## CP

#### Space-faring nations should

#### fully fund a program to cover 4.8% of the surface of the Earth’s oceans in a monolayer of 0.1 micrometer-diameter latex particles, either hollow, or of core-shell morphology, bearing a conventional stabilization system that is inactivated in salt water.

#### ban the use of systems that redirect near-earth objects

#### deploy a debris removal system removing small and large objects and the debris of other nations upon their request

#### establish a 25 year maximum lifetime limit after which space objects should be re-entered in the atmosphere

#### Solves debris and avoids miscalc

Matteo Frigoli 19, master’s degree in Law at the University of Parma, degree thesis concerned international law and the military uses of outer space and celestial bodies, “Between Active Debris Removal and Space-Based Weapons: A Comprehensive Legal Approach”, Chapter 4, Space Security and Legal Aspects of Active Debris Removal, Studies in Space Policy Series, (No. 16)https://www.ebooks.com/en-ag/209547370/space-security-and-legal-aspects-of-active-debris-removal/annette-froehlich/

4.1.5 Selective Cleaning Operations: A Possible Temporary Solution?

A workable legal solution that would address ADR operations cannot avoid or minimize the issue of space weaponization. This must be considered as a crucial aspect of ADR technologies.

The dual-use nature of ADR technologies bears different practical and legal consequences with respect to those posed by the current dual-use capacity of space assets.

For example, the utilization of civilian space assets, such as communication or observation satellites for military purposes, remains in the area of the passive military uses of outer space, which are generally accepted by the international community as permitted by Article 2(4) of the United Nations Charter, which basically prohibits “the threat or use of force”.67

On the other hand, the deployment for military purposes of a satellite dedicated to removal operations would be an active military use of outer space, in the form of a space-based weapon, thus constituting that “threat or use of force” in outer space that the international community has been striving to avoid.

In September 2013, China carried out experiments in outer space regarding onorbit servicing and satellite capture, involving a satellite fitted with a mechanical arm. These maneuvers raised international concerns that “the tests go beyond the stated objectives and are actually cover for testing on-orbit ASAT technology.”68 There is a thin line that separates ADR technologies from space-based weapons, and it could be argued that ignoring this feature in a possible future regulatory framework could lead to some sort of “masked weaponization” of outer space.

Bearing this in mind, what can be done with the existing legal regime? How can the set of four principles enshrined in Article I and Article IX of the Outer Space Treaty regulate ADR operations and ensure outer space as a “peaceful environment in the sense of a broad non-harmful medium”?

To answer these questions, a key-role should be played by the mandatory international consultation in case of a potentially harmful interference with activities in the peaceful exploration and use of outer space, which could deny access to outer space.

In effect, the increased accessibility of space technology has led to a deep diversification of space actors and space assets. As a result, outer space is increasingly becoming fundamental part of states infrastructures. Furthermore, the fundamental role of space-based assets in the essential fields of security, global communication and navigation, weather forecasting, and data transfer, weave the globe’s highly complex $78 trillion economy together.69 In the near future, access to and use of outer space could become increasingly exploitable by individuals. This prediction is substantiated by the development of commercial space flights and sub-orbital or orbital space tourism activities.70

It could be argued that the principles laid down by Article I and Article IX have progressively assumed greater value as access to outer space has become essential to states, and even to individuals.

The mandatory international consultation clause in the event of ‘harmful contamination of outer space’ or ‘harmful interference of outer space activities’ could be the instrument to deal with space debris in the present time. This is even more important considering that collisional cascading, known as the Kessler Syndrome, could render some orbits unusable for centuries,71 denying access, use, and exploration of outer space.

A discussion at international level would also minimize the threat of space weaponization, which would emerge eventual unilateral removal operations carried out by different states.

However, this matter will show all its complexity on the occurrence of broad international consultations concerning active debris removal. Which criteria for removal could be relevant?

In this respect, large-scale and small-scale removal operations bear different consequences and conclusions.

Large-scale removal operations will meet hard legal hurdles, requiring multiple authorizations by the states owners of the space objects, or at least multiple transfers of jurisdiction and control over the same objects to the entity or state that will conduct the removal. In addition, this approach may not be effective. In fact, not all debris are trackable, for each tracked debris there are 30–50 untracked objects in the centimeter range presenting a real danger to space assets.72

In pursuing this approach, attention would be concentrated on the removal of tracked and catalogued objects instead of addressing the uncatalogued “lethal population” of debris. Thus, in the discussion of large-scale removal, security issues need to be addressed, making harder the conclusion of an agreement.

On the other hand, small-scale removal and improved compliance with the IADC Space Debris Mitigation Guidelines, especially with the rule establishing a maximum of 25 years lifetime limit after which the space object should be re-entered in the atmosphere, could be effective and may constitute a first step toward a more general approach.

As has been demonstrated, complete compliance with the debris mitigation rules plus removal of five objects per year would prevent the number of catalogued fragments from increasing.73 Broad international consultation in the event of ‘harmful contamination of outer space’ or ‘harmful interference of outer space activities’ posed by space debris could be the context in which states agree on this selective approach by removing a few objects per year.

In the terms of Article IX, international consultations should be requested when a state “has reason to believe that an activity or experiment planned by it or its nationals in outer space, including the Moon and other celestial bodies, would cause potentially harmful interference with activities of other States Parties in the peaceful exploration and use of outer space” or when a state “has reason to believe that an activity or experiment planned by another State Party in outer space, including the Moon and other celestial bodies, would cause potentially harmful interference with activities in the peaceful exploration and use of outer space, including the Moon and other celestial bodies”.

Article IX is guided by principles of “cooperation and mutual assistance” with “due regard to the corresponding interests of all other States Parties to the Treaty”. Even if Article IX has a lack of specificity and does not describe what constitutes “harmful interference” and does not designate an agency to which States should turn for this evaluation, the international consultation clause should be interpreted, ad minimum, as requiring contact with other States Parties to the Treaty whose peaceful explorations and use of outer space would experience potentially harmful interference.

This could be a ‘step by step’ method to reach agreement on the removal of a few objects per year and to construct a consensus for future agreement on comprehensive cleaning operations, targeting catalogued and uncatalogued objects, since the technology to achieve this objective could be soon available.74

#### Solves warming – the counterplan’s reforms avoid any solvency deficit.

Morgan ‘11 (John Morgan, PhD in physical chemistry, runs R&D programmes at a Sydney startup company, research experience in chemical engineering in the US and at the Commonwealth Scientific and Industrial Research Organisation, Australia's national science agency, 10/8/11, “Low intensity geoengineering – microbubbles and microspheres,” http://bravenewclimate.com/2011/10/08/low-intensity-geoengineering-microbubbles-and-microspheres/)

