov/sites/republicans.science.house.gov/files/documents/TheFutureofSpaceCommercializationFinal.pdf

Innovation is generally hard to predict; some new technologies seem to come out of nowhere and others only take off when paired with a new application. It is difficult to predict the future, but it is reasonable to expect that a growing space economy would open opportunities for technological and organizational innovation. In terms of technology, the difficult environment of outer space helps incentivize progress along the margins. Because each object launched into orbit costs a significant amount of money—at the moment between $27,000 and $43,000 per pound, though that will likely drop in the future —each 19 reduction in payload size saves money or means more can be launched. At the same time, the ability to fit more capability into a smaller satellite opens outer space to actors that previously were priced out of the market. This is one of the reasons why small, affordable satellites are increasingly pursued by companies or organizations that cannot afford to launch larger traditional satellites. These small 20 satellites also provide non-traditional launchers, such as engineering students or prototypers, the opportunity to learn about satellite production and test new technologies before working on a full-sized satellite. That expansion of developers, experimenters, and testers cannot but help increase innovation opportunities. Technological developments from outer space have been applied to terrestrial life since the earliest days of space exploration. The National Aeronautics and Space Administration (NASA) maintains a website that lists technologies that have spun off from such research projects. Lightweight 21 nanotubes, useful in protecting astronauts during space exploration, are now being tested for applications in emergency response gear and electrical insulation. The need for certainty about the resiliency of materials used in space led to the development of an analytics tool useful across a range of industries. Temper foam, the material used in memory-foam pillows, was developed for NASA for seat covers. As more companies pursue their own space goals, more innovations will likely come from the commercial sector. Outer space is not just a catalyst for technological development. Satellite constellations and their unique line-of-sight vantage point can provide new perspectives to old industries. Deploying satellites into low-Earth orbit, as Facebook wants to do, can connect large, previously-unreached swathes of 22 humanity to the Internet. Remote sensing technology could change how whole industries operate, such as crop monitoring, herd management, crisis response, and land evaluation, among others. 23 While satellites cannot provide all essential information for some of these industries, they can fill in some useful gaps and work as part of a wider system of tools. Space infrastructure, in helping to change how people connect and perceive Earth, could help spark innovations on the ground as well. These innovations, changes to global networks, and new opportunities could lead to wider economic growth.

#### Short innovation cycles mean every contract counts

John J. Klein 19, Senior Fellow and Strategist at Falcon Research Inc. and adjunct professor at the George Washington University Space Policy Institute, 1-15-2019, "Rethinking Requirements and Risk in the New Space Age," Center for a New American Security, https://www.cnas.org/publications/reports/rethinking-requirements-and-risk-in-the-new-space-age

Unfortunately, these variances in models between the MDAP’s lengthy development cycle and the commercial space sector’s 18-month innovation cycle are a result of stark differences in thinking about requirements and risk. Requirements and risk for MDAPs commonly focus on ensuring critical mission capabilities at a given cost. In contrast, the commercial space sector tends to focus more on providing innovation quickly using economies of scale. The commercial sector understands that time dynamically shapes decisions related to requirements and risk because of the relatively short innovation cycle. In a highly competitive space sector with tight profit margins, those unable to innovate quickly will likely be out of business soon. Alternatively, space systems with mission assurance requirements – where failures are detrimental to national security and military operations – often drive DoD’s timelines. Program managers of critical national security space systems commonly require additional time to test and verify that satellites can perform missions with a very low probability of failure.

#### Tech innovation solves every existential threat – cumulative extinction events outweigh the aff

Dylan **Matthews 18**. Co-founder of Vox, citing Nick Beckstead @ Rutgers University. 10-26-2018. "How to help people millions of years from now." Vox. https://www.vox.com/future-perfect/2018/10/26/18023366/far-future-effective-altruism-existential-risk-doing-good

If you care about improving human lives, you should overwhelmingly care about those quadrillions of lives rather than the comparatively small number of people alive today. The 7.6 billion people now living, after all, amount to less than 0.003 percent of the population that will live in the future. It’s reasonable to suggest that those quadrillions of future people have, accordingly, hundreds of thousands of times more moral weight than those of us living here today do. That’s the basic argument behind Nick Beckstead’s 2013 Rutgers philosophy dissertation, “On the overwhelming importance of shaping the far future.” It’s a glorious mindfuck of a thesis, not least because Beckstead shows very convincingly that this is a conclusion any plausible moral view would reach. It’s not just something that weird utilitarians have to deal with. And Beckstead, to his considerable credit, walks the walk on this. He works at the Open Philanthropy Project on grants relating to the far future and runs a charitable fund for donors who want to prioritize the far future. And arguments from him and others have turned “long-termism” into a very vibrant, important strand of the effective altruism community. But what does prioritizing the far future even mean? The most literal thing it could mean is preventing human extinction, to ensure that the species persists as long as possible. For the long-term-focused effective altruists I know, that typically means identifying concrete threats to humanity’s continued existence — like unfriendly artificial intelligence, or a pandemic, or global warming/out of control geoengineering — and engaging in activities to prevent that specific eventuality. But in a set of slides he made in 2013, Beckstead makes a compelling case that while that’s certainly part of what caring about the far future entails, approaches that address specific threats to humanity (which he calls “targeted” approaches to the far future) have to complement “broad” approaches, where instead of trying to predict what’s going to kill us all, you just generally try to keep civilization running as best it can, so that it is, as a whole, well-equipped to deal with potential extinction events in the future, not just in 2030 or 2040 but in 3500 or 95000 or even 37 million. In other words, caring about the far future doesn’t mean just paying attention to low-probability risks of total annihilation; it also means acting on pressing needs now. For example: We’re going to be better prepared to prevent extinction from AI or a supervirus or global warming if society as a whole makes a lot of scientific progress. And a significant bottleneck there is that the vast majority of humanity doesn’t get high-enough-quality education to engage in scientific research, if they want to, which reduces the odds that we have enough trained scientists to come up with the breakthroughs we need as a civilization to survive and thrive. So maybe one of the best things we can do for the far future is to improve school systems — here and now — to harness the group economist Raj Chetty calls “lost Einsteins” (potential innovators who are thwarted by poverty and inequality in rich countries) and, more importantly, the hundreds of millions of kids in developing countries dealing with even worse education systems than those in depressed communities in the rich world. What if living ethically for the far future means living ethically now? Beckstead mentions some other broad, or very broad, ideas (these are all his descriptions): Help make computers faster so that people everywhere can work more efficiently Change intellectual property law so that technological innovation can happen more quickly Advocate for open borders so that people from poorly governed countries can move to better-governed countries and be more productive Meta-research: improve incentives and norms in academic work to better advance human knowledge Improve education Advocate for political party X to make future people have values more like political party X ”If you look at these areas (economic growth and technological progress, access to information, individual capability, social coordination, motives) a lot of everyday good works contribute,” Beckstead writes. “An implication of this is that a lot of everyday good works are good from a broad perspective, even though hardly anyone thinks explicitly in terms of far future standards.” Look at those examples again: It’s just a list of what normal altruistically motivated people, not effective altruism folks, generally do. Charities in the US love talking about the lost opportunities for innovation that poverty creates. Lots of smart people who want to make a difference become scientists, or try to work as teachers or on improving education policy, and lord knows there are plenty of people who become political party operatives out of a conviction that the moral consequences of the party’s platform are good. All of which is to say: Maybe effective altruists aren’t that special, or at least maybe we don’t have access to that many specific and weird conclusions about how best to help the world. If the far future is what matters, and generally trying to make the world work better is among the best ways to help the far future, then effective altruism just becomes plain ol’ do-goodery.\*

# 3

#### US wins space race now due to private competition – its key to space dominance and militarization is good – the plan nukes the US’s silver bullet against Chinese aggression

