### 1

#### Ethics must begin a priori and the meta-ethic is bindingness.

#### [1] Uncertainty – our experiences are inaccessible to others which allows people to say they don’t experience the same, however a priori principles are universally applied to all agents.

#### [2] Bindingness – I can keep asking “why should I follow this” which results in skep since obligations are predicated on ignorantly accepting rules. Only reason solves since asking “why reason?” requires reason which is self-justified.

#### That means we must universally will maxims— any non-universalizable norm justifies someone’s ability to impede on your ends.

#### Thus, the standard is consistency with the categorical imperative.

#### Prefer –

#### All other frameworks collapse—non-Kantian theories source obligations in extrinsically good objects, but that presupposes the goodness of the rational will.

#### Negate:

#### [1] A model of freedom 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] Banning private space appropriation inhibits the sale and use of spacecraft and fuel- that’s a form of restricting the free economic choices of individuals

**Richman 12**, Sheldon. “The free market doesn’t need government regulation.” Reason, August 5, 2012. // AHS RG

Order grows from market forces. But where do **market forces** come from? They **are the result of human action. Individuals select ends and act to achieve them by adopting suitable means.** Since means are scarce and ends are abundant, **individuals economize in order to accomplish more rather than less.** And they always seek to exchange lower values for higher values (as they see them) and never the other way around. In a world of scarcity, tradeoffs are unavoidable, so one aims to trade up rather than down. (One’s trading partner does the same.) **The result of this**, along with other **features of human action**, and the world at large **is what we call market forces. But really, it is just men and women acting rationally in the world.**

### 2

#### Interpretation: “Private entities” is a generic bare plural. The aff may not defend that a subset of nations ban the appropriation of outer space.

Nebel 19. [Jake Nebel is an assistant professor of philosophy at the University of Southern California and executive director of Victory Briefs. He writes a lot of this stuff lol – duh.] “Genericity on the Standardized Tests Resolution.” Vbriefly. August 12, 2019. <https://www.vbriefly.com/2019/08/12/genericity-on-the-standardized-tests-resolution/?fbclid=IwAR0hUkKdDzHWrNeqEVI7m59pwsnmqLl490n4uRLQTe7bWmWDO_avWCNzi14> TG

Both distinctions are important. Generic resolutions can’t be affirmed by specifying particular instances. But, since generics tolerate exceptions, plan-inclusive counterplans (PICs) do not negate generic resolutions.

Bare plurals are typically used to express generic generalizations. But there are two important things to keep in mind. First, generic generalizations are also often expressed via other means (e.g., definite singulars, indefinite singulars, and bare singulars). Second, and more importantly for present purposes, bare plurals can also be used to express existential generalizations. For example, “Birds are singing outside my window” is true just in case there are some birds singing outside my window; it doesn’t require birds in general to be singing outside my window.

So, what about “colleges and universities,” “standardized tests,” and “undergraduate admissions decisions”? Are they generic or existential bare plurals? On other topics I have taken great pains to point out that their bare plurals are generic—because, well, they are. On this topic, though, I think the answer is a bit more nuanced. Let’s see why.

“Colleges and universities” is a generic bare plural. I don’t think this claim should require any argument, when you think about it, but here are a few reasons.

First, ask yourself, honestly, whether the following speech sounds good to you: “Eight colleges and universities—namely, those in the Ivy League—ought not consider standardized tests in undergraduate admissions decisions. Maybe other colleges and universities ought to consider them, but not the Ivies. Therefore, in the United States, colleges and universities ought not consider standardized tests in undergraduate admissions decisions.” That is obviously not a valid argument: the conclusion does not follow. Anyone who sincerely believes that it is valid argument is, to be charitable, deeply confused. But the inference above would be good if “colleges and universities” in the resolution were existential. By way of contrast: “Eight birds are singing outside my window. Maybe lots of birds aren’t singing outside my window, but eight birds are. Therefore, birds are singing outside my window.” Since the bare plural “birds” in the conclusion gets an existential reading, the conclusion follows from the premise that eight birds are singing outside my window: “eight” entails “some.” If the resolution were existential with respect to “colleges and universities,” then the Ivy League argument above would be a valid inference. Since it’s not a valid inference, “colleges and universities” must be a generic bare plural.

Second, “colleges and universities” fails the [upward-entailment test](https://plato.stanford.edu/entries/generics/#IsolGeneInte) for existential uses of bare plurals. Consider the sentence, “Lima beans are on my plate.” This sentence expresses an existential statement that is true just in case there are some lima beans on my plate. One test of this is that it entails the more general sentence, “Beans are on my plate.” Now consider the sentence, “Colleges and universities ought not consider the SAT.” (To isolate “colleges and universities,” I’ve eliminated the other bare plurals in the resolution; it cannot plausibly be generic in the isolated case but existential in the resolution.) This sentence does not entail the more general statement that educational institutions ought not consider the SAT. This shows that “colleges and universities” is generic, because it fails the upward-entailment test for existential bare plurals.

Third, “colleges and universities” fails the adverb of quantification test for existential bare plurals. Consider the sentence, “Dogs are barking outside my window.” This sentence expresses an existential statement that is true just in case there are some dogs barking outside my window. One test of this appeals to the drastic change of meaning caused by inserting any adverb of quantification (e.g., always, sometimes, generally, often, seldom, never, ever). You cannot add any such adverb into the sentence without drastically changing its meaning. To apply this test to the resolution, let’s again isolate the bare plural subject: “Colleges and universities ought not consider the SAT.” Adding generally (“Colleges and universitiesz generally ought not consider the SAT”) or ever (“Colleges and universities ought not ever consider the SAT”) result in comparatively minor changes of meaning. (Note that this test doesn’t require there to be no change of meaning and doesn’t have to work for every adverb of quantification.) This strongly suggests what we already know: that “colleges and universities” is generic rather than existential in the resolution.

#### It applies to “private entities” – adding “generally” to the rez doesn’t substantially change its meaning and the rez doesn’t entail that all entities ought to ban private appropriation

#### Violation: They spec US

#### Net benefits -

#### [1] Limits – 195 recognized countries plus combinations and specific entities within countries makes negating impossible especially with no unifying disads against different policies, implementation and regulation procedures

#### [2] Precision outweighs – it determines which interps your ballot can endorse by providing the only salient focal point for debates—if their interp is not premised on the text of the resolution, its benefits are irrelevant to the question of topicality since it fails to interpret the topic. Plan affs just lead to cheatier pics anyways since the neg has to default to generics

#### Fairness and education are voters – its how judges evaluate rounds and why schools fund debate

#### Neg theory is DTD - 1ARs control the direction of the debate because it determines what the 2NR has to go for – DTD allows us some leeway in the round by having some control in the direction

#### Competing interps – Reasonability invites arbitrary judge intervention and a race to the bottom of questionable argumentation – it also collapses since brightlines operate on an offense-defense paradigm

#### No RVIs – A – Going all in on theory kills substance education which outweighs on timeframe B - Discourages checking real abuse which outweighs on norm-setting C – Encourages theory baiting – outweighs because if the shell is frivolous, they can beat it quickly D – its illogical for you to win for proving you were fair – outweighs since logic is a litmus test for other arguments

#### No time skew a] equal speech time and 1ac preempts solves (they did this) b] 3 minute 2ar collapses on RVIs make it impossible for me to win because I don’t have a 3nr to respond to them. 2AR judge psychology takes out their b point- smart 2ars collapse on one arg but the 2nr has to respond to the entire 1ar. C] substance education flows against rvi because if you go all in on theory no one learns anything. Double bind- either the shell is friv in which cause you beat it quickly and go to substance or it’s not and u should lose. That takes out baitings.