Is there another way to look at this? The Achilles heel of the hydrosol approach is the short bubble lifetime. But are there other ways to brighten water? Are there any other micron sized light scattering particles cheaply available in prodigious quantities, which float in water and don’t dissolve? It turns out the answer is yes. Synthetic latex is produced on a huge scale – 1010 kg in 2005. A latex is a dispersion of polymer microspheres in water (Figure 5). The particle size is typically around 0.1 – 0.5 μm. The polymer content is high – about 50% by weight. And its cheap – a bit over a dollar per kilo wet. It looks like a bright white opaque liquid, like wood glue, which is a polyvinylacetate latex. Its a bulk commodity used in adhesives, paper coatings, paint and many other applications. The common polymers are acrylates, polystyrene and its copolymers, PVA, and others. These polymers themselves are inert and non toxic. Whether they present any physical risk to the biota needs to be determined but given the small particle size and low concentration in a milieu already loaded with natural micro- and nanoparticles it seems low risk. The main safety concern in my opinion would be any residual monomers, which are toxic. But these can be eliminated, certainly to the point where these materials can be safely unleashed on the public as paints and glues. The chief virtues of latex particles over bubbles is **they don’t dissolve, they don’t coalesce, they are durable, and they can be made much smaller**. They have a density of just over 1 g cm-3 so they sink, but at 0.2 micron the sedimentation velocity is too slow to matter. This presents a different problem – the chief loss mechanism now is not dissolution but loss by convection to deeper waters. Is there some way to keep these particles afloat? I think there is. Most of these latex polymers, polystyrene, for example, are hydrophobic – they’re water repellent. To keep the particles in suspension requires added surfactants, or putting electrically charged groups on the surface. But when diluted with salt water, both these stabilization mechanisms fail. **Without stabilization a polystyrene sphere will attach to the water surface**. Breaking waves will drive them under, but rising bubbles will scavenge them back to the surface again. This mechanism is well known and extensively studied in the mineral separation process of flotation, where particles of mineral ores are recovered from slurries by attachment to rising bubbles. The natural bubble population from breaking waves could keep even submicron particles concentrated at and near the ocean surface (Figure 6). The use of latex technology opens other doors for engineering particle properties. For instance, rather than producing a particle composed of a single polymer, its possible to construct a particle with two different polymers in a core-shell morphology, or even hollow particles. Such particles can have much higher scattering power than simple spheres, and are also made in bulk at commodity prices. Indeed, they are used as opacifiers in paint. We could paint the oceans white. Lets run the numbers on this and ask, what would it take to reverse current warming? First we need to know how much light these particles scatter back to space. I used Mie theory to analyse scattering of 500 nm wavelength light (roughly the solar peak) from 0.1 μm diameter polystyrene spheres, as if the sun were overhead. The back scattering from these very small particles is intense – 42% of overhead light returns to space. And this is just direct scattering. Some of the light that scatters forward will scatter off a second particle, and a third. **Multiple scattering will see more than 42% of light returned to space.** Since these particles attach to the surface, lets consider, for the moment, a monolayer on the water surface. This requires 1014particles per square metre, with a volume of 5.2×10-8 m3 per m2(or 5 parts per billion of the top 10 m, for comparison with Seitz’ figures). Polystyrene has a density of 1050 kg m-3, so that’s a mass of 55 mg m-2. Over 3.16×1014 m2 of ocean that’s 1.7×1010 kg polymer. What would this do to the earth’s energy balance? Average insolation (accounting for cloud cover [Jin et al. 2002, cited by Seitz]) is 239 Wm-2. The monolayer cross sectional area fraction is pi/4. So the energy returned by direct overhead scattering is about 78 W. That’s huge compared to the current CO2 forcing of about 2.25 Wm-2. Modelling reported by Seitz indicates an increase of ocean albedo of 0.05 translates to an increase of planetary albedo by 0.031 [Seitz 2010; Figure 5]. So I’ll assume planetary albedo increase is 60% of the ocean albedo increase, which means we need ocean backscattering of 3.75 Wm-2. **We would only need 4.8% of a monolayer to offset current CO2 forcing** (ignoring the contribution from multiple scattering). 4.8% of a whole ocean monolayer is 8.3×108 kg of dry polymer, or about 1.7×109 kg wet latex. At say $1.20 per kg, this would cost $2.0 billion and account for 17% of 2005 global production capacity. This is, surprisingly, well within reach. $2.0b to reverse global warming is cheap. Restricting dispersal to the mid latitudes where the greatest effect is achieved, using core-shell latex technology, and properly accounting for multiple scattering would see this cost drop even further. Annual growth in latex production grew organically by 4.5% per annum between 2000-2005. Ramping production by 17% would be completely feasible. The ongoing cost depends on the residence time of the particles at the ocean surface. Equatorial currents run at about 1 ms-1, which would imply a traversal time of about 1 year for the Pacific ocean. Mid latitude the currents are much slower. The latex particles themselves will degrade in the environment, and there will be losses by association and entrainment in a complex marine environment. But let’s provisionally estimate a cost of $2b per year. This is significantly cheaper than, say, stratospheric sulfur aerosol injection which is estimated at $25-50b per year, let alone space sunshades. And it doesn’t require exotic engineering, enabling R&D, or orbital launches – it uses existing materials at a rate well inside existing production capacity. Conclusion So consider this final elaboration of Russell Seitz’ bright idea: 0.1 μm diameter latex particles, possibly hollow, or of core-shell morphology, bearing a conventional stabilization system that is inactivated in salt water ensuring that the particles are retained at and near the surface, are produced in bulk using about 17% of existing production capacity and using commercial recipes, and are sprayed onto the sea from tanks aboard ships or crop dusting aircraft, oil rigs, and other structures, in the mid latitudes. For a cost in the order of a mere $2b per year **we could offset current global warming**, subject to the many disclaimers and qualifications discussed above, and many others not mentioned. More limited, local applications, such as the direct cooling of coral reefs as envisaged by Seitz for the microbubble concept, are also possible.

## DA – Space Col

#### Space col only happens with space tourism – it’s key to setting up a space economy

Hopkins 08 [Mark Hopkins, Senior Vice President and Senior Operating Officer of the National Space Society. Hopkins built and led the political efforts of L-5 and NSS for 18 years through 1997. He founded Spacecause and Spacepac and served as President of Spacecause for 10 years and Chairman of Spacepac for 16 years. Senior Vice President and Senior Operating Officer of the National Space Society) "The Space Movement: Space Settlement and Space Tourism," National Space Society - Working to Create a Spacefaring Civilization, Winter-2008] SM

Space settlement proponents and space tourism proponents make up two substantial groups that have significant overlap. The goals of both are mutually reinforcing. The members of the two groups are forward looking, dynamic, energetic, enthusiastic, motivated, and strongly pro-space. Part of the longterm NSS strategy is to broker an ideological marriage between the two. This is a major reason why Ad Astra places substantial emphasis on the issues of both. Such a marriage would not only be beneficial to space settlement and space tourism, but also to humanity’s future in space.

Space settlement requires a viable space economy to generate jobs for space settlers. Earth’s history has demonstrated that an economy based on free enterprise is superior to other types of economies, such as those totally controlled by a government. Thus for space settlement, we want a free enterprise space economy. Such an economy would also provide enormous benefits for those who remain on Earth.

The major approaches to creating a free enterprise space economy are top-down, bottom-up, and then some various combinations of the two. In the topdown case, the government develops the technology, and when it becomes profitable, it is turned over to the private sector. The early history of communication satellites is a good example of this.

Space tourism is an example of the bottom-up approach. Private enterprise develops the technology with little help from the government beyond friendly regulation and possibly tax policy. Space tourism and, more generally, the entrepreneurial space sector (which includes the new entrepreneurial launch companies) will expand beyond its current near low-Earth orbit focus deeper into space. This expansion will be increasingly conducive to space settlement.

A successful space tourism industry will create political pressure for the government to do more to promote a space economy via both the top-down and bottom-up approaches. Indeed, the potential of entrepreneurial space has already inspired NASA’s Commercial Orbital Transportation Services (COTS) program. This $500-million program will partially pay for the entrepreneurial development of a new launch vehicle to provide transportation to the International Space Station and significantly lower launch costs.

However, space tourism has a problem. Due to high ticket prices, space tourism is open to the attack that it is a dangerous, elitist frivolity for the rich. Such attacks have already been made. When the first tourist dies in space, the ethics of space tourism will be attacked hard and consequently will need a great deal of support. Space settlement provides a powerful defense against such attacks.

Space tourism is not just about fun for the rich. It is a noble endeavor, a major step toward space settlement broadly defined and its immense benefits for all. This is an important selling point for potential space tourists. Many former tourists to the International Space Station have mentioned that they saw their trip as a way to advance human expansion into space.

A good method for convincing people to buy something is to hit them both low and high. The low in the case of space tourism is the personal enjoyment and adventure that the tourist will experience. The high in this case is the fact that by doing something enjoyable, they will also be contributing to the noble cause of space settlement.

An ideological marriage between space settlement and space tourism supporters will benefit both partners. The success of space tourism will help develop the free enterprise space economy needed for space settlement. Reciprocally, space settlement provides a noble justification for space tourism. Such a marriage will create a powerful coalition between two of the most enthusiastic groups of space supporters to the great benefit of our cause and the future of humanity.

#### Only private sector can effectively do space exploration

Diakovska & Aliieva 20 [Halyna Diakovska and Olga Aliieva, Ph.D.s in Philosophy, Associate Professors, Donbass State Pedagogical University, “Consequentialism and Commercial Space Exploration,” 2020, *Philosophy and Cosmology*, Vol. 24, pp. 5-24, https://doi.org/10.29202/phil-cosm/24/1, EA]

The experience of the USA showed that leadership in space exploration, which is maintained solely through public funding, could be erroneous. Since 1984, the share of public funding has gradually decreased in space telecommunications, commercial space transportation, remote sensing, etc., while the share of participation of non-state enterprises has increased rapidly. A legal and regulatory framework has been modified to stimulate space commercialization. The stages of space law development are discussed in the research of Valentyn Halunko (Halunko, 2019), Larysa Soroka (Soroka & Kurkova, 2019), etc. Larysa Soroka and Kseniia Kurkova explored the specifics of the legal regulation of the use and development of artificial intelligence for the space area (Soroka & Kurkova, 2019).

As a result of changing the legal framework and attracting private investors to the space market, the US did not lose its leadership in space exploration, but rather secured it. Private investment along with government funding have significantly reduced the risk of business projects in the space industry. The quality and effectiveness of space exploration programs have increased.