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As Jeff Bezos, the wealthiest man on the planet, readies to launch himself into space aboard one of his own rockets, the world is watching the birth of a new dawn in space. Previously, America relied on its government agency, NASA, to propel it to the cosmos during the last space race with the Soviet Union. Today, America’s greatest hopes are with its private sector. Jeff Bezos is not engaging in such risky behavior simply because he’s an adrenaline junky. No, he’s launching himself into orbit because his Blue Origins is in a titanic struggle with Elon Musk’s SpaceX — and Bezos’s firm is losing. Whatever happens, the American people will benefit from the competition that is shaping up between America’s space entrepreneurs. This has always been how innovation occurs: through the dynamic, often cutthroat competition between actors in the private sector. While money is their ultimate prize, fame and fortune are also alluring temptations to make men like Musk and Bezos risk much of their wealth to change the world. The private space race among these entrepreneurs is part of a far more important marathon between Red China and the United States. Whichever nation wins the new space race will determine the future of the earth below. Consider this: Since winning its initial contracts to launch sensitive U.S. military satellites into orbit, SpaceX has lowered the cost of military satellite launches on taxpayers by “over a million dollars less” than what bigger defense contractors can do. Elon Musk is convinced that he can bring these costs down even more, thanks to his reusable Falcon 9 rocket. The competition between the private space start-ups is fierce — just as the competition between Edison and Westinghouse was — but the upshot is ultimately greater innovation and lower costs for you and me. In fact, Elon Musk insists that if NASA gives SpaceX the contract for building the Human Landing System for the Artemis mission, NASA would return astronauts to the lunar surface by 2024 — four years before NASA believes it will do so. (Incidentally, 2024 is also when China anticipates having a functional base on the moon’s southern pole.) Whereas China has an all-of-society approach to its space race with the United States, Washington has yet to fully galvanize the country in the way that John F. Kennedy rallied America to wage — and win — the space race in the Cold War. America’s private sector, therefore, is the silver bullet against China’s quest for total space dominance. If left unrestricted by meddlesome Washington bureaucrats, these companies will ensure that the United States retains its overall competitive advantage over China — and all other challengers, for that matter. Indeed, the next four years could prove decisive in who will be victorious. Enter the newly minted NASA director, Bill Nelson, whose station at the agency has effectively poured cold water on the private sector’s ambitious space plans. “Space is not going to be the Wild West for billionaires or anyone else looking to blast off,” Nelson admonished an inquiring reporter. Why not? America’s actions during its western expansion created a dynamic and advanced nation that was well-positioned to dominate the world for the next century. Should we not attempt to emulate this in order to remain dominant in the next century? More important, this is precisely how China treats space: as a new Wild West . . . but one in which Beijing’s forces will dominate. China takes a leap-without-looking approach to space development — everything that can be done to further its grand ambition of becoming the world’s most dominant power by 2049 will be done. Meanwhile, the Biden administration wants to prevent America’s greatest strength, the free market, from helping to beat its foremost geopolitical competitor. Nelson’s comments are fundamentally at odds with America’s spirit and animating principles. Whatever one’s opinion about Bezos or Musk, the fact is that their private space companies are inspiring greater innovation today in the space sector after years of its being left in the sclerotic hands of the U.S. government. Sensing that the federal government’s dominance of U.S. space policy is waning, the Biden administration would rather cede the strategic high ground of space to China than let wildcatting innovators do the hard work. Today, the Federal Aviation Authority (FAA) and NASA are contriving new ways for strangling the budding private space sector, just as it is taking flight. Risk aversion is not how one innovates. Risk is what led Americans to the moon just 66 years after the Wright brothers flew their first airplane. A willingness for risk doesn’t exist today in the federal government — which is why the feds shouldn’t be running space policy. The U.S. government should be partnering with the new space start-ups, not shunning them. The FAA should be automatically approving SpaceX launches, not stymying them. The federal government will not win space any more than it could win the West or build the locomotive. It takes strong-willed, brilliant individuals of a rare caliber to do that. All government can do is to give the resources and support to private-sector innovators and let them make history for us. The next decade will decide who wins space. Let it be America — and let America’s dynamic start-ups win that race, not China’s state capitalism.

#### Space dominance solves hegemony – deterrence strategies, even rudimentary ones, are perceived as weakness and causes aggression

Weichert 17 (Brandon J. Weichert. Brandon J. Weichert is a former Congressional staff member who holds a Master of Arts in Statecraft & National Security Affairs from the Institute of World Politics in Washington, D.C. He is the founder of The Weichert Report: An Online Journal of Geopolitics, “The High Ground: The Case for U.S. Space Dominance,” Orbis, Vol 61, Issue 2, 2017, pp 227 – 237, <https://www.sciencedirect.com/science/article/pii/S0030438717300108>)

While space superiority and space dominance share a militarized view of space, there are fundamental differences in their stated end goals. Those who favor space superiority view space as a global commons, accessible to all in peacetime. They take a more defensive and reactive view of space and the actors who seek access to this domain. The space superiority model understands that U.S. dependence on space is vital for the basic functioning of American civilization (banking transactions, cell phone signals, GPS functions, television broadcasts, as well as essential military surveillance and support functions all across satellites in space). Yet, this model also accepts that current budgetary constraints mean that the United States is unlikely to invest significantly more into unwieldy and expensive space systems. A strategy of space superiority accepts the risk arising from reliance on space systems, while deterring attacks on space assets. As actors such as China or Russia become increasingly dependent on space systems themselves, space superiority advocates believe that U.S. willingness to retaliate in kind against any attack on its own space assets is sufficient.7 This is in keeping with the classic deterrence model of Mutual Assured Destruction (MAD). Unfortunately, however, U.S. dependence on space assets for its very survival is so much greater than any other state that such a threat is unrealistic. The reason that states like China or Russia are developing counter-space capabilities is because the cost to them is extremely low, whereas the benefit for them (in the event of war with the United States) is high. For the cost of a ground-based laser or an anti-satellite (ASAT) missile launcher, China could knock out the ability of all U.S. forces in the Pacific to coordinate and adequately defend themselves from a Chinese offensive. What could the United States do to the Chinese in return? The best option for U.S. retaliation in space would be to launch some blinding attacks on the handful of China's space assets. However, this ultimately would not deter China from escalating any future conflict since China's investment in space is so low compared to that of the United States. In addition, since Chinese forces are designed to operate in an environment without those assets, such retaliation grounded on deterrence-based models becomes highly problematic and ineffective. Rather than serving as a stabilizing force in space, then, the defensive and reactive space superiority model would be an inducement for conflict in the strategic high ground of space. Or, rather, the direction of attack would be unidirectional: from U.S. adversaries toward essential U.S. space systems. Thus, while space confers unequivocal advantages to the U.S. forces that depend on space assets for their vital functions, it also provides adversaries with an unprecedented weakness for them to exploit. The fact is that United States, China, or Russia's dependence on space is asymmetrical. Over the long run, a deterrent-based, space superiority model would eventually allow other states not only to gain and maintain access to space, but also effectively to gain strategic parity with the United States in space. Make no mistake, the more that states are able to access space, no matter how nascent or rudimentary their space programs may be, the more they will refine their capabilities and be able to develop space programs for their own strategic ends. While most defense analysts believe that deterrence during the Cold War led to bipolar stability, a deterrence-based model in space would create instability. If a near-peer competitor like China or Russia believed that it had acquired the capacity to achieve parity with the United States, what would stop that state from trying to gain strategic advantage over America in space? A Hegemonic Model The best solution to avoid this situation is a hegemonic model. The only way that the United States can ensure its continued strategic advantage in space is to embrace fully the space dominance model by weaponizing space. While space superiority advocates will denounce this policy as both cost-ineffective and destabilizing, a hegemonic approach to space is far more in keeping with U.S. traditions and values. Indeed, as John Lewis Gaddis asserts, the American response to foreign threat is traditionally to take “the offensive, by becoming more conspicuous, by confronting, neutralizing, and if possible overwhelming the sources of danger rather than fleeing from them. Expansion, we have assumed, is the path to security.”8 What of the claim that a deterrence-based space superiority model creates stability? The primary claim of deterrence efficacy is that during the Cold War, the more or less equal nuclear balance ensured that neither side had an incentive to launch a disarming first strike. This view was the basis of the mutual assured destruction theory. Since there was no conceivable advantage to either side from these weapons, both sides were forced into a more constructive diplomatic relationship. In all of the time that deterrence was employed, American policymakers assured the public that MAD was better than the alternatives—compellence,9 Rollback,10 and hegemony—because it restrained Soviet aggression. American policymakers assumed that the Soviet strategists in the Kremlin viewed nuclear arms in the same apocalyptic terms that they did. As such, U.S. policymakers were not only content to allow American nuclear dominance to erode, but also to degrade actively those capabilities through strategic arms agreements. In the meantime, until 1986, mainstream Soviet strategists and policymakers were convinced that they could prevail in a nuclear war. They were just biding their time.11 In this light then, deterrence was not built around the concept of enlightened self-interest, but more likely the result of U.S. policymakers’ inability to see through the fog of the Cold War. The Soviets were by definition a revolutionary power. Even after they had renounced the concept of spreading global communist revolution, however, the urge to transform fundamentally the world order to reflect their own image remained a high strategic priority for the USSR. The United States failed to discern this situation until the Reagan Administration. President Ronald Reagan, rather than accept the Cold War deterrence paradigm, planned to bring American technical and strategic dominance to bear in space in order to help defeat the Soviet Union. Reagan also recognized that the demilitarized sanctuary view of space was irrelevant, and he eschewed arms control agreements that sought to counteract the inherent American advantages in space. President Reagan not only embraced a militarized view of space, but in 1983, he also called for the weaponization of space with his Strategic Defense Initiative (SDI). By the 1980s, the United States was becoming increasingly dependent on space for military purposes (primarily in the area of satellites). These space systems formed the backbone of the modern military force that Reagan was assembling to counter the Soviet Union. What is more, Reagan's preferred strategy of Rollback meant that the United States would no longer sacrifice its own strategic advantages on the altar of diplomacy. After all, Reagan did not accept the Soviets as an equal and legitimate global power. He detested communism and viewed its proponents in the USSR as the great villains on the world stage. Furthermore, Reagan was staunchly opposed to nuclear weapons. Therefore, he sought to remove the notion of deterrence through MAD and replace it with the concept of hegemony through “Mutual Assured Survival.” These views coalesced into the Reagan Administration's commitment to placing missile defense systems in orbit. It also called for developing new technologies (i.e., directed-energy weapons) to be used in space. The United States would not only remove the threat of the Soviet nuclear arsenal by creating a working missile defense system in space, but it would also move beyond the Soviet threat by permanently dominating the high ground of space. This position was the basis of SDI.12 In fact, the Reagan Administration's shift in focus was a key factor in the collapse of the Soviet Union as the Soviet leadership then embarked on a tit-for-tat arms buildup that their economy simply could not sustain. 13 Even if deterrence did facilitate a significant reduction in hostility—thereby creating the bipolar stability—no such hope for stability exists in space today. As argued earlier, U.S. reliance on space assets for its most basic functions is far greater than that of other countries. Furthermore, there is no way that the United States can—or should—abandon its use of space as a strategic domain. Thus, a hegemonic model for space dominance is the only hope to create the stability that most planners seek, while at the same time defending the American position in space. Space dominance as a model for stability is nothing new. Indeed, Hegemonic Stability Theory (HST) asserts that the most stable global systems are those in which one actor dominates the system. In such a system, power is aggregated so greatly into a single, dominant actor that such a hegemonic power acts as a stabilizing force. Due to its relative strength, the hegemonic power can set the agenda and the rules that govern the system. The relative weakness of the other actors in the system is well understood, which then prompts these weak actors to abandon any hope of challenging the hegemonic power's rule. Eventually, they end up accommodating the hegemonic power. The lack of challenge creates peaceful stability.14 The fact that one actor is setting the rules means that the system is simple to operate in, as well. The same logic that buttresses the HST international relations theory arguably undergirds the military strategy of space dominance. If this claim is so, then American hegemony in space is essential for the continued survival of the United States. Whereas there are legitimate arguments to be made regarding the reliance on deterrence-based models for creating stability during the Cold War, the fact is that the world is more multipolar today than it was 25 years ago. Despite what writer Fareed Zakaria has dubbed “the rise of the rest,”15 the United States still retains greater relative power. Therefore, it is inevitable and logical that the United States should expand its hegemonic position in space, in order to secure its place there. Whereas deterrence-based models, such as space superiority, may have worked in a less chaotic international system, no such stability can be achieved today. Many of America's competitors are revanchist states intent on redefining the world order. They are not interested in preserving the American position in space. Also, they are not cowed by a U.S. deterrence strategy in space. Rather, they view such a policy as a concession that the United States is becoming weaker. Space dominance would create greater stability than space superiority. Missile defense systems, tungsten rods, and even directed-energy weapons potentially would all be placed in key orbits around the Earth. This, on top of the existing U.S. space infrastructure, would prove to the world that the United States is committed to preserving its position in space. In a world of rogue states, space-based weapons likely would prevent surprise nuclear attacks. Failing that, the fact that the United States possessed strategic, offensive weapons in orbit—that could be brought down against any hostile actor—undoubtedly, would make even the most intractable foe hesitant. It is arguable that overwhelming U.S. space power would trickle down from the strategic high ground to lower strategic domains. Rather than wasting time demonstrating resolve by “temporarily blinding Chinese satellites,”16 for example, the overwhelming American presence in space presumably would dissuade potential attackers.