### 3

#### 1] Interpretation – the Affirmative must specify what type of Private Actor Appropriation they effect.

#### Appropriation is extremely vague – no legal precedent which means no normal means.

Pershing 19, Abigail D. "Interpreting the Outer Space Treaty's Non-Appropriation Principle: Customary International Law from 1967 to Today." Yale J. Int'l L. 44 (2019): 149. (Robina Fellow at European Court of Human Rights. European Court of Human Rights Yale Law School)//Elmer

Though the Outer Space Treaty flatly prohibits national appropriation of space,150 it leaves unanswered many questions as to what actually counts as appropriation. As far back as 1969, scholars wondered about the implications of this article.151 While it is clear that a nation may not claim ownership of the moon, other questions are not so clear. Does the prohibition extend to collecting scientific samples?152 Does creating space debris count as appropriation by occupation? While the answers to these questions are most likely no, simply because of the difficulties that would be caused otherwise, there are some questions that are more difficult to answer, and more pressing. As commercial space flight becomes more and more prevalent,153 the question of whether private entities can appropriate property in space becomes very important. Whereas once it took a nation to get into space, it will soon take only a corporation, and scholars have pondered whether these entities will be able to claim property in space.154 Though this seems allowable, since the treaty only prohibits “national appropriation,”155 allowing such appropriation would lead to an absurd result. This is because the only value that lies in recognition of a claim is the ability to have that claim enforced.156 If a nation recognized and enforced such a claim, this enforcement would constitute state action.157 It would serve to exclude members of other nations and would thus serve as a form of national appropriation, even though the nation never attempted to directly appropriate the property.158 Furthermore, the Outer Space Treaty also requires that non-governmental entities must be authorized and monitored by the entities’ home countries to operate in space.159 Since a nation cannot authorize its citizens to act in contradiction to international law, a nation would not be allowed to license a private entity to appropriate property in space.160 While this nonappropriation principle is great for allowing free access to space, thereby encouraging research and development in the field, it makes it difficult to create or police a solution to the space debris problem. A viable solution will have to work without becoming an appropriation. There is, however, very little substantive law on what actually counts as appropriation in the context of space.161 So, the best way to see what is and is not allowed is to look both at the general international law regarding appropriations and to look at the past actions of space actors to see what has been allowed (or at least tolerated) and what has been prohibited or rejected.

#### 2] Violation: they don’t

#### 3] Standards

#### a] Shiftiness – vague plan wording wrecks Neg Ground since it’s impossible to know which DAs link or which CPs are competitive since different types of appropriation like Space Mining, Space Col, and Satellites – absent 1AC specification, the 1AR can squirrel out of links by saying they don’t effect a certain type of appropriation or they don’t reduce private appropriation enough to trigger the link.

#### Independently vote Negative on Presumption since the Aff gets struck down for being void-for-vagueness since they don’t have an explanation of what is effected or remaining after the Plan.

Singer 10 Bill Singer 9-13-2010 “Yo, Congress, Keep On Truckin' -- Can You Dig It?” <http://www.brokeandbroker.com/index.php?a=blog&id=554> (Bill Singer is a lawyer who represents securities-industry firms, individual registered persons, Wall Street whistleblowers, and defrauded public investors. For over three decades, Singer has represented clients before the American Stock Exchange, the New York Stock Exchange, the Financial Industry Regulatory Authority (formerly the NASD), the United States Securities and Exchange Commission, and in criminal investigations brought by various federal, state, and local prosecutors. Before entering the private practice of law, Singer was employed in the Legal Department of Smith Barney, Harris Upham & Co.; as a regulatory attorney with both the American Stock Exchange and the NASD (now FINRA); and as a Legal Counsel to Integrated Resources Asset Management. Singer was formerly Chief Counsel to the Financial Industry Association; General Counsel to the NASD Dissidents' Grassroots Movement; and General Counsel to the Independent Broker-Dealer Association. He was registered for a number of years as a Series 7 and Series 63 stockbroker.)//Elmer

All of which makes **it critical that** the **laws**, rules, and regulations of Wall Street be promulgated in an intelligible manner that **clearly sets forth** **what is allowed and what is prohibited**. What a provision was meant to say should be what it says -- there shouldn't be any guessing or uncertainty. Unfortunately, so much of what has been proposed as financial regulatory reform, and so much of what will likely emanate from the various agencies and commissions that will soon embark upon rulemaking, is vague. **If there is one thing** that **courts will not tolerate** **it is vagueness**. The **law books** are **filled with** agreements, contracts, rules, regulations, and **laws** **that have been struck down as void for vagueness**. I fear that much of FINREG may be headed for the same garbage can.

#### b] Topic Education – nuanced debates about private property in Outer Space requires specification since each form of appropriation has specific issues related to it so generalization disincentivizes in-depth research. Topic Education is a voter since we only debate the topic for two months.

### 4

#### Interp: the aff must disclose all changes at least 15 minutes before the round

#### Violation: screenshots

#### Standards

#### A~ Pre round prep- Not telling me changes mean that pre round neg prep was skewed—4 minutes of prep is not enough to put together a coherent 1nc or update our answers to the aff

#### B~ academic integrity – disclosing changes is key to ensure that new evidence isn't miscut and we have an idea of what analytics will look like. Their model of debate justifies people making the underview 5 minutes long without telling me.

### 5

#### Text – The United State ought to ban Private Appropriation of Outer Space except for Space Elevators.

#### It Competes:

#### Space Elevators constitute Appropriation – they impede orbits.

Matignon 19 Louis de Gouyon Matignon 3-3-2019 "LEGAL ASPECTS OF THE SPACE ELEVATOR TRANSPORTATION SYSTEM" <https://www.spacelegalissues.com/space-law-legal-aspects-of-the-space-elevator-transportation-system/> [PhD in space law (co-supervised by both Philippe Delebecque, from Université Paris 1 Panthéon-Sorbonne, France, and Christopher D. Johnson, from Georgetown University || regularly write articles on the website Space Legal Issues so as to popularise space law and public international law]//Elmer

An Earth-based space elevator would consist of a cable with one end attached to the surface near the equator and the other end in space beyond geostationary orbit. An orbit is the curved path through which objects in space move around a planet or a star. The 1967 Treaty’s regime and customary law enshrine the principle of non-appropriation and freedom of access to orbital positions. Space Law and International Telecommunication Laws combined to protect this use against any interference. The majority of space-launched objects are satellites that are launched in Earth’s orbit (a very small part of space objects – scientific objects for space exploration – are launched into outer space beyond terrestrial orbits). It is important to precise that an orbit does not exist: satellites describe orbits by obeying the general laws of universal attraction. Depending on the launching techniques and parameters, the orbital trajectory of a satellite may vary. Sun-synchronous satellites fly over a given location constantly at the same time in local civil time: they are used for remote sensing, meteorology or the study of the atmosphere. Geostationary satellites are placed in a very high orbit; they give an impression of immobility because they remain permanently at the same vertical point of a terrestrial point (they are mainly used for telecommunications and television broadcasting). A geocentric orbit or Earth orbit involves any object orbiting Planet Earth, such as the Moon or artificial satellites. Geocentric (having the Earth as its centre) orbits are organised as follow: 1) Low Earth orbit (LEO): geocentric orbits with altitudes (the height of an object above the average surface of the Earth’s oceans) from 100 to 2 000 kilometres. Satellites in LEO have a small momentary field of view, only able to observe and communicate with a fraction of the Earth at a time, meaning a network or constellation of satellites is required in order to provide continuous coverage. Satellites in lower regions of LEO also suffer from fast orbital decay (in orbital mechanics, decay is a gradual decrease of the distance between two orbiting bodies at their closest approach, the periapsis, over many orbital periods), requiring either periodic reboosting to maintain a stable orbit, or launching replacement satellites when old ones re-enter. 2) Medium Earth orbit (MEO), also known as an intermediate circular orbit: geocentric orbits ranging in altitude from 2 000 kilometres to just below geosynchronous orbit at 35 786 kilometres. The most common use for satellites in this region is for navigation, communication, and geodetic/space environment science. The most common altitude is approximately 20 000 kilometres which yields an orbital period of twelve hours. 3) Geosynchronous orbit (GSO) and geostationary orbit (GEO) are orbits around Earth at an altitude of 35 786 kilometres matching Earth’s sidereal rotation period. All geosynchronous and geostationary orbits have a semi-major axis of 42 164 kilometres. A geostationary orbit stays exactly above the equator, whereas a geosynchronous orbit may swing north and south to cover more of the Earth’s surface. Communications satellites and weather satellites are often placed in geostationary orbits, so that the satellite antennae (located on Earth) that communicate with them do not have to rotate to track them, but can be pointed permanently at the position in the sky where the satellites are located. 4) High Earth orbit: geocentric orbits above the altitude of 35 786 kilometres. The competing forces of gravity, which is stronger at the lower end, and the outward/upward centrifugal force, which is stronger at the upper end, would result in the cable being held up, under tension, and stationary over a single position on Earth. With the tether deployed, climbers could repeatedly climb the tether to space by mechanical means, releasing their cargo to orbit. Climbers could also descend the tether to return cargo to the surface from orbit.