In 2018, Springer published an eloquent book The Rise of Private Actors in the Space Sector. Alessandra Vernile, the author of the book, explores a broad set of topics that reveal the role of private actors in space exploration (Vernile, 2018). The book covers the following topics: “Innovative Public Procurement and Support Schemes,” “New Target Markets for Private Actors,” etc. In the “Selected Success Stories,” Vernile provides examples of successful private actors in space exploration (Vernile, 2018).

The current level of competition, which has developed on the space market, allows us to state the following fact. Private space companies have been able to compete with entire states in launching spacecraft, transporting cargo to orbital stations, and exploring space objects. The issue of mining on space objects, the creation of space settlements and the intensive development of the space tourism market are on the agenda.

In the 21st century, the creation of non-governmental commercial organizations specializing in the field of commercial space exploration, is regarded as an ordinary activity. They are established as parts of the universities around projects funded by private investors. For example, Astropreneurship & Space Industry Club based on the MIT community (Astropreneurship, 2019).

Large-scale research in the field of commercial space exploration, as well as the practical results achieved, led to the formation of a new paradigm called “New Space” ecosystem. The articles of Deganit Paikowsky’s (Paikowsky, 2017), Clelia Iacomino (Iacomino & Ciccarelli, 2018) et al. reveal its key meanings and the opportunities it offers in the space sector. The “New Space” ecosystem is a new vision for commercial space exploration. It is the formation of a cosmic worldview, in which the near space with all the wealth of its resources and capabilities, becomes a part of the global economy and the sustainable development of the society. The “New Space” ecosystem offers the following ways for commercial space exploration (Iacomino & Ciccarelli, 2018):

1. Innovative public procurement and support schemes, which significantly expand the role of commercial actors in space exploration.

2. Attracting new entrants in the space sector. First of all, these are companies working in the domain of Information and communications technology, artificial intelligence, etc. that are expanding their research in space markets. They offer innovative business models and new solutions to space commercialization.

3. Innovative industrial approaches based on new processes, methods, and industrial organization for the development and production of space systems or launchers.

4. Disruptive market solutions, which significantly reduce commercial space exploration prices, increase labor productivity, provide new types of services, etc.

5. Substantial private investment from different sources and involving different funding mechanisms. For instance, these are private fortunes, venture capital firms, business angels, private equity companies, or banks, etc.

6. Involvement of an increasing number of space-faring nations investing in the acquisition of turnkey space capabilities or even in the development of a domestic space industrial base. This expands the space markets and makes it more competitive.

The analysis of the research and advances in commercial space exploration allows us to draw the following conclusions:

1. In fact, the space market has already been created. It is currently undergoing continuous development that will integrate the resources and capabilities of the near space into the global economy over the next decade.

2. A new paradigm, denoted by the term “New Space” ecosystem, is at the heart of the created space market. The “New Space” ecosystem is a step towards the formation of cosmic thinking, in which outer space, with its resources and capabilities, is considered as a sphere of human activities.

3. Space market regulates space law, which is constantly evolving. The space law develops within the bounds of international law. In essence, the space market is integrated into the international legal field and is governed by its laws.

#### Massive spillover effects, solves resources and existential risks

Green 21 [Brian Patrick Green, director of technology ethics at the Markkula Center for Applied Ethics, Santa Clara University, “Space Ethics,” 2021, Rowman, pp. 4-5, EA]

In favor of going into space are such basics as gaining scientific knowledge and developing beneficial new technologies, both of which space exploration and use have already begun to accomplish with dramatic and sometimes unexpected effects for humankind. Scientific advancements include astronomical and cosmological knowledge from various orbiting experiments and telescopes that have let us gain unprecedented understanding about our universe. But space activities have also contributed to a great deal of scientific knowledge about our Earth, including measurements of environmental status, habitat conversion and destruction, detailed knowledge of anthropogenic climate change, and much about Earth’s chemistry and geology. We have also learned a great deal about our local planets, for example, that a runaway “greenhouse effect” in the atmosphere of Venus makes the surface scorchingly hot, while too little greenhouse effect on Mars leaves the surface quite cold. There have also been significant contributions made to medical science, especially concerning the behavior of the human body when subjected to radiation, microgravity, nutritional restrictions, and so on.

On the technological side, everything with American global positioning system (GPS), Russian Glonass, or other global navigation systems—from smartphones to military vehicles—relies on a network of satellites above us, placed there by rocketry and painstakingly tracked with instruments developed for the task. So many technologies have been pioneered by space exploration and use that it is hard to list them all, but some of the more important ones include weather satellites (which are not only convenient but also allow preparation for and evacuation from severe weather), communication satellites, solar photovoltaic (PV) cells, advances in electronics and computers, advances in materials science, and so on.

Space is also an important location for the contention of national interests in a geopolitical and military sense. As the ultimate “high ground” in battle, space allows certain asset classes such as spy satellites to exist in a position unassailable by many or most opponents. While permanent weapons stations and weapons of mass destruction are banned from space by the United Nations Outer Space Treaty (OST), 6 that has not stopped the development of weapons that are impermanent (such as missiles, missile interceptors, and antisatellite weapons) or the research and development of possible space-based weapons platforms, such as were envisioned by U.S. president Ronald Reagan’s Strategic Defense Initiative, nicknamed “Star Wars.” While military and political interests may ultimately seem to be a less noble reason to explore and use space, relative power, safety, and security certainly are very human interests and are valuable to those who feel they are being protected by them.

Space activities are also a key way of promoting international cooperation and global awareness. While the international competition of the “space race” fueled one nation all the way to the Moon, shortly afterward, the Apollo-Soyuz program announced a thawing of this competition and commenced a period of cooperation between the United States of America and the Union of Soviet Socialist Republics. Currently the International Space Station continues this cross-national cooperation in space, with five space agencies (representing Canada, the European Space Agency nations, Japan, Russia, and the United States) participating. In addition to cooperation in space exploration itself, the perspective given from space has itself helped to produce some feelings of unity on Earth, with the famous “Blue Marble” and “Earthrise” pictures showing Earth’s oneness and scientific discoveries supported by space science, such as those related to climate change, helping to promote international cooperation to address these problems.

Gaining access to new critical resources may be another reason to go into space. Earth is a finite planet, and certain elements on Earth are very rare in the planetary crust, particularly platinum group metals that are very dense and siderophilic (iron-loving) and so have tended to sink toward the core over the natural history of the planet. However, asteroids and other objects in space (for example, planets, comets, and moons) can sometimes have these elements in abundance and in more available locations, making them potentially excellent sources for these valuable materials. Now-defunct asteroid-mining startup Planetary Resources once estimated that one “platinum-rich 500 meter wide asteroid contains . . . 1.5 times the known world-reserves of platinum group metals (ruthenium, rhodium, palladium, osmium, iridium, and platinum).” 7 In addition to returning elements to a resource-hungry Earth, further exploration and development of space will require access to resources that are not purely sourced from Earth. In particular, it will be necessary to gain access to water, which is relatively rare in the inner solar system and which would be far too costly to transport in any significant amounts from the Earth’s surface.

Another reason that humans may want to explore space would be to create a “backup Earth” to hedge against global catastrophic and existential risks (risks that may cause widespread disaster or human extinction, respectively) on our home planet. 8 Earth has always been a dangerous place for humans, with asteroid impacts, supervolcanic eruptions, pandemic disease, and other natural hazards threatening civilization. Now, in addition to these natural threats, human-made hazards such as nuclear weapons, climate change, biotechnology, nanotechnology, and artificial intelligence may threaten not only the viability of technological civilization but perhaps the survival of human life itself. A serious global-scale catastrophe could set back civilization many decades or centuries, and the worst disasters could cause human extinction. In one scenario, in which 100 percent of humanity dies, all of human effort for all of history would be for nothing. However, were the same global catastrophe to happen to Earth, yet humans were a multiplanetary species with just one self-sustaining settlement off-Earth, it would not result in the end of human civilization or human extinction. Instead while the same unimaginable fate would befall the Earth (certainly no mere triviality, with perhaps the deaths of 99.999 percent of all humans and possibly the destruction of the ecosphere and everything in it), at least all of human and planetory history would not be for nothing. Human life and culture would go on elsewhere, as well as other Earth species. This is a dire fate, but less terrible than the first.

## Case

### Environment

#### Scarcity is here now. Empirics prove resource shortages don’t cause extinction. However, they ensure trade and globalization — the holdfasts of innovation and the safeguard against populism.