#### US hegemony prevents great-power conflicts that escalates to nuclear war – China and Russia are revisionist expansionists

Brands and Edel 19 (Hal Brands and Charles Edel. Hal Brands is the Henry Kissinger Distinguished Professor of Global Affairs in the Johns Hopkins School of Advanced International Studies and a scholar at the American Enterprise Institute. Charles Edel is a senior fellow at the United States Studies Centre at the University of Sydney and previously served on the U.S. Secretary of State’s policy planning staff, “Rediscovering Tragedy. In The Lessons of Tragedy: Statecraft and World Order; Chapter 6: The Darkening Horizon,” Yale University Press, pp 128-131 <http://www.jstor.org/stable/j.ctvbnm3r9.11>)

Each of these geopolitical challenges is different, and each reflects the distinctive interests, ambitions, and history of the country undertaking it. Yet there is growing cooperation between the countries that are challenging the regional pillars of the U.S.-led order. Russia and China have collaborated on issues such as energy, sales and development of military technology, opposition to additional U.S. military deployments on the Korean peninsula, and military exercises from the South China Sea to the Baltic. In Syria, Iran provided the shock troops that helped keep Russia’s ally, Bashar al-Assad, in power, as Moscow provided the air power and the diplomatic cover. “Our cooperation can isolate America,” supreme leader Ali Khamenei told Putin in 2017. 34 More broadly, what links these challenges together is their opposition to the constellation of power, norms, and relationships that the U.S.-led order entails, and in their propensity to use violence, coercion, and intimidation as means of making that opposition effective. Taken collectively, these challenges constitute a geopolitical sea change from the post– Cold War era. The revival of great-power competition entails higher international tensions than the world has known for decades, and the revival of arms races, security dilemmas, and other artifacts of a more dangerous past. It entails sharper conflicts over the international rules of the road on issues ranging from freedom of navigation to the illegitimacy of altering borders by force, and intensifying competitions over states that reside at the intersection of rival powers’ areas of interest. It requires confronting the prospect that rival powers could overturn the favorable regional balances that have underpinned the U.S.-led order for decades, and that they might construct rival spheres of influence from which America and the liberal ideas it has long promoted would be excluded. Finally, it necessitates recognizing that great-power rivalry could lead to great-power war, a prospect that seemed to have followed the Soviet empire onto the ash heap of history. Both Beijing and Moscow are, after all, optimizing their forces and exercising aggressively in preparation for potential conflicts with the United States and its allies; Russian doctrine explicitly emphasizes the limited use of nuclear weapons to achieve escalation dominance in a war with Washington.35 In Syria, U.S. and Russian forces even came into deadly contact in early 2018. American airpower decimated a contingent of government-sponsored Russian mercenaries that was attacking a base at which U.S. troops were present, an incident demonstrating the increasing boldness of Russian operations and the corresponding potential for escalation.36 The world has not yet returned to the epic clashes for global dominance that characterized the twentieth century, but it has returned to the historical norm of great-power struggle, with all the associated dangers. Those dangers may be even greater than most observers appreciate, because if today’s great-power competitions are still most intense at the regional level, who is to say where these competitions will end? By all appearances, Russia does not simply want to be a “regional power” (as Obama cuttingly described it) that dominates South Ossetia and Crimea.37 It aspires to the deep European and extra-regional impact that previous incarnations of the Russian state enjoyed. Why else would Putin boast about how far his troops can drive into Eastern Europe? Why else would Moscow be deploying military power into the Middle East? Why else would it be continuing to cultivate intelligence and military relationships in regions as remote as Latin America? Likewise, China is today focused primarily on securing its own geopolitical neighborhood, but its ambitions for tomorrow are clearly much bolder. Beijing probably does not envision itself fully overthrowing the international order, simply because it has profi ted far too much from the U.S.-anchored global economy. Yet China has nonetheless positioned itself for a global challenge to U.S. influence. Chinese military forces are deploying ever farther from China’s immediate periphery; Beijing has projected power into the Arctic and established bases and logistical points in the Indian Ocean and Horn of Africa. Popular Chinese movies depict Beijing replacing Washington as the dominant actor in sub-Saharan Africa—a fi ctional representation of a real-life effort long under way. The Belt and Road Initiative bespeaks an aspiration to link China to countries throughout Central Asia, the Middle East, and Europe; BRI, AIIB, and RCEP look like the beginning of an alternative institutional architecture to rival Washington’s. In 2017, Xi Jinping told the Nineteenth National Congress of the Chinese Communist Party that Beijing could now “take center stage in the world” and act as an alternative to U.S. leadership.38 These ambitions may or may not be realistic. But they demonstrate just how signifi cantly the world’s leading authoritarian powers desire to shift the global environment over time. The revisionism we are seeing today may therefore be only the beginning. As China’s power continues to grow, or if it is successful in dominating the Western Pacifi c, it will surely move on to grander endeavors. If Russia reconsolidates control over the former Soviet space, it may seek to bring parts of the former Warsaw Pact to heel. Historically, this has been a recurring pattern of great-power behavior—interests expand with power, the appetite grows with the eating, risk-taking increases as early gambles are seen to pay off.39 This pattern is precisely why the revival of great-power competition is so concerning—because geopolitical revisionism by unsatisfied major powers has so often presaged intensifying international conflict, confrontation, and even war. The great-power behavior occurring today represents the warning light flashing on the dashboard. It tells us there may be still-greater traumas to come.