#### Private Companies are pursuing Space Elevators.

Alfano 15 Andrea Alfano 8-18-2015 “All Of These Companies Are Working On A Space Elevator” <https://www.techtimes.com/articles/77612/20150818/companies-working-space-elevator.htm> (Writer at the Tech Times)//Elmer

Space elevators are solid proof that any mundane object sounds way cooler if you stick the word "space" in front of it. But there's much more than coolness at stake when building a space elevator – this technology has the potential to revolutionize space transportation, and the Canadian private space company Thoth Technology that was recently awarded a patent for its space elevator design isn't the only company in the game. One of the other major players is a U.S.-based company called LiftPort Group, founded by space entrepreneur Michael Laine in 2003. Its plan for a space elevator is vastly different from the one for which Thoth received a patent, however. Whereas Thoth's plans entail tethering a 12-mile-high inflatable space elevator to the Earth, LiftPort is shooting for the moon. Originally, LiftPort had planned to build an Earth elevator, too, but it abandoned the idea in 2007 in favor of building a lunar elevator. The basic design for a lunar elevator is an anchor in the moon that is attached to a cable that extends to a space station situated at a very special point. Known as a Lagrange Point, this is the gravitational tipping point between the Earth and the moon, where their gravitational pulls essentially cancel one another out. A robot could then travel up and down the tether, ferrying cargo between the moon and the station. Out farther in space, a counterweight would balance out the system. Both types of space elevator are intended to increase space access, but in very different ways. Thoth's Earth elevator aims to make launches easier by starting off 12 miles above the Earth's surface. LiftPort's space elevator aims to increase access to the moon in particular, because it is much easier to launch a rocket to the Lagrange Point and dock it at a space station than it is to get to the moon directly. There's a third major company based in Japan called Obayashi Corp. whose plans look like a hybrid of Thoth's and LiftPort's. Obayashi is not a space company, however – it's actually a construction company. Like Thoth, Obayashi plans to build an Earth elevator. But its Earth elevator would consist of a cable tethered to the blue planet, a robotic cargo-carrier, a space station, and a counterweight. It essentially looks like LiftPort's plans, but stuck to the Earth instead of to the moon.

#### Yes Space Elevators – NASA confirms.

Snowden 18 Scott Snowden 10-2-2018 "A colossal elevator to space could be going up sooner than you ever imagined" <https://www.nbcnews.com/mach/science/colossal-elevator-space-could-be-going-sooner-you-ever-imagined-ncna915421> (Scott has written about science and technology for 20 years for publications around the world. He covers environmental technology for Forbes.)//Elmer

For more than half a century, rockets have been the only way to go to space. But in the not-too-distant future, we may have another option for sending up people and payloads: a colossal elevator extending from Earth’s surface up to an altitude of 22,000 miles, where geosynchronous satellites orbit. NASA says the basic concept of a space elevator is sound, and researchers around the world are optimistic that one can be built. The Obayashi Corp., a global construction firm based in Tokyo, has said it will build one by 2050, and China wants to build one as soon as 2045. Now an experiment to be conducted soon aboard the International Space Station will help determine the real-world feasibility of a space elevator. “The space elevator is the Holy Grail of space exploration,” says Michio Kaku, a professor of physics at City College of New York and a noted futurist. “Imagine pushing the ‘up’ button of an elevator and taking a ride into the heavens. It could open up space to the average person.”

#### Regardless of completion, Elevators spur investment in Nanotechnology

Liam O’Brien 16. University of Wollongong. 07/2016. “Nanotechnology in Space.” Young Scientists Journal; Canterbury, no. 19, p. 22.

Nanotechnology is at the forefront of scientific development, continuing to astound and innovate. Likewise, the space industry is rapidly increasing in sophistication and competition, with companies such as SpaceX, Blue Origin and Virgin Galactic becoming increasingly prevalent in what could become a new commercial space race. The various space programs over the past 60 years have led to a multitude of beneficial impacts for everyday society. Nanotechnology, through research and development in space has the potential to do the same. Potential applications of nanotechnology in space are numerous, many of them have the potential to capture and inspire generations to come. One of these applications is the space elevator. By using carbon nanotubes, a super light yet strong material, this concept would be an actual physical structure from the surface of the Earth to an altitude of approximately 36 000 km. The tallest building in the world would fit into this elevator over 42 000 times. The counterweight, used to keep the elevator taught, is proposed to be an asteroid. This would need to be at a distance of 100 000 km, a quarter of the distance to the moon. The benefits of such a structure would be enormous. 95% of a space shuttle's weight at take-off is fuel, costing US$ 20 000 per kilogram to send something into space. However, with a space elevator the cost per kilogram can be reduced to as little as US$ 200. Exploration to other planets can begin at the tower, and travel to and from the moon could become as simple as a morning commute to work. Solar sails provide the means to travel large distances and incredible speeds. Much like sails on a boat use wind, the solar sail uses light as a source of propulsion. Ideally these sails would be kilometres in length and only a few micrometres in thickness. This provides us with the ability to travel at speeds previously unheard of. Using carbon nanotubes once again, a solar sail has the capability to travel at 39 756 km/s which is 13% of the speed of light! This sail could reach Pluto in an astonishing 1.7 days, and Alpha Centauri in just 32 years. Space travel to other planets, other stars, could be possible with solar sails. The Planetary Society is funding for a space sail of itself, and has successfully launched one into orbit. NASA has also sent a sail into orbit, allowing it to burn up in the atmosphere after 240 days. Investing time and resources into nanotechnology for space exploration has benefits for society today. Materials such as graphene are being used in modern manufacturing at an increasing rate as the applications become utilised. Carbon nanotubes will change the way we think about materials and their strength. These nanotubes have a tensile strength one hundred times that of steel, yet are only a sixth of the weight. Imagine light weight vehicles using less petrol and energy as well as being just as strong as regular vehicles. With potentials to revolutionize the way we think about space travel, nanotechnology has a bright future. As a new field of science, it has the capability to push the human race to the outer reaches of our galaxy and hopefully one day to other stars. It will inspire generations of explorers and dreamers to challenge themselves and advance the human race into the next era. As Richard Feynman said in his 1959 talk 'There's Plenty of Room at the Bottom' "A field in which little has been done, but in which an enormous amount can be done. There is still plenty more to achieve.