James 21 — Harold James; Professor of History and International Affairs at Princeton University. [Published: 4-20-2021; "Globalization’s Coming Golden Age"; *Foreign Affairs* “Trade Wars” May/June 2021; Accessed: 5-10-2021; [https://www.foreignaffairs.com/articles/united-states/2021-04-20/globalizations-coming-golden-age]//KL](https://www.foreignaffairs.com/articles/united-states/2021-04-20/globalizations-coming-golden-age%5d//KL)

THE FIRST TIME AROUND

The 1840s were a disaster. Crops failed, people went hungry, disease spread, and financial markets collapsed. The best-known catastrophe was the Irish potato famine, which began in 1845 and led to the deaths of nearly one million people, mostly from diseases caused by malnutrition. The same weather that made potatoes vulnerable to fungal rot also led to widespread crop failures and famine across Europe. In The Communist Manifesto, published in 1848, Karl Marx and Friedrich Engels articulated how global integration was driving the world toward social and political upheaval. “The development of Modern Industry,” they argued, “cuts from under its feet the very foundation on which the bourgeoisie produces and appropriates products.”

Europe was a tinderbox. In 1848, it ignited in an inferno of nationalist revolution, with populations rising up in France, Italy, and central Europe. But the economic shock of the 1840s did not reverse the course of global integration. Instead, trade expanded, governments reduced tariff barriers, capital mobility surged, and people moved across continents. Migration was not only a response to social and political immiseration; it also reflected the promise of new prosperity.

Historians now think of the second half of the nineteenth century as the first age of globalization. Food shortages highlighted the need for broad and diversified supply chains, and leaders realized that a modern state needed reliable access to supplies from beyond its borders. In the United Kingdom, the British government initially responded to the Irish famine by importing corn from outside Europe. At the time, The Economist argued that “except Russia, Egypt, and the United States, there are no countries in the world able to spare any quantity of grain worthy of mention.”

Historic ruptures often generate and accelerate new global links.

Imports, however, failed catastrophically. This was in part because the new food was unfamiliar, but above all, it was because London couldn’t work out how to pay for the goods. Trade deficits generated currency shortages, which pushed up interest rates in the United Kingdom and France. This intensified a manufacturing crisis—itself the result of a decline in purchasing power caused by surging food prices. Although the best solution was to sell more goods abroad, that would have required governments to lower trade barriers and open up their markets.

These shortages generated popular demands for more competent governments. Although it was only in 1981 that the economist Amartya Sen’s pioneering work on the 1943 great Bengal famine definitively showed that famines are often manmade, that intuition was already widely shared in the 1840s. John Mitchel, an Irish nationalist who emigrated to the United States, concluded, “No sack of Magdeburg, or ravage of the Palatinate, ever approached in horror and desolation to the slaughters done in Ireland by mere official red tape and stationery, and the principles of political economy.”

Governments everywhere eventually responded to these demands. That meant learning from successful efforts elsewhere. The United Kingdom enacted a series of civil service reforms, adopting a competitive examination process in place of arcane patronage. The most striking extension of state capacity, however, occurred across the English Channel, where Louis-Napoléon, the nephew of the emperor, was elected president of France in 1848. After a coup and a series of plebiscites advertising his competence and activism, Napoleon made himself president for life and, eventually, emperor—Napoleon III. His policies were designed to show the benefits of an efficient autocrat over divided liberal regimes. He initiated large-scale public works projects—including railroad expansions and Baron Haussmann’s famous rebuilding of Paris.

Napoleon also demonstrated his competence by negotiating the Anglo-French tariff agreement of 1860, which reduced duties on important goods traded across the channel. Other countries quickly followed suit and negotiated bilateral trade deals of their own across Europe. But even before 1860, improved communication and transportation meant commerce was surging: global trade in goods accounted for just 4.5 percent of output in 1846 but shot up to 8.9 percent in 1860.

The events of the 1840s also laid the foundation for a wave of institutional changes to address the proliferation of small states with a limited ability to deal with migration. The creation of new nation-states with novel currencies and banking systems, notably Germany and Italy, and administrative reform in the Habsburg empire—ending internal customs duties and serf labor—were all designed to push economic growth. In this context, the American Civil War and the Meiji Restoration in Japan were also nation-building efforts meant to maximize the effectiveness and capacity of institutions. The abolition of slavery in the United States and feudalism in Japan were profound social and economic transformations. Both upheavals, moreover, led to monetary and banking reforms.

Business competence was also newly in demand. In 1851, the United Kingdom celebrated its industrial strength with the Great Exhibition—an international fair intended to display British ingeniousness and mechanical superiority, as well as the virtues of peaceful commerce. Some of the most stunning products, however, were neither British nor particularly peaceful—among them, the steel cannon, invented by a German, Alfred Krupp, and the revolver, developed by an American, Samuel Colt. British observers saw continental Europeans catching up and overtaking their own country. To the British scientist Lyon Playfair, the exhibition showed “very clearly and distinctly that the rate of industrial advance of many European nations, even of those who were obviously in our rear, was at a greater rate than our own.” He went on: “In a long race the fastest sailing ship will win, even though they are for a time behind.” The event taught world leaders a powerful lesson: international trade was vital for enhancing national performance. Competition was central to generating competence.

The result was an abrupt psychological shift from catastrophism to optimism, and from despair to self-confidence. This new mood initiated the first wave of globalization—its so-called golden age, in which international trade and finance expanded rapidly. Eventually, however, this optimism gave way to complacency, then doubts about the benefits of globalization and increasing disillusion among those left behind (notably European farmers). The upswing came to an end with World War I. That conflict prompted a massive international rebuilding effort that faltered bloodily with the rise of fascism in the 1930s and the advent of World War II.

A SHOCK TO THE SYSTEM

The makers of the postwar settlement in 1945 had learned a great deal from the mistakes of the last century. They created an extensive framework of international institutions but left substantial economic control in the hands of national authorities. As a result, the end of World War II did not immediately unleash waves of capital mobility like those that had characterized the nineteenth century. Nearly three decades later, however, the dilemmas raised by shortages and scarcity that had led to earlier versions of integration finally returned—setting the stage for the current era of globalization.

In the 1970s, after two large oil price hikes, the industrialized world saw its way of life threatened. Oil prices had been stable in the 1960s, but a surge in demand taught producers that they could exploit control over the world’s most important commodity. Adding to the crunch, the first oil shock, in 1973–74, was accompanied by a 30 percent rise in wheat prices, after the Soviet Union experienced poor harvests and bought up U.S. grain to compensate. Shortages reappeared. Some oil-importing countries imposed “car-free days” as a way of rationing gasoline consumption. As states spent more on oil, grain, and other commodities, they found their balance of payments squeezed. Unable to afford vital goods from abroad, governments had to make hard choices. Many floundered as they tried to ration scarce goods: mandating who could drive cars when or struggling over whether they should pay nurses more than teachers, police officers, or civil servants.

The immediate and instinctual response to scarcity was protectionism. In the United Kingdom, where the balance-of-payments problem appeared earlier than elsewhere, the government tried a domestic purchasing campaign, supported by all the major political parties. Leaders encouraged citizens to wear stickers and badges with the Union Jack and the message “I’m backing Britain.” (The press magnate Robert Maxwell distributed T-shirts with a similar slogan, but they turned out to be made in Portugal.) In the mid-1970s, after the first oil shock, the government briefly flirted with what the Labour Party’s left flank called a “siege economy,” including extensive import restrictions. In the United States, there was acute anxiety about Japanese competition, and in 1981, Washington pressured Tokyo to sign an agreement that limited Japanese car exports. The move backfired, however. Because of the new restrictions, Japanese producers merely shifted their focus away from cheap, fuel-efficient cars and toward luxury vehicles.

Despite these gestures at economic nationalism, the oil shock—paradoxically at first—created more globalization. In conjunction with price increases, a financial revolution driven by the emergence of large international banks transferred huge surpluses accumulated by oil producers into lendable funds. The new availability of money made resources easily accessible for governments all over the world that wanted to push development and growth. International demand thus surged. In contrast, in the United Kingdom, Labour’s siege economy looked like it would cut off access to markets and prosperity.

Familiar historical forces will drive post-pandemic reglobalization.

Thus, crises in the 1970s led to the same realization as in the 1840s: openness produced resilience, and financing needed to be available for trade to expand. The eventual impact was obvious: trade in goods and services, which in 1970 had amounted to 12.1 percent of global GDP, increased to 18.2 percent by 1980. The cycle swung back to globalization once again.

Protectionism in the 1970s also triggered a discussion of whether governments were handling the crisis competently. At first, the debate was personalized and highly caricatured: in the United States, it centered on Richard Nixon’s crookery, Gerald Ford’s supposed inability to chew gum and walk, or Jimmy Carter’s micromanagement. In the United Kingdom, commentators focused on the detached bachelor existence of Prime Minister Edward Heath and then on allegations of cronyism against his successor, Harold Wilson. France went into the oil shock under the very sick President Georges Pompidou, who died of cancer in 1974. In West Germany, the revelation that Chancellor Willy Brandt’s closest assistant was an East German spy undermined the country’s reputation for competence. His successor, Helmut Schmidt, believed that Germany was returning to the chaos of the interwar Weimar Republic.