# 4

#### China’s “space dream” is key to Xi credibility – plan is a flip flop that undermines legitimacy

Kharpal 21 – senior technology correspondent based in Guangzhou, China at CNBC [Arjun, “China once said it couldn’t put a potato in space. Now it’s eyeing Mars,” 6/30/2021, https://www.cnbc.com/2021/06/30/china-space-goals-ccp-100th-anniversary.html]

Fast forward more than six decades and President Xi Jinping, China’s current leader, is seen congratulating three astronauts who were sent to the country’s own space station earlier this month.

Since Mao’s comments, China has launched satellites, sent humans to space and is now planning to build a base on Mars, achievements and ambitions Beijing has highlighted as the centennial of the CCP’s founding approaches. Space is now another battleground between the U.S. and China amid a broader technological rivalry for supremacy, one that could have scientific and military implications on Earth. “President Xi Jinping has declared that China’s ‘Space Dream’ is to overtake all nations and become the leading space power by 2045,” said Christopher Newman, professor of space law and policy at the U.K.’s Northumbria University. “This all feeds into China’s ambition to be the world’s single science and technology superpower.” Why space? In March, China highlighted space as a “frontier technology” it would focus on and research into the “origin and evolution of the universe.” But there are other implications too. “It is important for China and the US because it can advance technological development” in areas such as “national security and some socioeconomic development,” according to Sa’id Mosteshar, director of the London Institute of Space Policy and Law, and research fellow Christoph Beischl. While experts doubt it could spiral into war in space, extra-terrestrial activities can support military operations on Earth. Space achievements are also about the optics.Through space exploration to the Moon or to Mars, “China and the U.S. display their technological sophistication to the domestic audience and the world, increasing their domestic and international prestige, domestic legitimacy and international influence,” Mosteshar and Beischl said.

#### Flip flops trigger CCP instability

Buckley and Myers 19 (Chris Buckley and Steven Lee Myers, “As China Trade Talks Stall, Xi Faces a Dilemma: Fold? Or Double Down?,” New York Times, May 9, 2019, https://www.nytimes.com/2019/05/09/world/asia/xi-jinping-donald-trump.html)

China had been willing to protect intellectual property and open its markets to American business, but the Trump administration wanted the agreement to specify that some of those changes be made in Chinese law. For China, any legislative change or policy reversal could be a very public — and potentially humbling — reminder that it gave ground under pressure. “That would bring back painful memories of the days of national humiliation in our history,” said Wang Yong, the director of the Center for International Political Economy at Peking University. “China has made too many concessions.” The blaring nature of the Trump administration’s broadsides has sharpened the dilemma that Mr. Xi faces in the negotiations. “To have Trump doing it so publicly is obviously very, very difficult for Xi Jinping,” said Susan L. Shirk, a professor at the University of California, San Diego, who worked as a deputy assistant secretary of state responsible for China under President Bill Clinton. “It makes it much more difficult for him to make the compromises needed.”

#### CCP instability causes extinction.

Perkinson 12 — Jessica, Faculty of the School of International Service of American University in Partial Fulfilment of the Requirements for the Degree of Master of Arts in International Affairs; reviewed by: Quansheng Zhao, Professor of international relations and Chair of Asian Studies Program Research Council at American University, and John C. King, Assistant Professor School of International Service, 2012 (“The Potential for Instability in the PRC: How the Doomsday Theory Misses the Mark,” American University, April 19th, Available Online at http://aladinrc.wrlc.org/bitstream/handle/1961/10330/Perkinson\_american\_0008N\_10238display.pdf?sequence=1)

Should the CCP undergo some sort of dramatic transformation – whether that be significant reform or complete collapse, as some radical China scholars predict2 – the implications for international and US national security are vast. Not only does China and the stability of the CCP play a significant role in the maintenance of peace in the East Asian region, but China is also relied upon by many members of the international community for foreign direct investment, economic stability and trade. China plays a key role in maintaining stability on the Korean Peninsula as one of North Korea’s only allies, and it is argued that instability within the Chinese government could also lead to instability in the already sensitive military and political situation across the Taiwan Strait. For the United States, the effect of instability within the CCP would be widespread and dramatic. As the United States’ largest holder of US treasury securities, instability or collapse of the CCP could threaten the stability of the already volatile economic situation in the US. In addition, China is the largest trading partner of a number of countries, including the US, and the US is reliant upon its market of inexpensive goods to feed demand within the US.

It is with this in mind that China scholars within the United States and around the world should be studying this phenomenon, because the potential for reform, instability or even collapse of the CCP is of critical importance to the stability of the international order as a whole. For the United States specifically, the potential - or lack thereof - for reform of the CCP should dictate its foreign policy toward China. If the body of knowledge on the stability of the Chinese government reveals that the Chinese market is not a stable one, it is in the best interests of the United States to look for investors and trade markets elsewhere to lessen its serious dependence on China for its economic stability, particularly in a time of such uncertain economic conditions within the US.

#### Korean war goes nuclear

**Ward 18** [Alex Ward, staff writer @ Vox covering international security and defense issues, co-host of Vox's "Worldly" podcast, formerly an associate director in the Atlantic Council's Brent Scowcroft Center on International Security where he worked on military issues and US foreign policy, wrote the #NatSec2016 newsletter for War on the Rocks, December 26, 2018, “This is exactly how a nuclear war would kill you, Vox, <https://www.vox.com/future-perfect/2018/10/19/17873822/nuclear-war-weapons-bombs-how-kill>]