#### Nano tech solves warming

Bhavya Khullar. September 4, 2017. Nanomaterials Could Combat Climate Change and Reduce Pollution. https://www.scientificamerican.com/article/nanomaterials-could-combat-climate-change-and-reduce-pollution/

The list of environmental problems that the world faces may be huge, but some strategies for solving them are remarkably small. First explored for applications in microscopy and computing, nanomaterials—materials made up of units that are each thousands of times smaller than the thickness of a human hair—are emerging as useful for tackling threats to our planet’s well-being. Scientists across the globe are developing nanomaterials that can efficiently use carbon dioxide from the air, capture toxic pollutants from water and degrade solid waste into useful products. “Nanomaterials could help us mitigate pollution. They are efficient catalysts and mostly recyclable. Now, they have to become economical for commercialization and better to replace present-day technologies completely,” says [Arun Chattopadhyay](http://www.iitg.ac.in/arun/), a member of the chemistry faculty at the Center for Nanotechnology, Indian Institute of Technology Guwahati. To help slow the climate-changing rise in atmospheric CO2levels, researchers have developed nanoCO2 harvesters that can suck atmospheric carbon dioxide and deploy it for industrial purposes. “Nanomaterials can convert carbon dioxide into useful products like alcohol. The materials could be simple chemical catalysts or photochemical in nature that work in the presence of sunlight,” says Chattopadhyay, who has been working with nanomaterials to tackle environmental pollutants for more than a decade. Many research groups are working to address a problem that, if solved, could be a holy grail in combating climate change: how to pull CO2 out of the atmosphere and convert it into useful products. Chattopadhyay isn’t alone. Many research groups are working to address a problem that, if solved, could be a holy grail in combating climate change: how to pull CO2 out of the atmosphere and convert it into useful products. Nanoparticles offer a promising approach to this because they have a large surface-area-to-volume ratio for interacting with CO2 and properties that allow them to facilitate the conversion of CO2into other things. The challenge is to make them economically viable. Researchers have tried everything from metallic to carbon-based nanoparticles to reduce the cost, but so far they haven’t become efficient enough for industrial-scale application. One of the most recent points of progress in this area is work by scientists at the CSIR-Indian Institute of Petroleum and the Lille University of Science and Technology in France. The researchers developed a nanoCO2 harvester that uses water and sunlight to convert atmospheric CO2 into methanol, which can be employed as an engine fuel, a solvent, an antifreeze agent and a diluent of ethanol. Made by wrapping a layer of modified graphene oxide around spheres of copper zinc oxide and magnetite, the material looks like a miniature golf ball, captures CO2 more efficiently than conventional catalysts and can be readily reused, according to Suman Jain, senior scientist of the Indian Institute of Petroleum, Dehradun in India, who developed the nanoCO2harvester. Jain says that the nanoCO2 harvester has a large molecular surface area and captures more CO2 than a conventional catalyst with similar surface area would, which makes the conversion more efficient. But due to their small size, the nanoparticles have a tendency to clump up, making them inactive with prolonged use. Jain adds that synthesizing useful nanoparticle-based materials is also challenging because it’s hard to make the particles a consistent size. Chattopadhyay says the efficiency of such materials can be improved further, providing hope for useful application in the future. CLEANSING WATER Most toxic dyes used in textile and leather industries can be captured with nanoparticles. “Water pollutants such as dyes from human-created waste like those from tanneries could get to natural sources of water like deep tube wells or groundwater if wastewater from these industries is left untreated,” says Chattopadhyay. “This problem is rather difficult to solve.” An international group of researchers led by professor Elzbieta Megiel of the University of Warsaw in Poland reports that nanomaterials have been widely studied for removing heavy metals and dyes from wastewater. According to the research team, adsorption processes using materials containing magnetic nanoparticles are highly effective and can be easily performed because such nanoparticles have a large number of sites on their surface that can capture pollutants and don’t readily degrade in water. Chattopadhyay adds that appropriately designed magnetic nanomaterials can be used to separate pollutants such as arsenic, lead, chromium and mercury from water. However, the nanotech-based approach has to be more efficient than conventional water purification technology to make it worthwhile. In addition to removing dyes and metals, nanomaterials can also be used to clean up oil spills. Researchers led by Pulickel Ajayan at Rice University in Houston, Texas, have developed a reusable nanosponge that can remove oil from contaminated seawater.

#### Warming causes Extinction

Kareiva 18, Peter, and Valerie Carranza. "Existential risk due to ecosystem collapse: Nature strikes back." Futures 102 (2018): 39-50. (Ph.D. in ecology and applied mathematics from Cornell University, director of the Institute of the Environment and Sustainability at UCLA, Pritzker Distinguished Professor in Environment & Sustainability at UCLA)//Re-cut by Elmer