The many examples of personal incompetence in rich industrial democracies generated the thesis that such countries had become ungovernable. The political theorist Jean-François Revel concluded that democracies were perishing and that the Soviet Union was winning the Cold War. Autocracies such as Chile under Augusto Pinochet and Iran under Mohammad Reza Shah Pahlavi appeared better suited to handle modern global challenges. The autocrats lectured others about their superiority. In reality, however, they were bloody, corrupt, and, in many cases, spectacularly unsuccessful.

The real insight of the debate over administrative effectiveness was that governments could overstretch themselves by taking on too many tasks. That realization inspired a key tenet of what was later widely derided as “neoliberalism”: the belief that if governments took on microdecisions, such as determining wage and price levels (a central part of both Nixon’s and the British government’s bids to contain inflation), they risked their legitimacy and reputation for competence. Official decisions would appear both arbitrary and unenforceable because powerful groups would quickly make sure that new settlements favored their interests.

INFLATION NATION

The shortages of the 1840s and the 1970s both seemed to have an apparent cure: inflation. Inflation can help accommodate shocks, often painlessly. Because people have more cash or bank credit, monetary abundance generates the impression that they can have everything they want. Only gradually do consumers realize that prices are rising and that their money buys less.

In the 1850s, inflation may have been partially unintended. It was largely the result of the 1849 California Gold Rush, which vastly increased the world’s gold stock. Price increases were also driven by financial innovation, primarily Europe’s adoption of new types of banking that drove money creation, such as the so-called crédits mobiliers, which developed industrial lending in France and central Europe. By giving people apparently greater wealth, this increase in the supply of money (and the resulting mild inflation) helped governments appear more competent and made businesses and consumers more confident. It prompted a genuine global surge in production, which generated greater prosperity and security.

After 1971, when Nixon finally severed the link between the dollar and gold, monetary policy was no longer constrained by a metallic standard. In times of crisis, governments could now print more money to drive growth. In many countries, the immediate response to oil price increases was therefore to accommodate the shock through expansive fiscal and monetary stimulus: people could still go on buying. That reaction spurred inflation, which by 1974 had risen to 11 percent in the United States and beyond that in some other countries: in 1975, the United Kingdom’s inflation rate reached 24 percent.

Although inflation initially seemed to be the solution to the scarcity problem, it soon appeared in diagnoses of government incompetence. The economist Arthur Okun developed a popular “misery index” by simply adding inflation and unemployment. The metric became an important political weapon. The Democratic presidential challenger George McGovern used it against Nixon in 1972, Carter used it against Ford in 1976, and Ronald Reagan used it against Carter in 1980.

High inflation at first superficially stabilizes societies, but over time, it becomes a threat. Inflation often pushes interest groups—internationally, producer cartels such as OPEC, and domestically, labor unions—to mobilize, organize, and lobby in the hope of acquiring a greater share of monetary and fiscal resources. Depending on the extent of that mobilization, it can pull societies apart, as unions leapfrog each other with aggressive wage demands and inflation erodes the pay and pensions of the nonunionized and the retired. By demonstrating that governments are vulnerable to organized pressure, inflation is thus a destabilizing force in the long term. Indeed, analysts have argued that it was at least in part generalized international inflation in the 1960s that pushed oil producers to organize—leading to the price hikes of the 1970s.

Monetary experiments of this sort created demands for new ordering frameworks. After the surge in economic growth of the mid-nineteenth century, the world internationalized the gold standard to create a common framework for international payments. Although policymakers went a different route after the inflation and liberalization of the 1970s, they were also looking for a return to stability. To end the monetary disorder, central banks targeted a low inflation rate, and governments engaged in new patterns of cooperation abroad—creating the G-5 and then the G-7 and the G-20 as forums for discussing collective responses to global economic challenges. The quest for stability was also aided by the steady march of globalization. Greater global integration lowered production costs and thus helped correct the inflationary surge that initially accompanied the shortage economy. Inflation, which first fueled globalization in the 1850s, was, by the end of the twentieth century, eventually tamed by it.

PAST AS PROLOGUE

Today, the COVID-19 pandemic has produced a deep economic crisis, but it is different from many past ones. The shock is not a demand-driven downturn, like the Great Depression or the 2008 recession. Although lockdowns have interrupted supply and caused unemployment to soar, there is no overall shortage of demand. Large rescue and stimulus packages in rich countries have generated a financial buffer, and savings have shot up as people spend less. The best estimate is that in 2020, the United States piled up $1.6 trillion in excess savings, equivalent to seven percent of GDP. People are waiting to unleash their pent-up purchasing power. On top of that, finance ministers and international institutions are listening to U.S. Treasury Secretary Janet Yellen’s demand that “the time to go big is now” when it comes to fiscal relief.

Yet the current crisis does share key characteristics with the crises of the 1840s and the 1970s. The world of scarcity, for one thing, is already here. The pandemic has led to shortages of medical supplies such as face masks and glass vials for vaccine storage. Food prices have soared to their highest level since 2014—the result of a combination of dry weather in South America that has hurt wheat and soybean crops and pandemic-induced shipping disruptions. In the initial stages of the pandemic, laptops became scarce as employees scrambled to update their work-from-home setups. There is also a worldwide chip shortage, as the demand for microprocessors in medical, managerial, and leisure use has increased. Freight rates between China and Europe quadrupled at points in 2020. Steel, too, is in short supply.

Much as the crises in the 1840s and the 1970s did, the pandemic has also raised questions of government competence. At first, China seemed able to deal with the crisis better than its Western competitors—its cover-up of the severity of the pandemic notwithstanding—which prompted many observers to question whether democracies were capable of swift, effective action. Donald Trump’s presidency collapsed because of his chaotic handling of the crisis. British Prime Minister Boris Johnson faced a revolt among conservative members of Parliament because of his complex, contradictory, and constantly shifting lockdown rules. The European Commission lost credibility because of its poor management of vaccine purchases. As in the past, citizens personalized the incompetence. Americans debated, for example, how much blame to put on Trump’s son-in-law, Jared Kushner, who led part of the response. In the United Kingdom, much of the outrage focused on Dominic Cummings, the prime minister’s policy adviser, who had violated the country’s lockdown rules.

The challenge of the new upswing in the cycle of globalization will be to find ways to learn and adapt.

For other observers, the unifying theme behind the mismanagement was populism, with Trump, Johnson, Brazilian President Jair Bolsonaro, Indian Prime Minister Narendra Modi, and Philippine President Rodrigo Duterte all botching the response. But even in countries where the crisis has been handled relatively well, there have been surges of protests against the way governments have reacted to the pandemic. In Germany, “alternative thinkers” protesting new lockdown measures attacked the parliament building in August 2020. Even in Japan, where there is a long tradition of the use of face masks as a hygiene measure, a movement calling itself the Popular Sovereignty Party organized “cluster protests” again mask wearing.

Given these challenges, it’s easy to assume that governments and citizens alike would prioritize nationalization—cultivating supposedly resilient domestic supply chains to hedge against the next crisis. But that’s unlikely to happen. Instead, people are desperately looking for new leadership and new visions. As was true during previous supply shocks, leaders can make a good case for the importance of foreign models: some countries have done much better than others in dealing with the health and economic consequences of COVID-19. Although some of these countries are small or relatively isolated, by most metrics, the country with the most competent response was the biggest: China. That is not without irony, to put it mildly: the country responsible for unleashing the virus has also been a major beneficiary—with some states now looking to Beijing for leadership. But instead of condemning China’s response or demanding reparations for the pandemic’s costs, other countries should consider how to use Beijing’s example, just as the United Kingdom in the 1850s realized that it could learn from foreign producers.

NO SURPRISES

Familiar historical forces will drive post-pandemic reglobalization. In a world facing enormous challenges, not just the pandemic but also climate change, solutions are global public goods. In 1945, the architects of the postwar order believed that peace and prosperity were indivisible and could not be the property of one nation. Now, health and happiness are the same. Both are impossible for individual states or regions to enjoy alone.

Technology is also transforming a globalizing planet, as it did in the 1840s and the 1970s. In the mid-nineteenth century, the drivers were the steamship, the undersea cable, and the railroad. In the last quarter of the twentieth century, it was computing power: the first widely available personal computers appeared in the early 1980s. Today, data occupies the same position—linking the world and offering solutions to major problems, including government incompetence. New types of information might help leaders attack some of the inequalities and injustices highlighted by the COVID-19 pandemic. More automation might mean that machines can take on some of the repetitive and dangerous tasks performed by low-paid essential workers. Telemedicine and data-driven public health can trigger faster and more precisely targeted pharmaceutical or medical interventions.