Still, there remains a genuine fear — perhaps slightly allayed now following Washington and Pyongyang’s diplomatic thaw — that the leaders might escalate their public squabble into a nuclear conflict. In February, Yochi Dreazen wrote for Vox that “a full-blown war with North Korea wouldn’t be as bad as you think. It would be much, much worse,” in part because “millions — plural — would die.” As Dreazen recounts, the US would likely have to send in around 200,000 troops to destroy Kim’s nuclear arsenal. Seoul, South Korea’s capital, would soon — if not already — lie in ruins due to North Korea’s large artillery capabilities. None of that may even be the worst part: Bruce Klingner, a 20-year veteran of the CIA who spent years studying North Korea, told me that Iraqi leader Saddam Hussein had stood by in 2002 as the US methodically built up the forces it used to invade the country — and oust Hussein — the following year. He said there was little chance that Kim would follow in Hussein’s footsteps and patiently allow the Pentagon to deploy the troops and equipment it would need for a full-on war with North Korea. “The conventional wisdom used to be that North Korea would use only nuclear weapons as part of a last gasp, twilight of the gods, pull the temple down upon themselves kind of move,” said Klingner, who now works for the conservative Heritage Foundation. “But we have to prepare for the real possibility that Kim would use nuclear weapons in the early stages of a conflict, not the latter ones.” In effect, any attempt to overthrow the Kim regime would prompt North Korea to launch nukes at the United States. Washington would almost certainly respond in kind, leading to one of the worst wars in world history. 2) US vs. Russia war Few experts discounted the idea that the US and Russia could yet engage in a nuclear war despite a decades-long standoff. After all, they’ve come close a few times. Here are just two examples: In September 1983, a missile attack system made it seem like the US had launched weapons at the Soviet Union. One man, Soviet Lt. Col. Stanislav Petrov, decided it was a false alarm and didn’t report the alert. Had he done so, Moscow likely would’ve responded with an actual nuclear strike. Stanislav Petrov, a former Soviet military officer known in the West as “The man who saved the world’’ for his role in averting a nuclear war over a false missile alarm, died in May, 2015 at age 77. Stanislav Petrov, a former Soviet military officer known in the West as “The man who saved the world’’ for his role in averting a nuclear war over a false missile alarm, died in May 2015 at age 77. Pavel Golovkin/AP Two months later, a too-real NATO war game — Able Archer 83 — made the Soviets believe Western forces were preparing for an actual attack. Moscow put its nuclear arsenal on high alert, but ultimately, neither side came to nuclear blows. Today, two main reasons explain why a US-Russia nuclear fight is a major concern. The first is the most obvious: Moscow just has so many nuclear weapons. Russia is the only country that could match the US bomb-for-bomb in any conflict. The longer Moscow has its weapons, the thinking goes, the higher the chance it uses them on the US — or vice versa. The second reason is the most troublesome: Washington and Moscow may be on a collision course. Russia is expanding further into Europe and encroaching on NATO territory. There’s even fear that Putin might authorize an invasion of a Baltic country that once was a part of the Soviet Union but is now in NATO. If that happens, the US would be treaty-bound to defend the Baltic country, almost assuredly setting up a shooting war with Moscow. Experts disagree on what would happen next. Some, including the Trump administration, claim Russia would use nuclear weapons early in a fight as a way to “escalate to deescalate” — do something so brash at the start of a conflict that it has to end before it gets even worse. Others say Russia would use the weapons only if its forces are on the brink of defeat. Magnets depicting Russian President Putin and President Trump on sale in Helsnki, Finland. Magnets depicting Russian President Putin and President Trump on sale in Helsnki, Finland. Alexander Demianchuk\TASS via Getty Images But Olga Oliker and Andrey Baklitskiy, experts on Russia’s nuclear strategy, wrote at War on the Rocks in February that Moscow’s “military doctrine clearly states that nuclear weapons will be used only in response to an adversary using nuclear or other weapons of mass destruction,” or if the country’s survival is in doubt. In other words, they say Russia would only use nukes in retaliation or to avoid certain extinction. Washington, of course, would likely respond with its own nuclear strikes after Moscow dropped its bombs. At that point, they’d be in a full-blown nuclear war with the potential to destroy each other and much of the world (more on that below). 3) India vs. Pakistan war India and Pakistan have gone to war four times since 1947, when Britain partitioned what had been a single colony into Hindu-majority India and Muslim-majority Pakistan. The worry today, though, is that a fifth conflict could go nuclear. Protesters hurl stones towards police and paramilitary men during clashes on the outskirts of Srinagar, India, on October 16, 2018. Protesters hurl stones towards police and paramilitary men during clashes on the outskirts of Srinagar, India, on October 16, 2018. Waseem Andrabi/Hindustan Times via Getty Images After decades of testing, India officially became a nuclear power in 1998. Islamabad, which had started a uranium enrichment program in the 1970s, soon joined New Delhi in the nuclear club. Two of their fights — the 1999 Kargil War and the 2001-’02 Twin Peaks Crisis — happened with fully functioning nuclear arsenals, but ultimately, neither country chose to use them. But the opportunity keeps presenting itself. Each side claims the other has violated an ongoing ceasefire in the contested, but India-administered, Kashmir region. The region continues to be roiled by violence; for instance, six people were killed in separate instances on September 27. The dispute over Kashmir is a key reason for current India-Pakistan tensions — and has the potential to spiral out of control. Javier Zarracina/Vox Some fear that India and Pakistan may reach for the proverbial nuclear button sooner rather than later. Here’s just one reason why, according to an April report by Tom Hundley for Vox: The Pakistan navy is likely to soon place nuclear-tipped cruise missiles on up to three of its five French-built diesel-electric submarines. ... Even more disturbing, Pakistani military authorities say they are considering the possibility of putting nuclear-tipped cruise missiles on surface vessels. ... Pakistan says its decision to add nuclear weapons to its navy is a direct response to India’s August 2016 deployment of its first nuclear submarine, the Arihant. A second, even more advanced Indian nuclear submarine, the Arighat, began sea trials last November, and four more boats are scheduled to join the fleet by 2025. That will give India a complete “nuclear triad,” which means the country will have the ability to deliver a nuclear strike by land-based missiles, by warplanes, and by submarines. In effect, India and Pakistan are in a nuclear arms race, and historical enemies will soon patrol dangerous waters in close proximity with nuclear weapons aboard their vessels. While there’s no real indication a fifth India-Pakistan war is on the horizon, it’s possible one flare-up puts both countries on the path to a nuclear crisis. Wild card: Trump’s temperament Cirincione, the head of the Ploughshares Fund, told me the risk of nuclear war is increasing because of one factor: Trump. “He is the greatest nuclear risk in the world, more than any person, any group, or any nation,” he said. “The policies he is pursuing are making most of our nuclear risks worse, and he is tearing down the global institutions that have reduced and restrained nuclear risks over the last few decades.” Activists marches with a model of a nuclear rocket during a demonstration against nuclear weapons on in Berlin, Germany, on November 18, 2017. About 700 demonstrators protested against the escalation of threat of nuclear attack between the US and North Ko Activists marches with a model of a nuclear rocket during a demonstration against nuclear weapons on in Berlin, Germany, on November 18, 2017. About 700 demonstrators protested against the escalation of threat of nuclear attack between the US and North Korea. Adam Berry/Getty Images Here’s what he means: The administration’s Nuclear Posture Review, released in February, lowered the threshold for dropping a bomb on an enemy. Basically, the US said that it would launch low-yield nuclear weapons — smaller, less deadly bombs — in response to nonnuclear strikes, such as a major cyberattack. That was in contrast with previous US administrations, which said they would respond with a nuke only in the event of the most egregious threats against the US, like the possible use of a biological weapon. The document also calls for more, smaller weapons on submarines and other platforms to attack enemies. Many experts worry that having tinier nukes makes them more usable, thereby increasing the chance of a skirmish turning into a full-blown nuclear war. (Think, for example, of the US-China trade war escalating to the point that Trump thinks his only option is to launch a smaller nuke, or how Trump could respond to Beijing after a devastating cyberattack on US infrastructure.) Plus, increasing the arsenal in this way would partially undo decades of the US’s work to stop nuclear proliferation around the world. Some experts, like Georgetown’s Kroenig, say having smaller tactical weapons is actually a good idea. Our current arsenal, which prioritizes older and bigger nukes, leads adversaries to think we would never use it. Having smaller bombs that America might use, then, makes the chance of a nuclear conflict less likely. “It gives us more options to threaten that limited response,” Kroenig told me. “We raise the bar with these lower-yield weapons.” But the Trump risk may have less to do with what kinds of bombs he has and more to do with his temperament. Take his tweet from January 2 toward the end of his spat with Kim Jong Un, the North Korean leader: Donald J. Trump ✔ @realDonaldTrump North Korean Leader Kim Jong Un just stated that the “Nuclear Button is on his desk at all times.” Will someone from his depleted and food starved regime please inform him that I too have a Nuclear Button, but it is a much bigger & more powerful one than his, and my Button works! 475K 7:49 PM - Jan 2, 2018 Twitter Ads info and privacy 324K people are talking about this While tensions with North Korea were high early on in Trump’s presidency, he has yet to face a situation, like his predecessors did, where it seemed nuclear war was likely. The 13-day Cuban missile crisis in October 1962, where the Soviet Union had secretly placed missiles in Cuba — just 90 miles from the US mainland — comes to mind. Members of President John F. Kennedy’s team, especially his military advisers, called for airstrikes on Cuba and even an invasion. But Kennedy decided to set up a blockade of the island and try to work out a diplomatic settlement with the Soviets, in part because a military confrontation might turn nuclear. Ultimately, the situation ended when they agreed on a deal: The Soviets would withdraw the missiles from the island, and the US would take out its missiles in Turkey. Before that conclusion, both sides came as close to nuclear war as ever. Customers gather to watch President John F. Kennedy as he delivers a televised address to the nation on the subject of the Cuban Missile Crisis, on October 22, 1962. Customers gather to watch President John F. Kennedy as he delivers a televised address to the nation on the subject of the Cuban Missile Crisis, on October 22, 1962. Ralph Crane/The LIFE Picture Collection/Getty Images How would Trump handle himself in a similar situation? Would he resist the urges of some in his military brass to strike an enemy — perhaps with a lower-yield nuke — or would he simply tweet out a threat in a hair-trigger moment? The fact is we don’t know — but what we do know about Trump makes his demeanor in such a situation a potential, even if very small, nuclear risk. Here’s what happens in a nuclear attack The theory around whether someone might drop a nuclear bomb takes away from the most serious matter in these discussions: the human and physical toll. Simply put, a nuclear strike of any magnitude would unleash suffering on a scale not seen since World War II. And with the advances in nuclear technology since then, it’s possible the devastation of the next nuclear strike would be far, far worse. It’s hard to picture what the effect of a modern-day nuclear attack would actually look like. But Wellerstein, the nuclear historian, created a website called Nukemap that allows users to “drop” a specific bomb — say, the roughly 140-kiloton explosive North Korea tested in September 2017 — on any target. So I did just that, detonating that North Korean device on the Capitol building in the heart of Washington, DC — and, well, see for yourself: Christina Animashaun/Vox Roughly 220,000 people would die from this one attack alone, according to the Nukemap estimate, while another 450,000 would sustain injuries. By comparison, America’s two nuclear attacks on Japan in 1945 killed and injured a total of around 200,000 people (granted, Hiroshima and Nagasaki had smaller populations than the Washington metro area). It’s very likely that North Korea wouldn’t launch just one bomb, but multiple at DC and likely some at New York City, the West Coast, and possibly US military bases in Guam and/or Hawaii. But for simplicity’s sake, let’s focus on the effects of this one horrible attack. The center yellow circle is the fireball radius — that is, the mushroom cloud — which would extend out about 0.25 square miles. Those within the green circle, approximately a 1.2-square-mile area, would face the heaviest dose of radiation. “Without medical treatment, there can be expected between 50% and 90% mortality from acute effects alone. Dying takes between several hours and several weeks,” according to the website. Radiation poisoning is a horrible way to die. Here are just some of the symptoms people sick with radiation get: Nausea and vomiting Spontaneous bleeding Diarrhea, sometimes bloody Severely burnt skin that may peel off The dark grey circle in the middle is where a shock wave does a lot of damage. In that 17-square-mile area, the bomb would flatten residential buildings, certainly killing people in or near them. Debris and fire would be everywhere. People in the bigger yellow circle, a 33.5-square-mile area, would receive third-degree burns. “There’s a bright flash of light,” Brian Toon, a scientist and expert on nuclear disasters at the University of Colorado Boulder, told me about when the bomb goes off. Those exposed to the light, which would stretch for miles, would get those burns if their skin were exposed. The light would also “easily ignite fires with flammable objects like leaves, twigs, paper, or your clothing,” he added. The victims may not feel much pain, however, because the burn will destroy pain nerves. Still, some will suffer major scarring or have the inability to use certain limbs, and others might require amputation, according to Wellerstein’s site. A mother tends her injured child, a victim of the atomic bomb blast at Hiroshima. A mother tends her injured child, a victim of the atomic bomb blast at Hiroshima. Keystone/Getty Images The biggest circle encompasses the near entirety of the air-blast zone: a 134-square-mile area. People can still die, or at least receive severe injuries, in that location. The blast would break windows, and those standing near the glass might be killed by shards, or at least shed blood from myriad cuts. Those who survive the bombing and its effects will have to walk through burning rubble and pass lifeless, charred bodies to reach safety. Some of them will ultimately survive, but others will succumb to sustained injuries or radiation. The wind, meanwhile, will carry the irradiated debris and objects — known as fallout because they drop from the sky — far outside the blast zone and sicken countless others. As for Washington, it will likely take decades and billions of dollars not only to rebuild the city but clean it of radiation entirely. It’s worth reiterating that all of the above are estimates for one strike on one location. An actual nuclear war would have much wider and more devastating consequences. And if that war spiraled out of control, the effects after the conflict would be much worse than the attacks themselves — and change the course of human history. “Almost everybody on the planet would die” It’s possible you have an idea of what a post-nuclear hellscape looks like. After all, disaster movies are obsessed with that kind of world. But scientists and other nuclear experts care deeply about this issue too — and their research shows the movies may be too optimistic. Alan Robock, an environmental sciences professor at Rutgers University, has spent decades trying to understand what a nuclear war would do to the planet. The sum of his work, along with other colleagues’, is based on economic, scientific, and agricultural models. Here’s what he found: The most devastating long-term effects of a nuclear war actually come down to the black smoke, along with the dust and particulates in the air, that attacks produce. People walking through the ruins of Hiroshima in the weeks following the atomic bomb blast. People walking through the ruins of Hiroshima in the weeks following the atomic bomb blast. Bernard Hoffman/The LIFE Picture Collection/Getty Images In a nuclear war, cities and industrial areas would be targeted, thereby producing tons of smoke as they burn. Some of that smoke would make it into the stratosphere — above the weather — where it would stay for years because there’s no rain to wash it out. That smoke would expand around the world as it heats up, blocking out sunlight over much of Earth. As a result, the world would experience colder temperatures and less precipitation, depleting much of the globe’s agricultural output. That, potentially, would lead to widespread famine in a matter of years. The impact on the world, however, depends on the amount of rising smoke. While scientists’ models and estimates vary, it’s believed that around 5 million to 50 millions tons of black smoke could lead to a so-called “nuclear autumn,” while 50 million to 150 millions tons of black smoke might plunge the world into a “nuclear winter.” If the latter scenario came to pass, Robock told me, “almost everybody on the planet would die.”