In summary, six of the nine proposed planetary boundaries (phosphorous, nitrogen, biodiversity, land use, atmospheric aerosol loading, and chemical pollution) are unlikely to be associated with existential risks. They all correspond to a degraded environment, but in our assessment do not represent existential risks. However, the three remaining boundaries (**climate change**, global **freshwater** cycle, **and** ocean **acidification**) do **pose existential risks**. This is **because of** intrinsic **positive feedback loops**, substantial lag times between system change and experiencing the consequences of that change, and the fact these different boundaries interact with one another in ways that yield surprises. In addition, climate, freshwater, and ocean acidification are all **directly connected to** the provision of **food and water**, and **shortages** of food and water can **create conflict** and social unrest. Climate change has a long history of disrupting civilizations and sometimes precipitating the collapse of cultures or mass emigrations (McMichael, 2017). For example, the 12th century drought in the North American Southwest is held responsible for the collapse of the Anasazi pueblo culture. More recently, the infamous potato famine of 1846–1849 and the large migration of Irish to the U.S. can be traced to a combination of factors, one of which was climate. Specifically, 1846 was an unusually warm and moist year in Ireland, providing the climatic conditions favorable to the fungus that caused the potato blight. As is so often the case, poor government had a role as well—as the British government forbade the import of grains from outside Britain (imports that could have helped to redress the ravaged potato yields). Climate change intersects with freshwater resources because it is expected to exacerbate drought and water scarcity, as well as flooding. Climate change can even impair water quality because it is associated with heavy rains that overwhelm sewage treatment facilities, or because it results in higher concentrations of pollutants in groundwater as a result of enhanced evaporation and reduced groundwater recharge. **Ample clean water** is not a luxury—it **is essential for human survival**. Consequently, cities, regions and nations that lack clean freshwater are vulnerable to social disruption and disease. Finally, ocean acidification is linked to climate change because it is driven by CO2 emissions just as global warming is. With close to 20% of the world’s protein coming from oceans (FAO, 2016), the potential for severe impacts due to acidification is obvious. Less obvious, but perhaps more insidious, is the interaction between climate change and the loss of oyster and coral reefs due to acidification. Acidification is known to interfere with oyster reef building and coral reefs. Climate change also increases storm frequency and severity. Coral reefs and oyster reefs provide protection from storm surge because they reduce wave energy (Spalding et al., 2014). If these reefs are lost due to acidification at the same time as storms become more severe and sea level rises, coastal communities will be exposed to unprecedented storm surge—and may be ravaged by recurrent storms. A key feature of the risk associated with climate change is that mean annual temperature and mean annual rainfall are not the variables of interest. Rather it is extreme episodic events that place nations and entire regions of the world at risk. These extreme events are by definition “rare” (once every hundred years), and changes in their likelihood are challenging to detect because of their rarity, but are exactly the manifestations of climate change that we must get better at anticipating (Diffenbaugh et al., 2017). Society will have a hard time responding to shorter intervals between rare extreme events because in the lifespan of an individual human, a person might experience as few as two or three extreme events. How likely is it that you would notice a change in the interval between events that are separated by decades, especially given that the interval is not regular but varies stochastically? A concrete example of this dilemma can be found in the past and expected future changes in storm-related flooding of New York City. The highly disruptive flooding of New York City associated with Hurricane Sandy represented a flood height that occurred once every 500 years in the 18th century, and that occurs now once every 25 years, but is expected to occur once every 5 years by 2050 (Garner et al., 2017). This change in frequency of extreme floods has profound implications for the measures New York City should take to protect its infrastructure and its population, yet because of the stochastic nature of such events, this shift in flood frequency is an elevated risk that will go unnoticed by most people. 4. The combination of positive feedback loops and societal inertia is fertile ground for global environmental catastrophes **Humans** are remarkably ingenious, and **have adapted** to crises **throughout** their **history**. Our doom has been repeatedly predicted, only to be averted by innovation (Ridley, 2011). **However**, the many **stories** **of** human ingenuity **successfully** **addressing** **existential risks** such as global famine or extreme air pollution **represent** environmental c**hallenges that are** largely **linear**, have immediate consequences, **and operate without positive feedbacks**. For example, the fact that food is in short supply does not increase the rate at which humans consume food—thereby increasing the shortage. Similarly, massive air pollution episodes such as the London fog of 1952 that killed 12,000 people did not make future air pollution events more likely. In fact it was just the opposite—the London fog sent such a clear message that Britain quickly enacted pollution control measures (Stradling, 2016). Food shortages, air pollution, water pollution, etc. send immediate signals to society of harm, which then trigger a negative feedback of society seeking to reduce the harm. In contrast, today’s great environmental crisis of climate change may cause some harm but there are generally long time delays between rising CO2 concentrations and damage to humans. The consequence of these delays are an absence of urgency; thus although 70% of Americans believe global warming is happening, only 40% think it will harm them (http://climatecommunication.yale.edu/visualizations-data/ycom-us-2016/). Secondly, unlike past environmental challenges, **the Earth’s climate system is rife with positive feedback loops**. In particular, as CO2 increases and the climate warms, that **very warming can cause more CO2 release** which further increases global warming, and then more CO2, and so on. Table 2 summarizes the best documented positive feedback loops for the Earth’s climate system. These feedbacks can be neatly categorized into carbon cycle, biogeochemical, biogeophysical, cloud, ice-albedo, and water vapor feedbacks. As important as it is to understand these feedbacks individually, it is even more essential to study the interactive nature of these feedbacks. Modeling studies show that when interactions among feedback loops are included, uncertainty increases dramatically and there is a heightened potential for perturbations to be magnified (e.g., Cox, Betts, Jones, Spall, & Totterdell, 2000; Hajima, Tachiiri, Ito, & Kawamiya, 2014; Knutti & Rugenstein, 2015; Rosenfeld, Sherwood, Wood, & Donner, 2014). This produces a wide range of future scenarios. Positive feedbacks in the carbon cycle involves the enhancement of future carbon contributions to the atmosphere due to some initial increase in atmospheric CO2. This happens because as CO2 accumulates, it reduces the efficiency in which oceans and terrestrial ecosystems sequester carbon, which in return feeds back to exacerbate climate change (Friedlingstein et al., 2001). Warming can also increase the rate at which organic matter decays and carbon is released into the atmosphere, thereby causing more warming (Melillo et al., 2017). Increases in food shortages and lack of water is also of major concern when biogeophysical feedback mechanisms perpetuate drought conditions. The underlying mechanism here is that losses in vegetation increases the surface albedo, which suppresses rainfall, and thus enhances future vegetation loss and more suppression of rainfall—thereby initiating or prolonging a drought (Chamey, Stone, & Quirk, 1975). To top it off, overgrazing depletes the soil, leading to augmented vegetation loss (Anderies, Janssen, & Walker, 2002). Climate change often also increases the risk of forest fires, as a result of higher temperatures and persistent drought conditions. The expectation is that **forest fires will become more frequent** and severe with climate warming and drought (Scholze, Knorr, Arnell, & Prentice, 2006), a trend for which we have already seen evidence (Allen et al., 2010). Tragically, the increased severity and risk of Southern California wildfires recently predicted by climate scientists (Jin et al., 2015), was realized in December 2017, with the largest fire in the history of California (the “Thomas fire” that burned 282,000 acres, https://www.vox.com/2017/12/27/16822180/thomas-fire-california-largest-wildfire). This **catastrophic fire** embodies the sorts of positive feedbacks and interacting factors that **could catch humanity off-guard and produce a** true **apocalyptic event.** Record-breaking rains produced an extraordinary flush of new vegetation, that then dried out as record heat waves and dry conditions took hold, coupled with stronger than normal winds, and ignition. Of course the record-fire released CO2 into the atmosphere, thereby contributing to future warming. Out of all types of feedbacks, water vapor and the ice-albedo feedbacks are the most clearly understood mechanisms. Losses in reflective snow and ice cover drive up surface temperatures, leading to even more melting of snow and ice cover—this is known as the ice-albedo feedback (Curry, Schramm, & Ebert, 1995). As snow and ice continue to melt at a more rapid pace, millions of people may be displaced by flooding risks as a consequence of sea level rise near coastal communities (Biermann & Boas, 2010; Myers, 2002; Nicholls et al., 2011). The water vapor feedback operates when warmer atmospheric conditions strengthen the saturation vapor pressure, which creates a warming effect given water vapor’s strong greenhouse gas properties (Manabe & Wetherald, 1967). Global warming tends to increase cloud formation because warmer temperatures lead to more evaporation of water into the atmosphere, and warmer temperature also allows the atmosphere to hold more water. The key question is whether this increase in clouds associated with global warming will result in a positive feedback loop (more warming) or a negative feedback loop (less warming). For decades, scientists have sought to answer this question and understand the net role clouds play in future climate projections (Schneider et al., 2017). Clouds are complex because they both have a cooling (reflecting incoming solar radiation) and warming (absorbing incoming solar radiation) effect (Lashof, DeAngelo, Saleska, & Harte, 1997). The type of cloud, altitude, and optical properties combine to determine how these countervailing effects balance out. Although still under debate, it appears that in most circumstances the cloud feedback is likely positive (Boucher et al., 2013). For example, models and observations show that increasing greenhouse gas concentrations reduces the low-level cloud fraction in the Northeast Pacific at decadal time scales. This then has a positive feedback effect and enhances climate warming since less solar radiation is reflected by the atmosphere (Clement, Burgman, & Norris, 2009). The key lesson from the long list of potentially positive feedbacks and their interactions is that **runaway climate change,** and runaway perturbations have to be taken as a serious possibility. Table 2 is just a snapshot of the type of feedbacks that have been identified (see Supplementary material for a more thorough explanation of positive feedback loops). However, this list is not exhaustive and the possibility of undiscovered positive feedbacks **portends** even greater **existential risks**. The many environmental crises humankind has previously averted (famine, ozone depletion, London fog, water pollution, etc.) were averted because of political will based on solid scientific understanding. We cannot count on complete scientific understanding when it comes to positive feedback loops and climate change.

### 6

#### Plan flaw is a reason to drop the aff- debate is a training ground for movement builders, lawyers, and policymakers. All 3 professions require precise wording. Otherwise, policies will be circumvented and movements coopted. It’s not frivolous- there are multiple egregious flaws. Don’t use reasonability- we did the work in paradigm issues section.

#### A] They say “US”- that means ultrasonography- so the actor is incoherent

#### B] private appropriation- this could mean secret appropriation by states which also means you presume neg.

#### C] space- this refers to anything- including my living room- means private companies can’t own anything.

### Case

#### Russia/China space alliance is key to the Belt and Road initiative.

Goward 8/23/19 (Dana A. - president of the Resilient Navigation and Timing foundation, “Russia, China Alliance on Navigation Satellites Threatens GPS,” https://www.nationaldefensemagazine.org/articles/2019/8/23/viewpoint-russia-china-alliance-on-navigation-satellites-threatens-gps)

Russia and China have been increasingly moving toward greater synergies between their respective satellite navigation systems since at least 2015. The stated goals of the two powers have been: ensuring compatibility and interoperability of GLONASS and BeiDou navigation systems; augmentations, including mutual allocation of measuring stations within the territories of Russia and China; global navigation satellite system performance characteristics monitoring and assessment; and navigation technologies application Last month the partnership entered a new stage. Russia passed a law entitled “On ratification of the agreement between the Government of the Russian Federation and the Government of the People’s Republic of China on cooperation in the use of GLONASS and Beidou global navigation satellite systems for peaceful purposes.” This has caused some experts to assess the future implications for both GPS and the United States. At least a few industry insiders see this as part of an on-going effort to virtually combine the two systems and replace GPS as the leading global navigation system. This has far reaching geo-political implications and could impact GPS operations globally. “I believe that, in the intermediate term, these nations will increasingly combine their systems. This will conceivably create a larger, more robust constellation” said Rich Lee of Greenwood Telecommunications Consultants. “It could spawn important synergies that benefit both countries without either losing control of their respective national system.” Synergies could ultimately include having a shared, common signal, sponsorship of common chipset and receiver product requirements, and common ground reference stations. It could also include additional cooperation on terrestrial precision navigation and timing (PNT) augmentation systems. Both nations already operate versions of the Loran terrestrial PNT system, for example, and meet regularly to coordinate and discuss technical issues. Ultimately, the two nations and their satellite systems could declare their shared PNT architecture to be the official and primary source for PNT services. This would allow them to be more vigorous in trying to exclude other PNT sources and systems. Long recognized as a “silent utility” for transportation, networks, and a wealth of technologies, some see China incorporating PNT as part of its Belt and Road initiative.