As in past crises, there is also an immediate and powerful global demand for cheap and reliable products. In the mid-nineteenth century, it was foodstuffs, and in the 1970s, it was oil and commodities. In the 2020s, it is medical supplies, data chips, and rare-earth metals. To be resilient to new shocks, these commodities need to be produced and traded internationally, by a multiplicity of suppliers.

Governments and businesses also need to continuously innovate. As it did in the 1840s, isolationism today would mean cutting off opportunities to learn from different experiments. No single country, or its particular culture of science and innovation, was responsible for the development of an effective COVID-19 vaccine—one of the miracles of 2020. Success was the product of intense international collaboration. This story of innovation also applies to government competence. No state can succeed alone. Even if one particular decision is by chance spectacularly successful—say, Germany’s impressive testing record or the United Kingdom’s fast vaccine rollout—it is usually difficult to repeat that success in other policy areas. Policymakers may stride confidently past their first victory, only to slip on a banana peel.

The United States, in particular, may find this a hard pill to swallow. Americans have long been attached to the idea of their country’s superiority, akin to the belief held by the British in the mid-nineteenth century. COVID-19, like the 1840s famines and the 1970s oil shocks, presents both a crisis and a learning opportunity. The United States has coasted on the idea that the world needs the English language and the U.S. dollar. Neither of those assumptions can hold forever. Just as automatic translation technology is increasing linguistic accessibility, a different currency could become a new international standard. The dollar is not an adequate insurance policy or a viable basis for Washington to reject the need for change.

The challenge of the new upswing in the cycle of globalization will be to find ways to learn and adapt—increasing the effectiveness of government and business—without compromising fundamental values. As in the 1840s and the 1970s, financial and monetary innovation, or the tonic of inflation, will drive transformational change. Memories of crisis will push countries and governments to adapt in 2021 and beyond, just as they have before.

#### Innovation solves everything and saves billions of lives — including resource shortages.

* Solves warming, resource shortages, and natural disasters.

Kay 20 — Award-winning editor, versatile storyteller, and the founder of Hong Kong-based creative content agency Perfect Ink Media. Proven track record for creating and directing multi-platform content that balances commercial imperatives with editorial verve for media outlets and international brands. Effective team-builder and experienced trainer. [Paul Kay; Published: December 7, 2020; "When disaster strikes, innovation strikes back"; National Geographic; Accessed: April 26, 2021; <https://www.nationalgeographic.com/science/article/partner-content-when-disaster-strikes-innovation-strikes-back>]//KL

The course of human history has been shaped by many different forces, from kings and empires, to wars and treaties, to science and technology. Frequently, however, the world has been changed—or, better yet, improved—by a single idea.

Over the past 150 years alone, the invention of toilets, synthetic fertilizers, blood transfusions, and vaccines are all credited with saving more than a billion lives each1, while countless other innovations—from pasteurization to water chlorination to bifurcated needles—have saved tens of millions more. In most cases, these breakthroughs have been the result of meticulous, single-minded research to solve a specific problem, but many of the world’s most important life-saving inventions have been stumbled upon by accident, or developed for a completely different purpose than that which they would ultimately fulfill.

The laminated safety glass most commonly used in car windshields, for example, was invented when French scientist Edouard Benedictus carelessly dropped a glass flask containing cellulose nitrate, a liquid plastic that not only stopped the glass from shattering but enabled it to retain its original shape. Penicillin, meanwhile, was discovered when Scottish researcher Alexander Fleming accidentally contaminated a petri dish of bacteria he was working on, and noticed that the mold that formed prevented the bacteria culture from growing. And X-rays were a fortuitous byproduct of German physics professor Wilhelm Röntgen’s experiments with cathode ray tubes.

As science and technology have grown more sophisticated, world-changing discoveries—both deliberate and inadvertent—have become more and more frequent, with new innovations that enhance, protect or even save people’s lives appearing at astoundingly regular intervals. But just as our ability to advance or safeguard our species has grown and evolved, so too have the problems we face. For all our ingenuity, Covid-19 brought the world to a virtual standstill in the past year, highlighting the need for innovative solutions that can respond quickly to emergency situations, while the challenges posed by climate change, dwindling resources, and natural disaster events continue to loom large.

#### Shortages get populists out of office — Modi proves.

Tripathi 21 — Salil Tripathi; a Foreign Policy writer based in New York [Published: 5-12-2021; "India’s Pandemic Disaster Has Finally Slowed Modi’s Unstoppable Rise"; Foreign Policy; Accessed: 5-13-2021; [https://foreignpolicy.com/2021/05/12/india-modi-bjp-covid-pandemic-disaster-west-bengal-kerala-tamil-nadu-state-elections-anger/]//KL](https://foreignpolicy.com/2021/05/12/india-modi-bjp-covid-pandemic-disaster-west-bengal-kerala-tamil-nadu-state-elections-anger/%5d//KL)

The populist leader is blaming everyone but himself. Voters aren’t buying it.

After the spectacular failure of the U.S.-sponsored invasion of Cuba at the Bay of Pigs, then-President John F. Kennedy did the honorable thing: He took full responsibility for the fiasco. “Victory has a hundred fathers and defeat is an orphan,” he told the nation. Americans appreciated Kennedy’s candor, rewarding him with an unexpected rise in his approval ratings.

Indian Prime Minister Narendra Modi has taken the opposite path and is getting punished at the polls. Faced with an even bigger disaster—a devastating COVID-19 outbreak with a projected 1 million deaths by the end of July amid shortages of ambulances, oxygen, and vaccines—Modi is blaming anyone but himself. His lack of leadership likely played a major role in recent elections in West Bengal, India’s fourth-most populous state, where voters handed Modi’s Bharatiya Janata Party (BJP) a resounding defeat. It was the state he coveted most, and where he’d campaigned relentlessly, holding irresponsible public rallies even as the virus was multiplying across the country.

Modi has been immensely popular among Indians, but public criticism is now at its sharpest across the country. He has been absent from the public eye in recent weeks. He has continued to operate as if nothing has changed, including pressing forward with his personal prestige project of rebuilding the Indian capital with such monuments as a palatial new prime minister’s residence at a time when the country has clearly different priorities. And he hopes that the next national elections in 2024 are sufficiently far away that Indian voters will have put the trauma of the pandemic aside and returned to supporting his Hindu nationalist party. While the political opposition is still divided and not yet ready to mount a national challenge, the pandemic has opened a floodgate of public criticism unlike anything Modi has faced since he took office in 2014.

It wasn’t supposed to be like that. At the virtual World Economic Forum in January, Modi patted himself on the back and ridiculed those who had feared India would be swallowed by the COVID-19 tsunami. India was handling the crisis so well, Modi said, that it could afford to help other countries by donating vaccines, even as scientists warned about shortages in India. India’s national COVID-19 task force didn’t even meet in February or March. Lacking urgency, the government ordered vaccines several months after the United States, the European Union, Japan, and Brazil had already secured supplies. Hospitals in India had begun winding down the extra capacity they had preemptively put in place. As a result, the country was disastrously unprepared when the current crisis hit.

Modi took no blame, but now the public mood has turned from despair and sadness to anger.

But in Modi’s India, the buck keeps rolling, settling conveniently wherever the prime minister believes the blame should lie. This is hardly unusual. Modi has never failed to take credit for achievements belonging to others, nor has he accepted blame for the various disasters during his seven-year rule. Now, with the worst public health crisis for India in nearly a century, Modi’s luck may have finally run out.

#### Rising populism and decline in trade causes nuclear war.

von der Heyden 17 — Co-Chairman of the American Academy in Berlin, was awarded the Duke University Medal for Distinguished Meritorious Service, recipient of The International Center in New York's Award of Excellence, M.B.A. from the Wharton School of the University of Pennsylvania [Karl; Published: June 12, 2017; “I Survived World War II. Nationalism Is a Path to War”; TIME; [https://time.com/4815170/wwii-nationalism-donald-trump-america-first/]//CYang](https://time.com/4815170/wwii-nationalism-donald-trump-america-first/%5d//CYang)

Similarly, seventy years after World War II, millions of people in the U.S. and Europe have forgotten the lessons learned from that war and from the peace that followed. Nascent nationalist and popular movements converged in Britain to produce a vote to leave the European Union. Similar coalitions heavily influence the American political scene today, as they do in Poland, Hungary and even the Netherlands. White House communications that appear to realign foreign policy put in place over the last half-century are beginning to concern America’s allies.

I understand why the “America First” movement propagated by Donald Trump sounds patriotic to many voters, as do other movements that favor isolationism. It is natural to blame others for our failure to adjust to new technologies, to immigration and to competition from countries whose growth rates are higher than our own. But the truth is that the “America First” movement runs the risk that it could trigger a global decline in productivity. Free trade has benefitted the U.S, Europe and much of the rest of the world. Many new businesses, particularly in information technology, can now start with a global footprint on Day One instead of being confined to a local market. NATO has preserved the freedom of the Western World from Communism. It has recently become more relevant again in view of the Russia’s efforts to disrupt it.