# Case

## Top

#### Capitalism is sustainable – solves climate impacts

Hausfather 21 – a climate scientist and energy systems analyst whose research focuses on observational temperature records, climate models, and mitigation technologies. He spent 10 years working as a data scientist and entrepreneur in the cleantech sector, where he was the lead data scientist at Essess, the chief scientist at C3.ai, and the cofounder and chief scientist of Efficiency 2.0. He also worked as a research scientist with Berkeley Earth, was the senior climate analyst at Project Drawdown, and the US analyst for Carbon Brief. He has masters degrees in environmental science from Yale University and Vrije Universiteit Amsterdam and a PhD in climate science from the University of California, Berkeley. (Zeke, "Absolute Decoupling of Economic Growth and Emissions in 32 Countries," Breakthrough Institute, 4-6-2021, https://thebreakthrough.org/issues/energy/absolute-decoupling-of-economic-growth-and-emissions-in-32-countries)

The past 30 years have seen immense progress in improving the quality of life for much of humanity. Extreme poverty — the number of people living on less than $1.90 per day — has fallen by nearly two-thirds, from 1.9 billion to around 650 million. Life expectancy has risen in most of the world, along with literacy and access to education, while infant mortality has fallen. Despite perceptions to the contrary, the average person born today is likely to have access to more opportunities and have a better quality of life than at any other point in human history. Much of this increase in human wellbeing has been propelled by rapid economic growth driven largely by state-led industrial policy, particularly in poor-to-middle income countries. However, this growth has come at a cost: between 1990 and 2019, global emissions of CO2 increased by 56%. Historically, economic growth has been closely linked to increased energy consumption — and increased CO2 emissions in particular — leading some to argue that a more prosperous world is one that necessarily has more impacts on our natural environment and climate. There is a lively academic debate about our ability to “absolutely decouple” emissions and growth — that is, the extent to which the adoption of clean energy technology can allow emissions to decline while economic growth continues. Over the past 15 years, however, something has begun to change. Rather than a 21st century dominated by coal that energy modelers foresaw, global coal use peaked in 2013 and is now in structural decline. We have succeeded in making clean energy cheap, with solar power and battery storage costs falling 10-fold since 2009. The world produced more electricity from clean energy — solar, wind, hydro, and nuclear — than from coal over the past two years. And, according to some major oil companies, peak oil is upon us — not because we have run out of cheap oil to produce, but because demand is falling and companies expect further decline as consumers increasingly shift to electric vehicles. The world has long been experiencing a relative decoupling between economic growth and CO2 emissions, with the emissions per unit of GDP falling for the past 60 years. This is the case even in countries like India and China that have been undergoing rapid economic growth. But relative decoupling alone is inadequate in a world where global CO2 emissions need to peak and decline in the next decade to give us any chance at limiting warming to well below 2℃, in line with Paris Agreement targets. Thankfully, there is increasing evidence that the world is on track to absolutely decouple CO2 emissions and economic growth — with global CO2 emissions potentially having peaked in 2019 and unlikely to increase substantially in the coming decade. While an emissions peak is just the first and easiest step towards eventually reaching the net-zero emissions required to stop the world from continuing to warm, it demonstrates that linkages between emissions and economic activity are not an immutable law, but rather simply a result of our current means of energy production. In recent years we have seen more and more examples of absolute decoupling — economic growth accompanied by falling CO2 emissions. Since 2005, 32 countries with a population of at least one million people have absolutely decoupled emissions from economic growth, both for terrestrial emissions (those within national borders) and consumption emissions (emissions embodied in the goods consumed in a country). This includes the United States, Japan, Mexico, Germany, United Kingdom, France, Spain, Poland, Romania, Netherlands, Belgium, Portugal, Sweden, Hungary, Belarus, Austria, Bulgaria, El Salvador, Singapore, Denmark, Finland, Slovakia, Norway, Ireland, New Zealand, Croatia, Jamaica, Lithuania, Slovenia, Latvia, Estonia, and Cyprus. Figure 1, below, shows the declines in territorial emissions (blue) and increases in GDP (red). To qualify as having experienced absolute decoupling, we require countries included in this analysis to pass four separate filters: a population of at least one million (to focus the analysis on more representative cases), declining territorial emissions over the 2005-2019 period (based on a linear regression), declining consumption emissions, and increasing real GDP (on a purchasing power parity basis, using constant 2017 international $USD). We chose not to include 2020 in this analysis because it is not particularly representative of longer-term trends, and consumption and territorial emissions estimates are not yet available for many countries. There is a wide range of rates of economic growth between 2005-2019 among countries experiencing absolute decoupling. Somewhat counterintuitively, there is no significant relationship between the rate of economic growth and the magnitude of emissions reductions within the group. While it is unlikely that there is not at least some linkage between the two factors, there are plenty of examples of countries (e.g., Singapore, Romania, and Ireland) experiencing both extremely rapid economic growth and large reductions in CO2 emissions. One of the primary criticisms of some prior analyses of absolute decoupling is that they ignore leakage. Specifically, the offshoring of manufacturing from high-income countries over the past three decades to countries like China has led to “illusory” drops in emissions, where the emissions associated with high-income country consumption are simply shipped overseas and no longer show up in territorial emissions accounting. There is some truth in this critique, as there was a large increase in emissions embodied in imports from developing countries between 1990 and 2005. After 2005, however, structural changes in China and a growing domestic market led to a reversal of these trends; the amount of emissions “exported” from developed countries to developing countries has actually declined over the past 15 years. This means that, for many countries, both territorial emissions and consumption emissions (which include any emissions “exported” to other countries) have jointly declined. In fact, on average, consumption emissions have been declining slightly faster than territorial emissions since 2005 in the 32 countries we identify as experiencing absolute decoupling. Figure 2, below, shows the change in consumption emissions (teal) and GDP (red) between 2005 and 2019. There is a pretty wide variation in the extent to which these countries have reduced their territorial and consumption emissions since 2005. Some countries — such as the UK, Denmark, Finland, and Singapore – have seen territorial emissions fall faster than consumption emissions, while the US, Japan, Germany, and Spain (among others) have seen consumption emissions fall faster. Figure 3 shows reductions in consumption and territorial emissions for each country, with the size of the dot representing the size of the population in 2019. Absolute decoupling is possible. There is no physical law requiring economic growth — and broader increases in human wellbeing — to necessarily be linked to CO2 emissions. All of the services that we rely on today that emit fossil fuels — electricity, transportation, heating, food — can in principle be replaced by near-zero carbon alternatives, though these are more mature in some sectors (electricity, transportation, buildings) than in others (industrial processes, agriculture).