#### Successful BRI solves Indo-China war.

Joel Wuthnow 17, a Research Fellow in the Center for the Study of Chinese Military Affairs, Institute for National Strategic Studies, at the National Defense University (NDU), Chinese Perspectives on the Belt and Road Initiative: Strategic Rationales, Risks, and Implications, Center for the Study of Chinese Military Affairs, Institute for National Strategic Studies, China Strategic Perspectives, No. 12, <http://www.css.ethz.ch/content/dam/ethz/special-interest/gess/cis/center-for-securities-studies/resources/docs/ChinaPerspectives-12-1.pdf>

One common argument in Chinese analyses of the BRI is that regional integration will contribute to a more stable security environment, especially around China’s southern and western periphery. This argument both reflects and supports Xi’s broader vision for a new regional order—often described as a “community of common destiny” or “community of shared interests”—in which economic development and cooperative security reinforce each other.27 China’s 2017 white paper on Asia-Pacific security explains the logic: Security and development are closely linked and mutually complementary. Equal consideration should be given to both a security framework and an economic framework—the main components of the entire regional structure—to ensure their parallel development. On the one hand, the improvement of the security framework will help ensure a peaceful and stable environment for economic development; on the other, faster regional economic integration will provide solid economic and social support for the development of the security framework.28 This is not an abstract goal but rather vital to the mitigation of a range of security challenges within and around China’s borders, including terrorism, separatism, and extremism (known as the “three evils”), territorial disputes with India in the Himalayas and with several Southeast Asian nations in the South China Sea, and the alleged fomenting of “color revolutions” by the United States.29 Along these lines, Chinese scholars argue that the BRI can help improve stability in several ways: ■ Mitigating the sources of violence in fragile states. Retired Major General Wang Haiyun, a senior advisor at the China Institute of International Strategic Studies (CIISS), claims that economic growth created by the BRI will “eradicate poverty,” which is a “root cause” of terrorism and extremism, and play a role in “diffusing clashes of civilization that should actually never happen, and calming the restless social sentiments of Islamic regions.”30 This could reduce perceived threats such as those posed by Uighur separatists and militants of the so-called Islamic State (IS) infiltrating into China.31 ■ Ameliorating territorial disputes. Wang Junsheng, a scholar at the CASS National Institute of International Strategy, argues that the BRI will help resolve territorial disputes in the South China Sea by moving leaders away from a “zero sum” mindset. As evidence, he claims that Vietnam’s participation in BRI projects has lowered tensions between Beijing and Hanoi in the South China Sea, and led to stronger overall Sino-Vietnamese relations.32 Hu Bo, a research fellow at Beijing University, similarly argues that one goal of the BRI is to alleviate maritime disputes, though this does not imply that China will “sacrifice” its “legal rights” to enforce territorial claims.33 ■ Increasing mutual trust.34 Li Gang, a scholar at the Central Party School’s Institute of International Strategy, argues that the BRI will exhibit China’s virtues of “openness, trustworthiness, inclusivity, and development,” and thus convince other states of its peaceful intentions.35 Renmin University professor Wang Yiwei likewise contends that trust gained through “civil and local interactions” in creating the BCIM economic corridor will help Beijing and New Delhi overcome historical suspicions.36 ■ Building more effective security partnerships. Central Party School scholar Sun Xianpu argues that China can expand CT intelligence sharing, training, and technical exchanges under the BRI framework, citing closer CT cooperation with Pakistan as an example. Sun also anticipates greater cooperation in the areas of counternarcotics in Southeast Asia, and counterpiracy in South Asia.37 Senior Colonel Meng Xiangqing, a professor at the People’s Liberation Army (PLA) NDU, similarly argues that the BRI will lead to closer CT cooperation among Shanghai Cooperation Organization (SCO) members, which is needed to address violent extremism and to stabilize Afghanistan following a reduction of U.S. forces.38

#### Goes nuclear.

Brendan Thomas-Noone 18, Research Fellow at the United States Studies Centre at the University of Sydney, India’s rivalry with China, from the mountains to the sea, 2-23-18, <https://www.lowyinstitute.org/the-interpreter/doklam-india-rivalry-china-mountains-sea>

The Doklam border stand-off between India, China, and India’s ally Bhutan managed to break into the news cycle last year. It was a significant dispute, with troops clashing at one point and military forces mobilised, between two of the world’s nuclear powers that have previously fought a war. But details have emerged in recent weeks that indicate the crisis was even more serious than many realised. It may be one of the first episodes to demonstrate the evolving risks (and potential long-term benefits) that the introduction of nuclear-armed submarines will have on strategic stability in the Indo-Pacific. In June 2017, Chinese troops and bulldozers began to extend a road into the Doklam plateau, an area alaimed by the governments in Beijing and Thimphu at the intersection of Indian, Bhutanese, and Chinese territory. The area is of strategic importance to Indian and Chinese defence planners because it is near a geographic chokepoint that leads further into Indian territory known as the Siliguri Corridor, or India’s “chicken neck”. At the request of Bhutan, India’s troops responded to the intrusion, resulting in a series of “jostles” between the opposing forces on the plateau (this leaked video gives an idea of these events). For the next several weeks, the situation escalated as Chinese state media claimed that India would “suffer worse losses than 1962” if a conflict ensued. The stand-off lasted until August, and while tensions have largely subsided, reports alleging China’s continued military build-up in the area have filtered out. However, the most interesting detail to emerge since the crisis is the potential role of the INS Arihant, India’s first nuclear ballistic missile submarine. On 9 January, The Hindu reported that the Arihant, commissioned in August 2016 and first launched in 2009, had “suffered major damage” due to “human error”. According to the article, a “hatch” had been left open, allowing water to enter the submarine’s propulsion compartment, resulting in serious damage. A couple of days later, an article published in another Indian media outlet disputed some of the technical aspects of The Hindu story. Since the Arihant is based on a double-hull design, it agued, the engineering compartment was unlikely to have an outside hatch. Also, surely a modern submarine would have a warning system in place for hatches that must be closed for diving? What’s not in dispute is the fact that the submarine was not working at the time of the stand-off, and had probably been out of commission for at least 10 months. This caused some controversy in India, considering the cost of the project (US $2.9 billion) and the possibility that the government in New Delhi didn’t know about it. Yet this misses what should be the real focus for analysts concerned with strategic stability in the Indo-Pacific: that India’s leadership was interested to see if the Arihant could be deployed during the stand-off with China, and that a border dispute in an isolated Himalayan region could easily have escalated to other areas. Articles about India’s wider nuclear mobilisation should be treated with a healthy degree of scepticism. But the reporting raises interesting questions. Why would New Delhi be interested in sending out the Arihant on patrol during the crisis? One reason could be as a signal to Beijing of its resolve in the dispute. At present, the Arihant has limited military capability – the sea-launched ballistic missiles it carries, the K-15, has a widely reported range of only 750 kilometres, meaning limited use in a conflict with China when operated from likely patrol areas in the Bay of Bengal. But there is always the potential to escalate the crisis to other geographic regions. This also assumes Beijing would know that the boat was deployed, either through surveillance or communication from New Delhi. Surveillance is becoming more likely as Chinese intelligence and reconnaissance capabilities improve, and PLAN naval activity increases in the Indian Ocean. This may have been the purpose of the original leak. Even though the Arihant was disabled, Beijing will need to think hard about deploying assets to the Bay of Bengal the next time a crisis erupts on the Indian–Chinese border. Adding to the dynamic is China’s own evolving nuclear missile submarine program, which has the range to strike Indian targets from patrol areas near Chinese coastal waters, or from the South China Sea. Theoretically, like they did in the Cold War, secure second-strike capabilities should add to strategic stability in the region. Knowing a nuclear-armed submarine, which your military forces are going to have a hard time tracking and destroying during a crisis, is out there should have a mitigating impact on risk-taking and escalation. But in the short term, the Doklam stand-off also shows potential destabilising dynamics. China and India are still in the early stages of developing second-strike capabilities, and are putting the structures in place to maintain credible contact between submarines and political leaders while on patrol. In a crisis, accidents do occur; there were reportedly between 20 and 40 collisions between a tailing submarine and its target during the Cold War. Importantly, nuclear forces don’t exist in a vacuum. The Doklam episode underscores the growing military activity, as well as the competition for influence between China and India throughout the Bay of Bengal. Military access for anti-submarine warfare forces, control of port facilities, and intelligence are becoming more critical for both countries