Perhaps most worrisome is the apparent cooling of relations between European NATO allies and the United States, which has compelled German Chancellor Angela Merkel to say, “The times when we could fully rely on others are to some extent over… We Europeans must really take our fate into our own hands.”

Problems arise when we start classifying our own and other countries as “winners” or “losers.” Free trade, immigration and the treatment of refugees will never be perfect — far from it. But the alternatives of walling off people, as well as trade, are worse. Appealing to ultra-nationalist and xenophobic feelings is playing with fire. With easy access to weapons of mass destruction, the danger is greater than ever.

Growing up in Germany, I saw the dangers of fascism and nationalism. I saw leaders who only made matters worse by appealing to the majority of voters who feared minorities and foreigners. Anyone who appreciates history would know better than to make even casual references to the possibility of nuclear war.

#### We’re larger — the war involves all nuclear and great powers.

Sapiro 14 — Visiting Fellow in the Global Economy and Development Program at Brooking, former Deputy US Trade Representative, former Director of European Affairs at the National Security Council, [Miriam Sapiro; Published: September 2014; “Why Trade Matters,”; [http://www.brookings.edu/~/media/research/files/papers/2014/09/why%20trade%20matters/trade%20global%20views\_final.pdf]//RT](http://www.brookings.edu/~/media/research/files/papers/2014/09/why%20trade%20matters/trade%20global%20views_final.pdf%5d//Peninsula-RT)

This policy brief explores the economic rationale and strategic imperative of an ambitious domestic and global trade agenda from the perspective of the United States. International trade is often viewed through the relatively narrow prism of trade-offs that might be made among domestic sectors or between trading partners, but it is important to consider also the impact that increased trade has on global growth, development and security. With that context in mind, this paper assesses the implications of the Asia-Pacific and European trade negotiations underway, including for countries that are not participating but aspire to join. It outlines some of the challenges that stand in the way of completion and ways in which they can be addressed. It examines whether the focus on “mega-regional” trade agreements comes at the expense of broader liberalization or acts as a catalyst to develop higher standards than might otherwise be possible. It concludes with policy recommendations for action by governments, legislators and stakeholders to address concerns that have been raised and create greater domestic support. It is fair to ask whether we should be concerned about the future of international trade policy when dire developments are threatening the security interests of the United States and its partners in the Middle East, Asia, Africa and Europe. In the Middle East, significant areas of Iraq have been overrun by a toxic offshoot of Al-Qaeda, civil war in Syria rages with no end in sight, and the Israeli-Palestinian peace process is in tatters. Nuclear negotiations with Iran have run into trouble, while Libya and Egypt face continuing instability and domestic challenges. In Asia, historic rivalries and disputes over territory have heightened tensions across the region, most acutely by China’s aggressive moves in the South China Sea towards Vietnam, Japan and the Philippines. Nuclear-armed North Korea remains isolated, reckless and unpredictable. In Africa, countries are struggling with rising terrorism, violence and corruption. In Europe, Russia continues to foment instability and destruction in eastern Ukraine. And within the European Union, lagging economic recovery and the surge in support for extremist parties have left people fearful of increasing violence against immigrants and minority groups and skeptical of further integration. It is tempting to focus solely on these pressing problems and defer less urgent issues—such as forging new disciplines for international trade—to another day, especially when such issues pose challenges of their own. But that would be a mistake. A key motivation in building greater domestic and international consensus for advancing trade liberalization now is precisely the role that greater economic integration can play in opening up new avenues of opportunity for promoting development and increasing economic prosperity. Such initiatives can help stabilize key regions and strengthen the security of the United States and its partners. The last century provides a powerful example of how expanding trade relations can help reduce global tensions and raise living standards. Following World War II, building stronger economic cooperation was a centerpiece of allied efforts to erase battle scars and embrace former enemies. In defeat, the economies of Germany, Italy and Japan faced ruin and people were on the verge of starvation. The United States led efforts to rebuild Europe and to repair Japan’s economy. A key element of the Marshall Plan, which established the foundation for unprecedented growth and the level of European integration that exists today, was to revive trade by reducing tariffs.1 Russia, and the eastern part of Europe that it controlled, refused to participate or receive such assistance. Decades later, as the Cold War ended, the United States and Western Europe sought to make up for lost time by providing significant technical and financial assistance to help integrate central and eastern European countries with the rest of Europe and the global economy. There have been subsequent calls for a “Marshall Plan” for other parts of the world,2 although the confluence of dedicated resources, coordinated support and existing capacity has been difficult to replicate. Nonetheless, important lessons have been learned about the valuable role economic development can play in defusing tensions, and how opening markets can hasten growth. There is again a growing recognition that economic security and national security are two sides of the same coin. General Carter Ham, who stepped down as head of U.S. Africa Command last year, observed the close connection between increasing prosperity and bolstering stability. During his time in Africa he had seen that “security and stability in many ways depends a lot more on economic growth and opportunity than it does on military strength.”3 Where people have opportunities for themselves and their children, he found, the result was better governance, increased respect for human rights and lower levels of conflict. During his confirmation hearing last year, Secretary John Kerry stressed the link between economic and national security in the context of the competitiveness of the United States but the point also has broader application. Our nation cannot be strong abroad, he argued, if it is not strong at home, including by putting its own fiscal house in order. He asserted—rightly so—that “more than ever foreign policy is economic policy,” particularly in light of increasing competition for global resources and markets. Every day, he said, “that goes by where America is uncertain about engaging in that arena, or unwilling to put our best foot forward and win, unwilling to demonstrate our resolve to lead, is a day in which we weaken our nation itself.”4 Strengthening America’s economic security by cementing its economic alliances is not simply an option, but an imperative. A strong nation needs a strong economy that can generate growth, spur innovation and create jobs. This is true, of course, not only for the United States but also for its key partners and the rest of the global trading system. Much as the United States led the way in forging strong military alliances after World War II to discourage a resurgence of militant nationalism in Europe or Asia, now is the time to place equal emphasis on shoring up our collective economic security. A failure to act now could undermine international security and place stability in key regions in further jeopardy.

### Debris

**Probability – 0.1% chance of a collision.**

**Salter 16** [(Alexander William, Economics Professor at Texas Tech) “SPACE DEBRIS: A LAW AND ECONOMICS ANALYSIS OF THE ORBITAL COMMONS” 19 STAN. TECH. L. REV. 221 \*numbers replaced with English words] TDI

The probability of a collision is currently low. Bradley and Wein estimate that the maximum probability in LEO of a collision over the lifetime of a spacecraft remains below one in one thousand, conditional on continued compliance with NASA’s deorbiting guidelines.3 However, the possibility of a future “snowballing” effect, whereby debris collides with other objects, further congesting orbit space, remains a significant concern.4 Levin and Carroll estimate the average immediate destruction of wealth created by a collision to be approximately $30 million, with an additional $200 million in damages to all currently existing space assets from the debris created by the initial collision.5 The expected value of destroyed wealth because of collisions, currently small because of the low probability of a collision, can quickly become significant if future collisions result in runaway debris growth.

**Time frame – Kessler effect 200 years away**

**Stubbe 17** [(Peter, PhD in law @ Johann Wolfgang Goethe University Frankfurt) “State Accountability for Space Debris: A Legal Study of Responsibility for Polluting the Space Environment and Liability for Damage Caused by Space Debris,” Koninklijke Brill Publishing, ISBN 978-90-04-31407-8, p. 27-31] TDI

The prediction of possible scenarios of the future evolution of the debris p o p ulation involves many uncertainties. Long-term forecasting means the prediction of the evolution of the future debris environment in time periods of decades or even centuries. Predictions are based on models84 that work with certain assumptions, and altering these parameters significantly influences the outcomes of the predictions. Assumptions on the future space traffic and on the initial object environment are particularly critical to the results of modeling efforts.85 A well-known pattern for the evolution of the debris population is the so-called Kessler effect’, which assumes that there is a certain collision probability among space objects because many satellites operate in similar orbital regions. These collisions create fragments, and thus additional objects in the respective orbits, which in turn enhances the risk of further collisions. Consequently, the num ber of objects and collisions increases exponentially and eventually results in the formation of a self-sustaining debris belt aroundthe Earth. While it has long been assumed that such a process of collisional cascading is likely to occur only in a very long-term perspective (meaning a time 1 n of several hundred years),87 a consensus has evolved in recent years that an uncontrolled growth of the debris population in certain altitudes could become reality much sooner.88 In fact, a recent cooperative study undertaken by various space agencies in the scope of i a d c shows that the current l e o debris population is unstable, even if current mitigation measures are applied. The study concludes:

Even with a 90% implementation of the commonly-adopted mitigation measures [...] the l e o debris population is expected to increase by an average of 30% in the next 200 years. The population growth is primarily driven by catastrophic collisions between 700 and 1000 km altitudes and such collisions are likely to occur every 5 to 9 years.89

**No ‘space war’ – Insurmountable barriers and everyone has an interest in keeping space peaceful**

**Dobos 19** [(Bohumil Doboš, scholar at the Institute of Political Studies, Faculty of Social Sciences, Charles University in Prague, Czech Republic, and a coordinator of the Geopolitical Studies Research Centre) “Geopolitics of the Outer Space, Chapter 3: Outer Space as a Military-Diplomatic Field,” Pgs. 48-49] TDI

Despite the theorized potential for the achievement of the terrestrial dominance throughout the utilization of the ultimate high ground and the ease of destruction of space-based assets by the potential space weaponry, the utilization of space weapons is with current technology and no effective means to protect them far from fulfilling this potential (Steinberg 2012, p. 255). In current global international political and technological setting, the utility of space weapons is very limited, even if we accept that the ultimate high ground presents the potential to get a decisive tangible military advantage (which is unclear). This stands among the reasons for the lack of their utilization so far. Last but not the least, it must be pointed out that the states also develop passive defense systems designed to protect the satellites on orbit or critical capabilities they provide. These further decrease the utility of space weapons. These systems include larger maneuvering capacities, launching of decoys, preparation of spare satellites that are ready for launch in case of ASAT attack on its twin on orbit, or attempts to decrease the visibility of satellites using paint or materials less visible from radars (Moltz 2014, p. 31). Finally, we must look at the main obstacles of connection of the outer space and warfare. The first set of barriers is comprised of physical obstructions. As has been presented in the previous chapter, the outer space is very challenging domain to operate in. Environmental factors still present the largest threat to any space military capabilities if compared to any man-made threats (Rendleman 2013, p. 79). A following issue that hinders military operations in the outer space is the predictability of orbital movement. If the reconnaissance satellite's orbit is known, the terrestrial actor might attempt to hide some critical capabilities-an option that is countered by new surveillance techniques (spectrometers, etc.) (Norris 2010, p. 196)-but the hide-and-seek game is on. This same principle is, however, in place for any other space asset-any nation with basic tracking capabilities may quickly detect whether the military asset or weapon is located above its territory or on the other side of the planet and thus mitigate the possible strategic impact of space weapons not aiming at mass destruction. Another possibility is to attempt to destroy the weapon in orbit. Given the level of development for the ASAT technology, it seems that they will prevail over any possible weapon system for the time to come. Next issue, directly connected to the first one, is the utilization of weak physical protection of space objects that need to be as light as possible to reach the orbit and to be able to withstand harsh conditions of the domain. This means that their protection against ASAT weapons is very limited, and, whereas some avoidance techniques are being discussed, they are of limited use in case of ASAT attack. We can thus add to the issue of predictability also the issue of easy destructibility of space weapons and other military hardware (Dolman 2005, p. 40; Anantatmula 2013, p. 137; Steinberg 2012, p. 255). Even if the high ground was effectively achieved and other nations could not attack the space assets directly, there is still a need for communication with those assets from Earth. There are also ground facilities that support and control such weapons located on the surface. Electromagnetic communication with satellites might be jammed or hacked and the ground facilities infiltrated or destroyed thus rendering the possible space weapons useless (Klein 2006, p. 105; Rendleman 2013, p. 81). This issue might be overcome by the establishment of a base controlling these assets outside the Earth-on Moon or lunar orbit, at lunar L-points, etc.-but this perspective remains, for now, unrealistic. Furthermore, no contemporary actor will risk full space weaponization in the face of possible competition and the possibility of rendering the outer space useless. No actor is dominant enough to prevent others to challenge any possible attempts to dominate the domain by military means. To quote 2016 Stratfor analysis, "(a) war in space would be devastating to all, and preventing it, rather than finding ways to fight it, will likely remain the goal" (Larnrani 20 16). This stands true unless some space actor finds a utility in disrupting the arena for others.

#### No BioD tipping point

* Permian-Triassic extinction proves resiliency
* No data on tipping points
* Ecosystems never outright collapse
* 600 models prove no ecosystem collapse

Hance 18 [Jeremy Hance, wildlife blogger for the Guardian and a journalist with Mongabay focusing on forests, indigenous people, climate change and more. He is also the author of Life is Good: Conservation in an Age of Mass Extinction. Could biodiversity destruction lead to a global tipping point? Jan 16, 2018. https://www.theguardian.com/environment/radical-conservation/2018/jan/16/biodiversity-extinction-tipping-point-planetary-boundary]

Just over 250 million years ago, the planet suffered what may be described as its greatest holocaust: ninety-six percent of marine genera (plural of genus) and seventy percent of land vertebrate vanished for good. Even insects suffered a mass extinction – the only time before or since. Entire classes of animals – like trilobites – went out like a match in the wind.

But what’s arguably most fascinating about this event – known as the Permian-Triassic extinction or more poetically, the Great Dying – is the fact that anything survived at all. Life, it seems, is so ridiculously adaptable that not only did thousands of species make it through whatever killed off nearly everything (no one knows for certain though theories abound) but, somehow, after millions of years life even recovered and went on to write new tales.

Even as the Permian-Triassic extinction event shows the fragility of life, it also proves its resilience in the long-term. The lessons of such mass extinctions – five to date and arguably a sixth happening as I write – inform science today. Given that extinction levels are currently 1,000 (some even say 10,000) times the background rate, researchers have long worried about our current destruction of biodiversity – and what that may mean for our future Earth and ourselves.

In 2009, a group of researchers identified nine global boundaries for the planet that if passed could theoretically push the Earth into an uninhabitable state for our species. These global boundaries include climate change, freshwater use, ocean acidification and, yes, biodiversity loss (among others). The group has since updated the terminology surrounding biodiversity, now calling it “biosphere integrity,” but that hasn’t spared it from critique.

A paper last year in Trends in Ecology & Evolution scathingly attacked the idea of any global biodiversity boundary.

“It makes no sense that there exists a tipping point of biodiversity loss beyond which the Earth will collapse,” said co-author and ecologist, José Montoya, with Paul Sabatier Univeristy in France. “There is no rationale for this.”

Montoya wrote the paper along with Ian Donohue, an ecologist at Trinity College in Ireland and Stuart Pimm, one of the world’s leading experts on extinctions, with Duke University in the US.

Montoya, Donohue and Pimm argue that there isn’t evidence of a point at which loss of species leads to ecosystem collapse, globally or even locally. If the planet didn’t collapse after the Permian-Triassic extinction event, it won’t collapse now – though our descendants may well curse us for the damage we’ve done.

Instead, according to the researchers, every loss of species counts. But the damage is gradual and incremental, not a sudden plunge. Ecosystems, according to them, slowly degrade but never fail outright.

“Of more than 600 experiments of biodiversity effects on various functions, none showed a collapse,” Montoya said. “In general, the loss of species has a detrimental effect on ecosystem functions...We progressively lose pollination services, water quality, plant biomass, and many other important functions as we lose species. But we never observe a critical level of biodiversity over which functions collapse.”

### Tourism

#### 1] Space tourism doesn’t uq cause warming– space mining, colonization, etc all trigger their impact – alt cause

#### 2] Warming inevitable – even if you ignore our card, they only stop space tourism, not any of the hundreds of other underlying causes of warming like ag, fossil fuels, etc

**Plumer and Fountain ‘21**(Brad Plumer, climate reporter specializing in policy and technology efforts to cut carbon dioxide emissions. At The Times, he has also covered international climate talks and the changing energy landscape in the United States., Henry Fountain, specializes in the science of climate change and its impacts. He has been writing about science for The Times for more than 20 years and has traveled to the Arctic and Antarctica, 8-9-21, accessed on: 9-1-21, NYT, “A Major New Report Finds Some of the Devastating Impacts of Global Warming are Now Unavoidable”, [https://www.nytimes.com/2021/08/09/climate/a-major-new-report-finds-some-of-the-devastating-impacts-of-global-warming-are-now-unavoidable.html)//JMS](https://www.nytimes.com/2021/08/09/climate/a-major-new-report-finds-some-of-the-devastating-impacts-of-global-warming-are-now-unavoidable.html)/JMS)

Humans have already heated the planet by roughly 1.1 degrees Celsius, or 2 degrees Fahrenheit, since the 19th century, largely by burning coal, oil and gas for energy. And the consequences can be felt across the globe: This summer alone, blistering heat waves have killed hundreds of people in the United States and Canada, floods have devastated Germany and China, and wildfires have raged out of control