#### Cap solves warming – sustainable, private-industry tech key, their model fails and results in transition wars – turns the environment impact

Smith 19 (Noah Smith; PhD in economics from the University of Michigan and Bloomberg Opinion columnist. He was an assistant professor of finance at Stony Brook University; 4/5/19; "Dumping Capitalism Won’t Save the Planet"; https://www.bloomberg.com/opinion/articles/2019-04-05/capitalism-is-more-likely-to-limit-climate-change-than-socialism; Bloomberg)

It has become fashionable on social media and in certain publications to argue that capitalism is killing the planet. Even renowned investor Jeremy Grantham, hardly a radical, made that assertion last year. The basic idea is that the profit motive drives the private sector to spew carbon into the air with reckless abandon. Though many economists and some climate activists believe that the problem is best addressed by modifying market incentives with a carbon tax, many activists believe that the problem can’t be addressed without rebuilding the economy along centrally planned lines. The climate threat is certainly dire, and carbon taxes are unlikely to be enough to solve the problem. But eco-socialism is probably not going to be an effective method of addressing that threat. Dismantling an entire economic system is never easy, and probably would touch off armed conflict and major political upheaval. In the scramble to win those battles, even the socialists would almost certainly abandon their limitation on fossil-fuel use — either to support military efforts, or to keep the population from turning against them. The precedent here is the Soviet Union, whose multidecade effort to reshape its economy by force amid confrontation with the West led to profound environmental degradation. The world's climate does not have several decades to spare. Even without international conflict, there’s little guarantee that moving away from capitalism would mitigate our impact on the environment. Since socialist leader Evo Morales took power in Bolivia, living standards have improved substantially for the average Bolivian, which is great. But this has come at the cost of higher emissions. Meanwhile, the capitalist U.S managed to decrease its per capita emissions a bit during this same period (though since the U.S. is a rich country, its absolute level of emissions is much higher). In other words, in terms of economic growth and carbon emissions, Bolivia looks similar to more capitalist developing countries. That suggests that faced with a choice of enriching their people or helping to save the climate, even socialist leaders will often choose the former. And that same political calculus will probably hold in China and the U.S., the world’s top carbon emitters — leaders who demand draconian cuts in living standards in pursuit of environmental goals will have trouble staying in power. The best hope for the climate therefore lies in reducing the tradeoff between material prosperity and carbon emissions. That requires technology — solar, wind and nuclear power, energy storage, electric cars and other vehicles, carbon-free cement production and so on. The best climate policy plans all involve technological improvement as a key feature. Recent developments show that the technology-centered approach can work. A recent report by Bloomberg New Energy Finance analyzed about 7000 projects in 46 countries, and found that large drops in the cost of solar power from photovoltaic systems, wind power and lithium-ion batteries have made utility-scale renewable electricity competitive with fossil fuels. A 76 percent decline in the cost of energy for short-term battery storage since 2012 is especially important. In a blog post, futurist and energy writer Ramez Naam underscores the significance of these developments. Naam notes the important difference between renewables being cheap enough to outprice new fossil-fuel plants, and being inexpensive enough to undercut existing plants. The former is already the case across much of the world, which is among the reasons for an 84 percent decrease in the number of new coal-fired plants worldwide since 2015. But when it becomes cheaper to scrap existing fossil-fuel plants and build renewables in their place, it will allow renewables to start replacing coal and gas much more quickly. Naam cites examples from Florida and Indiana where this is already being done. He cites industry predictions that replacing existing fossil-fuel plants with renewables will be economically efficient almost everywhere at some point in the next decade. Electricity is far from the only source of carbon emissions — there’s also transportation, manufacturing (especially of steel and cement), home and office heating, and agriculture to worry about. But the rapid advance of solar technology is a huge victory in the struggle against climate change, because it will allow people all over the world to have electricity without cooking the planet. And how was this victory achieved? A combination of smart government policy and private industry. Massachusetts Institute of Technology researchers Goksin Kavlak, James McNerney and Jessika Trancik in a recent paper evaluated the factors behind the solar-price decline from 1980 to 2012. They concluded that from 1980 to 2001, government-funded research and development was the main factor in bringing down costs, but from 2001 to 2012, the biggest factor was economies of scale. These economies of scale were driven by private industry increasing output, but with government subsidies helping to increase the incentive to ramp up production. It’s apparent, therefore, that both government and profit-seeking enterprises have their roles to play. Government funds the development of early-stage technology and then helps push the private sector toward adopting those technologies, while private companies compete to find ever-cheaper methods of implementation. Instead of eco-socialism, it’s eco-industrialism. If there’s any system that can beat climate change, this looks like it.

#### Cap gets us off the rock and solves every impact.

Thiessen ‘20 – writes a twice-weekly column for The Post on foreign and domestic policy. He is a fellow at the American Enterprise Institute, and the former chief speechwriter for President George W. Bush. (Marc A., "SpaceX’s success is one small step for man, one giant leap for capitalism," Washington Post, 6-1-2020, https://www.washingtonpost.com/opinions/2020/06/01/spacexs-success-is-one-small-step-man-one-giant-leap-capitalism/)

It was one small step for man, one giant leap for capitalism. Only three countries have ever launched human beings into orbit. This past weekend, SpaceX became the first private company ever to do so, when it sent its Crew Dragon capsule into space aboard its Falcon 9 rocket and docked with the International Space Station. This was accomplished by a company Elon Musk started in 2002 in a California strip mall warehouse with just a dozen employees and a mariachi band. At a time when our nation is debating the merits of socialism, SpaceX has given us an incredible testament to the power of American free enterprise. While the left is advocating unprecedented government intervention in almost every sector of the U.S. economy, from health care to energy, today Americans are celebrating the successful privatization of space travel. If you want to see the difference between what government and private enterprise can do, consider: It took a private company to give us the first space vehicle with touch-screen controls instead of antiquated knobs and buttons. It took a private company to give us a capsule that can fly entirely autonomously from launch to landing — including docking — without any participation by its human crew. It also took a private company to invent a reusable rocket that can not only take off but land as well. When the Apollo 11 crew reached the moon on July 20, 1969, Neil Armstrong declared “the Eagle has landed.” On Saturday, SpaceX was able to declare that the Falcon had landed when its rocket settled down on a barge in the Atlantic Ocean — ready to be used again. That last development will save the taxpayers incredible amounts of money. The cost to NASA for launching a man into space on the space shuttle orbiter was $170 million per seat, compared with just $60 million to $67 million on the Dragon capsule. The cost for the space shuttle to send a kilogram of cargo into to space was $54,500; with the Falcon rocket, the cost is just $2,720 — a decrease of 95 percent. And while the space shuttle cost $27.4 billion to develop, the Crew Dragon was designed and built for just $1.7 billion — making it the lowest-cost spacecraft developed in six decades. SpaceX did it in six years — far faster than the time it took to develop the space shuttle. The private sector does it better, cheaper, faster and more efficiently than government. Why? Competition. Today, SpaceX has to compete with a constellation of private companies — including legacy aerospace firms such as Orbital ATK and United Launch Alliance and innovative start-ups such as Blue Origin (which is designing a Mars lander and whose owner, Jeff Bezos, also owns The Post) and Virgin Orbit (which is developing rockets than can launch satellites into space from the underside of a 747, avoiding the kinds of weather that delayed the Dragon launch). In the race to put the first privately launched man into orbit, upstart SpaceX had to beat aerospace behemoth Boeing and its Starliner capsule to the punch. It did so — for more than $1 billion less than its competitor. That spirit of competition and innovation will revolutionize space travel in the years ahead. Indeed, Musk has his sights set far beyond Earth orbit. Already, SpaceX is working on a much larger version of the Falcon 9 reusable rocket called Super Heavy that will carry a deep-space capsule named Starship capable of carrying up to 100 people to the moon and eventually to Mars. Musk’s goal — the reason he founded SpaceX — is to colonize Mars and make humanity a multiplanetary species. He has set a goal of founding a million-person city on Mars by 2050 complete with iron foundries and pizza joints. Can it be done? Who knows. But this much is certain: Private-sector innovation is opening the door to a new era of space exploration. Wouldn’t it be ironic if, just as capitalism is allowing us to explore the farthest reaches of our solar system, Americans decided to embrace socialism back here on Earth?