#### It's the only thing keeping the Russian economy afloat.

Alexander Gabuev and Temur Umarov 20 {Gabuev is a senior fellow and the chair of the Russia in the Asia-Pacific Program at the Carnegie Moscow Center. Temur Umarov is an expert on China and Central Asia, and a consultant at Carnegie Moscow Center. 7-8-2020. “Will the Pandemic Increase Russia’s Economic Dependence on China?” https://carnegie.ru/2020/07/08/will-pandemic-increase-russia-s-economic-dependence-on-china-pub-81893}//JM

The coronavirus pandemic and the accompanying economic crisis are impacting Russia-China relations just like the 2014–2015 crisis unleashed by the war in Ukraine did: the bilateral relationship is not fundamentally changing, but existing trends are picking up speed. Russia’s economic and technological development will become increasingly dependent on China, and U.S.-China tensions, which are worsening as a result of the pandemic, may soon make Moscow’s balancing act more precarious.

Since 2014, far-reaching U.S.-EU sanctions have pushed the Kremlin to deepen Sino-Russian cooperation in multiple domains. Ever since, Russia’s asymmetrical dependence on the Chinese economy has grown continuously. China’s share in Russia’s trade turnover increased from 10.5 percent ($88.8 billion) in 2013 to 15.7 percent ($108.3 billion) in 2019. Meanwhile, Russia’s central bank has increased the proportion of the Chinese yuan in its foreign currency reserves from 0.1 percent in 2015 to the current 13.2 percent. Moscow is also increasingly relying on Chinese technology, and firms like Huawei are set to make major inroads in the Russian market as key decisions on 5G approach. In 2016, China for the first time surpassed Germany as the number one source of industrial equipment and other technology-related imports in the Russian market. This trend continued in 2019, as Russia imported $30.8 billion worth of equipment and technology-related products from China (28 percent of all technology-related imports that year), while imports from Germany dropped to $12.9 billion, or just 12 percent.

The deepening of Sino-Russian ties following the war in Ukraine and Western sanctions extended beyond trade. To highlight only a handful of key examples, in 2018 Russia’s armed forces carried out the biggest military exercises in the country’s history in which they were joined by a 3,200-strong contingent from China’s People’s Liberation Army. President Vladimir Putin announced in October 2019 that Moscow is helping Beijing create its own missile early warning system, thus tying China’s strategic nuclear deterrent to a Russian technological backbone.

Crises aside, however, there are several objective reasons for the Sino-Russian rapprochement. The structures of their economies naturally complement each other. The political regimes are similar, which frequently inspires joint approaches on issues like human rights, NGOs, and the future of the internet. The strategic imperative to spend once-scarce resources on a heavily fortified, 4,200-kilometer border has given way to new forms of cross-border cooperation and trade. For all of these reasons, Moscow and Beijing were well-inclined toward each other and likely to become closer partners even without a well-timed nudge from recent crises. But their actions scarcely would have been as coordinated as they are now.

The pandemic is accelerating a wide-ranging set of processes and incentives inside both Russia and China that are helping pull the two largest Eurasian powers toward each other. Unprecedented synchronized global economic turbulence and the drop in oil and gas demand from locked-down economies set the stage for a period of painful adjustment for the Russian economy. Trade with Beijing becomes increasingly important to offset the immediate shocks, as China appears to be the first major economy to recover after the pandemic.

#### Nuke war.

Dr. Benjamin Ståhl 15, CEO of the Blue Institute, PhD in Business Studies and Economics from Uppsala University, MA in International Relations from the University of Kent, and Johan Wiktorin, Founder and CEO of the Intelligence Company Brqthrough, Licensed Master of Competitive Intelligence and Former Member of the Swedish Armed Forces, “What’s At Stake?: A Geopolitical Perspective on the Swedish Economic Exposure in Northeast Europe”, Swedish Growth Barometer, 7/1/2015, https://blueinst.com/wp-content/uploads/2019/07/whats-at-stake\_geopolitical-perspective.pdf

Scenario 1: Disintegration

If the Russian economy continues to deteriorate and the regime continue to distance themselves from the West, the centre may not be capable to maintain legitimacy and keep the periphery together. Already, some regions and counties are highly indebted. In other parts, ethnic Russians are a minority. Regions in eastern Russia, rich in raw materials, may look to China for funding. It is, however, probable that Beijing will not want to undermine the stability in Russia.

Closer to the region in focus in this report, Kaliningrad is an area that could distance itself from the Kremlin. Economic problems and security concerns form a background that could lead to a political uprising. A “Kaliningrad-Maidan” development is at the heart of this scenario. Triggers could also come from outside Kaliningrad, in or in the immediate surrounding of the Russian Federation, or from other factors such as severe pollution.

The other countries in the region would in all probability remain cool in this situation, considering the county’s military importance for the Russian government. However, a mutiny like the ones in Kroonstad in June 1917, March 1921 or on the frigate Storozjevoj in November 1975 cannot be excluded.

Economic and political tensions in Europe could weaken the EU and worsen the development at the same time. A Greek withdrawal from the EU, triggered by its exit from the Eurozone, could set such a movement in motion. A Podemos-led government in Spain could undermine confidence for the single market, at a time when Europe also faces the consequences of a highly unstable North Africa, with a large flow of migrants.

Attempts by Russia to influence certain members in the EU, such as Hungary and Cyprus, could sow further discord in the EU. At the most severe levels of disintegration, France could adopt policies effectively blocking EU and NATO response in a time of increased tensions. Britain may opt out of the union altogether, or be forced out if their demands for special status is rejected by the other member states.

In all varieties of disintegration, uncertainty concerning the control over the nuclear arsenals will increase. The US will become involved both diplomatically and financially in order to bring clarity and establish control over the arsenals. Should Russia, in that situation, ask for military support for this, it is highly probable that the US would acquiesce: such operations in other parts of the world were the object of joint US-Russian exercises just a few years ago.

Scenario 2: Ultra-nationalism

If Russian domestic and international policy continues to become more radicalised, it might take ever more drastic forms. As the economy deteriorates, wages fall and shortages become common, a focus on nostalgic nationalism, using belligerent rhetoric and demonstrations of military power, could be used to deflect growing discontentment.

A logical target would be to “protect” zones which are perceived as Russian, e.g. where there are Russian ethnic minorities or even just Russian-speaking areas. Such rhetoric was and is used in the Ukraine.

The coming years will tell what the Russian ambitions are in the Ukraine. Offensives to secure and expand their supply lines, and weakening those of the Ukraine, are probable, and more ambitious plans, such as the opening of new directions in Kharkiv or Odessa, are possible. As a distraction, conflicts in Moldavia can be fuelled.

If the West, primarily the US, UK and Poland, support Ukraine with military means, the risk increases for further escalation of the conflict. Remaining passive, on the other hand, runs the risk that Russia perceives that it could act against other targets.

A second country that could be the target of Russian nationalism is Belarus. Judging by president Putin’s justification of the annexation of Crimea, Belarus would similarly be a legitimate candidate for “re-inclusion” in Russia.

There are indications that the regime in Belarus are worried about such a development and acting to thwart it. In late 2014, Lukashenko appointed a new government, and has increased the emphasis on “Belorussian”. The fragmented (and thoroughly infiltrated) opposition has declared that it will not field candidates in elections this autumn, since they deem the threat of president Putin to be greater than of Lukashenko himself.

Belarus has also passed laws permitting prosecution of non-regular armed troops, as a consequence of the Russian method employed in the annexation of Crimea. In the economic sphere, Russia has complained that Belarus is profiting from sanctions against Russia.