#### Colonizing space is critical to preventing rampant overpopulation and environmental destruction.

**THINKQUEST 07**

[“The Essentials: Why Space Colonization is Necessary,” http://www.tqnyc.org/2007/NYC074772//why.htm]

As with all high goals and dreams, clear sight of the purpose and the motivation is essential for success. Why then, should we colonize space? Why not remain in our comfy homes instead of facing great challenges to live on the Moon or Mars or anywhere else? Two quotes can sum up the reasons behind space colonization: "Because it's there."-George Mallory (when asked why he wanted to climb Mt. Everest) "If Earth is considered a closed system, there will be less for all forever. The frontier is closed, the wilderness is gone, nature is being destroyed by human consumers, while billions are starving. The future indeed looks grim, and there are, ultimately, no really long-range, positive solutions, nor motivation for making the sacrifices and doing the hard work needed now, unless we understand that we are evolving from an Earth-only toward San Earth-space or universal species." -Barbara Marx Hubbard, Distant Star, 1997 Problems faced by the Earth's population: "I don't think the human race will survive the next thousand years, unless we spread into space. There are too many accidents that can befall life on a single planet. But I'm an optimist. We will reach out to the stars." -Stephen Hawking1) All of human species is contained within the biosphere of planet Earth, a place more fragile than many of us realize. Biological warfare, nuclear warfare, meteoric impacts, and of course global warming can result in annihilation of the majority, if not all, of human life and technology. Other underlying threats persist as well, particularly environmental destruction. \* Overpopulation is a big demographic problem. Earth alone will not be able to sustain the geometric growth of the human species. The overpopulation issue grows increasingly serious as larger populations reproduce even faster. Increased taxing of resources on Earth and the lack of sentiments towards nature will be catastrophic. This issue will cross its own boundaries and facilitate the other problems. Overpopulation causes vying for resources, and as world powers clash for these resources, highly destructive warfare increases in likelihood. In addition, overpopulation will accelerate the spreading of dangerous viruses should they be released in the warfare.

## Corporate Space Col

#### Their link is about how capitalism creates the idea of getting off the rock to solve climate change, but the aff doesn’t solve that – even if a few billionaires cant go to space, the public idea of “space as a solution to all our problems” still exists so they cant solve

#### The ozone links are about mass launch, which the aff cant solve – NASA and other public space programs will inevitably do more rocket launches as we get more advanced which triggers their impact. They haven’t proven some sort of exponential increase in private launches either

#### Timeframe – ozone depletion is super slow and incoherent there’s no brink argument or falsifiable data that explains the brink, 50 years of launches proves resilience

#### Ozones getting better lol – we fixed it

* https://www.vox.com/future-perfect/22686105/future-of-life-ozone-hole-environmental-crisis

#### No ozone impact

**Ridley 14** -- Matthew White Ridley, 5th Viscount Ridley DL FRSL FMedSci, known commonly as Matt Ridley, is a British journalist, businessman and author of popular science books. Since 2013 Ridley has been a Conservative hereditary peer in the House of Lords. “THE OZONE HOLE WAS EXAGGERATED AS A PROBLEM” http://www.rationaloptimist.com/blog/the-ozone-hole-was-exaggerated-as-a-problem.aspx

Serial hyperbole does the environmental movement no favours My recent [Times column](http://www.thetimes.co.uk/tto/opinion/columnists/article4206440.ece) argued that the alleged healing of the ozone layer is exaggerated, but so was the impact of the ozone hole over Antarctica: The ozone layer is healing. Or so said the news last week. Thanks to a treaty signed in Montreal in 1989 to get rid of refrigerant chemicals called chlorofluorocarbons (CFCs), the planet’s stratospheric sunscreen has at last begun thickening again. Planetary disaster has been averted by politics. For reasons I will explain, this news deserves to be taken with a large pinch of salt. You do not have to dig far to find evidence that the ozone hole was never nearly as dangerous as some people said, that it is not necessarily healing yet and that it might not have been caused mainly by CFCs anyway. The timing of the announcement was plainly political: it came on the 25th anniversary of the treaty, and just before a big United Nations climate conference in New York, the aim of which is to push for a climate treaty modelled on the ozone one. Here’s what was actually announced last week, in the words of a Nasa scientist, Paul Newman: “From 2000 to 2013, ozone levels climbed 4 per cent in the key mid-northern latitudes.” That’s a pretty small change and it is in the wrong place. The ozone thinning that worried everybody in the 1980s was over Antarctica. Over northern latitudes, ozone concentration has been falling by about 4 per cent each March before recovering. Over Antarctica, since 1980, the ozone concentration has fallen by [40 or 50 per cent each September](http://bigstory.ap.org/article/scientists-say-ozone-layer-recovering) before the sun rebuilds it. So what’s happening to the Antarctic ozone hole? Thanks to a diligent blogger named Anthony Watts, I came across a press release also from Nasa about nine months ago, which said: “ Two new studies show that signs of recovery are not yet present, and that temperature and winds are still driving any annual changes in ozone hole size.” As recently as 2006, Nasa announced, quoting Paul Newman again, that the Antarctic ozone hole that year was “the largest ever recorded”. The following year a paper in Nature magazine from Markus Rex, a German scientist, presented new evidence that suggested CFCs may be responsible for less than 40 per cent of ozone destruction anyway. Besides, nobody knows for sure how big the ozone hole was each spring before CFCs were invented. All we know is that it varies from year to year. How much damage did the ozone hole ever threaten to do anyway? It is fascinating to go back and read what the usual hyperventilating eco-exaggerators said about ozone thinning in the 1980s. As a result of the extra ultraviolet light coming through the Antarctic ozone hole, southernmost parts of Patagonia and New Zealand see about 12 per cent more UV light than expected. This means that the weak September sunshine, though it feels much the same, has the power to cause sunburn more like that of latitudes a few hundred miles north. Hardly Armageddon. The New York Times reported “an increase in Twilight Zone-type reports of sheep and rabbits with cataracts” in southern Chile. Not to be outdone, Al Gore wrote that “hunters now report finding blind rabbits; fisherman catch blind salmon”. Zoologists briefly blamed the near extinction of many amphibian species on thin ozone. Melanoma in people was also said to be on the rise as a result. This was nonsense. Frogs were dying out because of a fungal disease spread from Africa — nothing to do with ozone. Rabbits and fish blinded by a little extra sunlight proved to be as mythical as unicorns. An eye disease in Chilean sheep was happening outside the ozone-depleted zone and was caused by an infection called pinkeye — nothing to do with UV light. And melanoma incidence in people actually levelled out during the period when the ozone got thinner. Then remember that the ozone hole appears when the sky is dark all day, and over an uninhabited continent. Even if it persists into the Antarctic spring and spills north briefly, the hole allows 50 times less ultraviolet light through than would hit your skin at the equator at sea level (let alone at a high altitude) in the tropics. So it would be bonkers to worry about UV as you sailed round Cape Horn in spring, say, but not when you stopped at the Galapagos: the skin cancer risk is 50 times higher in the latter place. This kind of eco-exaggeration has been going on for 50 years. In the 1960s Rachel Carson said there was an epidemic of childhood cancer caused by DDT; it was not true — DDT had environmental effects but did not cause human cancers. In the 1970s the Sahara desert was said be advancing a mile a year; it was not true — the region south of the Sahara has grown markedly greener and more thickly vegetated in recent decades. In the 1980s acid rain was said to be devastating European forests; not true — any local declines in woodland were caused by pests or local pollution, not by the sulphates and nitrates in rain, which may have contributed to an actual increase in the overall growth rate of European forests during the decade. In the 1990s sperm counts were said to be plummeting thanks to pollution with man-made “endocrine disruptor” chemicals; not true — there was no fall in sperm counts. In the 2000s the Gulf Stream was said to be failing and hurricanes were said to be getting more numerous and worse, thanks to global warming; neither was true, except in a Hollywood studio. The motive for last week’s announcement was to nudge world leaders towards a treaty on climate change by reminding them of how well the ozone treaty worked. But getting the world to agree to cease production of one rare class of chemical, for which substitutes existed, and which only a few companies mainly in rich countries manufactured, was a very different proposition from setting out to decarbonise the whole economy, when each of us depends on burning carbon (and hydrogen) for almost every product, service, meal, comfort and journey in our lives. The true lesson of the ozone story is that taking precautionary action on the basis of dubious evidence and exaggerated claims might be all right if the action does relatively little economic harm. However, loading the entire world economy with costly energy, and new environmental risks based on exaggerated claims about what might in future happen to the climate makes less sense.

## Debris

#### First card is about NASA’s redirection program, which is public not private so they cant solve and alt cause to debris

Didn’t read an impact