Any attempts from Russia to enter Belarus’ with military means would probably not be met by any effective resistance from the Belorussian security apparatus. The opportunities for Russia are in some ways more favourable here than in Ukraine, due to the close cooperation between the countries’ armies and intelligence services. Passive resistance cannot be ruled out but would not mean much in a short-term.

However, tensions with other former Soviet Union republics, with the EU and with NATO would surely increase. Polish and Lithuanian forces would probably mobilize to counteract spillover effects. EU policy would be substantially revised. Belorussian citizens would attempt to flee, primarily to neighbouring Poland, Lithuania and Latvia.

The Russian government would also threaten the Baltic states, in order to undermine their economies and try to influence policy in these countries. Estonia, Latvia and Lithuania would be in a precarious situation. While they need to strengthen their civil and military defence, they must retain credibility with their allies and not be perceived as to exaggerate the Russian threat. The higher the tensions, the more sensitive the world is to psychological influence.

Russia would, in this scenario, also fan nationalism in other parts of Europe through political and financial support. West Balkan is particularly vulnerable, as the EU and the US have invested considerable political capital in the region with only mixed success. Bosnia, Kosovo and Macedonia have stagnated in their political and economic development with high levels of unemployment, political polarisation and even the establishing of Islamic fundamentalist cells: a fertile ground for nationalist movements.

Finally, Russian ultra-nationalism would also be directed inwards, with an escalated persecution of the domestic political opposition, independent media, and nationalisation of foreign assets. This will be combined with attacks on minority groups, especially on Jews.

This scenario could happen separately or as a precursor to the final, and most dangerous, scenario.

Scenario 3: Test of strength

In this scenario, Russia would attempt to break NATO through challenging of one or more of the Baltic states. The objective would be to demonstrate to alliance members that NATO’s response is too late and too weak.

A precondition for success is a distraction through a crisis by an intermediator, which would tie down especially American attention and resources. The distraction could come in many forms, e.g. by partnering with North Korea, fanning war in the Middle East, or even hidden support for terrorists.

If the current polarisation in US domestic politics continues, any reaction will be obstructed and delayed. An especially vulnerable window of opportunity is in the period between the presidential elections in November 2016 and the installation of the new president in January 2017, which could create a legitimacy problem for the American political system when it comes to the possibilities of directly confronting Russia quickly.

An attack on any Baltic state would directly affect Swedish territory and air space. In the worst-case scenario, it will happen immediately before open conflict with NATO.

The Baltic states each offer different opportunities for Russia, but they all have in common that they lack any strategic depth, which means that an open invasion would be accomplished in a few days, unless support from other alliance members is forthcoming.

Estonia, which is the most powerful of the three, both economically and military, poses as a potential threat to the trade over St Petersburg. To control the maritime traffic through the Gulf of Finland is an important motive for Russia to influence Estonian politics. The population of Estonia, with 25 percent ethnic Russians, could be used to legimize action and as grounds for destabilisation, especially around the border town Narva where more than 90% of the population is ethnic Russian.

Latvia is the most vulnerable of the three states. The economy is weaker; the Russian minority is about the same as in Estonia; and Russian organised crime has a strong hold. Especially the eastern parts of the country are vulnerable to Russian influence.

Lithuania only have about six percent ethnic Russians and a stronger military tradition. On the other hand, Lithuania offers access to Kaliningrad. Lithuania’s attempts to decrease their dependence on energy from Russia has annoyed the Russian regime, as is evident in the harassments by the Russian navy of the cabling operation which will connect the Lithuanian grid to Sweden. There are also some tensions surrounding the Polish minorities in the country which Russia could exploit.

How fast Sweden will become involved depends on the extent of open, armed actions against one or all of the Baltic States.

If a confrontation occurs with non-regular or paramilitary means, maintaining dominance over Swedish territory and territorial waters will be in focus. The same will be the case for Finland, but Finnish action could be influenced by Russian fabrication of tensions in Karelia, that Helsinki could be blamed for.

NATO would try to respond in a controlled manner, i.e. prioritizing transports by air and sea. This would mean greatly increased traffic in and over the Baltic Sea. Tensions will rise drastically, with increased risks of miscalculations on both sides. Sweden and Finland are expected to act together with the rest of the EU and the US. If no direct military threat emerges against Sweden, then Sweden cannot count on any enforcements from the rest of the world apart from mutual information exchange.

The instance that the citizens in the Baltic states perceive a risk of a Russian incursion, the probability is high that a flow of refugees will commence. From Lithuania, the biggest flow will be to Poland while Latvian will flee to Sweden, mainly Gotland. Refugees from Estonia can be expected to flee towards Finland or Sweden depending on where in the country they live and where they have relations or connections.

In the worst-case scenario, Swedish and Finnish territory will become an arena for hostilities. As Russian readiness exercises have shown, airborne and marine infantry could rapidly and with surprise occupy parts of Gotland and Åland. A possible option is also to mine the Danish Straits in connection with this.

By supplies of surface-to-air and anti-ship missiles, Russian forces can temporarily extend their air and coastal defence in the Baltic Sea, protecting an incursion by land into the Baltic states. NATO would be faced with a fait accompli. The invasion does not need to happen in all three states nor include the entire territory of a country. The only thing that is needed is a demonstration of NATO’s inability to defend alliance members. This would establish a new security order.

Depending on the level of conflict that Russia would be willing to risk, air and navy bases in Sweden and Finland could be struck with missiles from the ground, air and sea. It is, however, likely that the governments would be issued an ultimatum to remain neutral, with only a few hours to comply.

Public announcement of the ultimatum would put immense pressure on the political system and weaken resistance. Such diplomatic tactics could be reinforced by forced cyber attacks on the electricity and telecommunication networks. During the coldest months of the year, the vulnerability would be the highest.

At the same time, Sweden would be expected to support their Western partners’ need for transports into the theatre of action. If Russia would close the Danish Straits, any military support to the Baltic states would need to move over Swedish territory; such as air support Norwegian air bases or aircraft carriers in the Norwegian Sea. There would also be demands to clear of mines in Oresund, and possibly for allowing equipment and troop transports to harbours on the east coast for further transport across the Baltic Sea. The Swedish to such demands would have consequences for generations to come.

If Gotland would not be occupied by Russian forces, NATO would demand to set up bases on the island. The smallest indication of acquiescing to such demands would have the Russians racing to the island.

Furthermore, Russia would coordinate activities in the far north, with submarines of all kinds and possibly even direct action in northern Finland and even in northern Sweden, in order to expand Russian air defence.

Faced with the risk of direct confrontations between Russian and American forces, Russia could mount land-based as well as amphibian operations in the north of Norway and on Svalbard, to improve the defence of Murmansk. Following a similar strategy, occupying parts of Bornholm would make it more difficult for NATO to support their members. This is probably not necessary, but it is a possible option.

In most people’s minds, there is a sharp line between the Baltic states’ eastern borders and Russia, the crossing of which is unconceivable. By first gaining the control over Gotland and Åland, the Russian General Army Staff could circumvent a mental Maginot line, in the same way as Germany attacked France through Benelux in May 1940.

Russian success in this scenario hinges on speed and the ability to contain the conflict. The first message to Washington will entail the understanding that this is not a direct conflict between the US. For Russia, the uncertainty is therefore how US interests are perceived from an American perspective.

For the US, it is not just the credibility of NATO that is at stake but also the unity of the EU. This has global connotations since allies (and enemies) in the Middle East and Asia will also form assumptions regarding the willingness and ability of the US to act in order to protect their allies. The risk is obviously that Russia miscalculates and underestimates the difference between, for instance, the departing presidential administration perceptions of US security interests on the one hand with the wider US security establishment’s perception of these on the other.

During the whole process, the threat of nuclear strikes would hover over all decision makers, which increases the degree of uncertainty. Nuclear tests in the period before a test of strength cannot be ruled out, especially since Russian emphasis on nuclear deterrence could lose credibility over time. Direct threats of using the nuclear weapons is, however, completely excluded in this scenario.