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### 1

#### Interp: “Appropriation of outer space” by private entities refers to the exercise of exclusive control of space.

TIMOTHY JUSTIN TRAPP, JD Candidate @ UIUC Law, ’13, TAKING UP SPACE BY ANY OTHER MEANS: COMING TO TERMS WITH THE NONAPPROPRIATION ARTICLE OF THE OUTER SPACE TREATY UNIVERSITY OF ILLINOIS LAW REVIEW [Vol. 2013 No. 4]

The issues presented in relation to the nonappropriation article of the Outer Space Treaty should be clear.214 The ITU has, quite blatantly, created something akin to “property interests in outer space.”215 It allows nations to exclude others from their orbital slots, even when the nation is not currently using that slot.216 This is directly in line with at least one definition of outer-space appropriation.217 [\*\*Start Footnote 217\*\*Id. at 236 (“Appropriation of outer space, therefore, is ‘the exercise of exclusive control or exclusive use’ with a sense of permanence, which limits other nations’ access to it.”) (quoting Milton L. Smith, The Role of the ITU in the Development of Space Law, 17 ANNALS AIR & SPACE L. 157, 165 (1992)). \*\*End Footnote 217\*\*]The ITU even allows nations with unused slots to devise them to other entities, creating a market for the property rights set up by this regulation.218 In some aspects, this seems to effect exactly what those signatory nations of the Bogotá Declaration were trying to accomplish, albeit through different means.219

#### Violation: they ban asteroid mining which is temporary

#### Standards:

#### 1] Limits and ground: the aff interpretation explodes the topic to allow any aff about temporary use such as extraction, colonization, and exploration, which structurally alters the neg research burden because there’s a qualitative difference between appropriation of outer space and of temporary use.

#### 2] Precision: court rulings say that appropriation means permanent invasion. Appropriation should not get confused with common definition because this is court ruling and is used in law which o/w on precision

#### Topicality is a voting issue because topicality indicts the aff’s entire advocacy.

#### Competing interpretations: reasonability is arbitrary and causes a race to the bottom because the neg doesn’t know what constitutes a “reasonable” interp when doing prep. It also collapses to competing interps because you use offense defense to determine that reasonability is good.

#### No RVIs—T is an aff burden just like inherency. It also causes a chilling effect on legitimate topicality arguments which causes proliferation of questionably topical cases.

### 2

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

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

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

#### Private sector key to Indian space efforts

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

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

#### Indian soft power and international leadership key to global cooperation and tolerance through cultural diplomacy

**Gupta 20** [(Arunima, Arunima Gupta is Principal at Network of Indian Cultural Enterprises (NICE). She holds a Master’s in International Relations from Leiden University), “Celebrating Indian Soft Power”, USC Center on Public Diplomacy, <https://uscpublicdiplomacy.org/blog/celebrating-indian-soft-power>] KZ

India is a culture-driven soft power. One example is availability and appreciation of Indian cinema as a source of recreation in the conflict-ridden Afghanistan. Another major cultural export is Indian gastronomy, be it turmeric latte sold in cafés, jackfruits used in gourmet preparations or the Australian PM Scott Morison’s display of Samosa diplomacy. Arts, fashion and handicrafts, literary works, and performing arts and tourism are other key aspects of Indian soft power. To realize and maximize the potential of such traditions and practices, it is important to develop a robust cultural creative economy, giving more and more opportunities for creative entrepreneurs to take Indian culture across the globe. This can also lead to cross-cultural cooperation and mutual learnings between cultural experts, entrepreneurs and enthusiasts from across the world. Dinesh Patnaik, the Director-General of ICCR speaking at Namaste 2020 [observed that](https://www.softpowermag.com/inaugural-session-namaste-2020/) “the soft power of a country is when its cultural assets become a subject of aspiration and admiration by the global community. India is blessed with immense cultural assets, be it Yoga, Ayurveda, literature, arts, heritage, culinary practices, sports and much more, along with being the largest democracy and, having strong institutions and leaders. When the propagation of soft power is done with the idea of fostering mutual respect, shared understanding and joint collaborations for cultural advancements between countries, it becomes the essence of cultural diplomacy.” Beyond cultural and civilizational heritage, India has been recognized for its role in addressing global challenges and being at the forefront of various development-related initiatives. Though India’s international engagement is guided by its security and strategic interests, it is also underpinned by the values of inclusivity, plurality and welfare for all. The establishing of International Solar Alliance, for example, demonstrated India’s commitment towards mitigating environmental risks through multilateral cooperation. Similarly, Indian offers humanitarian aid to smaller mainland and island economies in times of calamity, while its contributions to the UN Peacekeeping forces are amongst the highest in the world. The country’s cooperation at bilateral and multilateral forums for fighting COVID-19 through supplying hydro-chloroquine to the world as well as directing R&D efforts towards vaccine development highlight India’s contribution in the global pharmaceutical and wellness sector. Owing to these and many other contributions towards the greater good for all, India is ranked 44th out of 160 countries in the [Good Country Index](https://www.goodcountry.org/) (GCI). According to Anholt, the creator of GCI, the underlying idea is that in the ongoing contest for soft power in the world where countries increasingly seek to lead and steer conversations around power dynamics, there is an increasing desire and necessity to connect with each other’s culture and communities. Speaking on the theme India’s Global Connect at Namaste 2020, Anholt [explained that](https://www.softpowermag.com/event/indias-global-connect/) the ‘goodness’ of a country is determined by its multilateral engagement and cooperation in addressing common global challenges. Higher levels of involvement build positive perceptions about the country that in turn invite greater foreign investment and visitors, thus contributing to the country’s soft power and reputation in the eyes of common citizens.

#### International cooperation key to solving bioterror and health crises

**Roffey et al 02** [(Roger, Swedish Defence Research Agency, Division of NBC-Defense, Umeå. Kurt Lantorp, Department of Infectious Disease Control, Jönköping. Anders Tegnell, Center for Microbiological Preparedness, Swedish Institute for Infectious Disease Control (SMI), Solna. Frederik Elgh, Swedish Defence Research Agency, Division of NBC-Defense, Umeå.) “Biological weapons and bioterrorism preparedness: importance of public-health awareness and international cooperation”, ScienceDirect, 8/2002 [https://www.sciencedirect.com/science/article/pii/S1198743X14626410#](https://www.sciencedirect.com/science/article/pii/S1198743X14626410)!] KZ

Coordination and communication also need to be strengthened, to minimize response times. If a bioterrorist event is suspected, established communication must be among hospital personnel, local and central healthcare departments, specialized laboratories, central and regional authorities for disease surveillance, and police and rescue services. A biological attack will also require of preservation evidence (at the scene of a crime), a unified command system, and the need to protect emergency responders against possible secondary devices intentionally placed to maim or injure them [19,20]. The management of the disease might not follow normal procedures, since diagnostic laboratory confirmation might take too long. Instead, it will be necessary to initiate a response based on the recognition of high-risk syndromes. Epidemiologic principles must be used to assess whether a patient’s presentation is typical of an endemic disease or is an unusual event that should raise concern [21]. There should also be specialist teams on standby that can rapidly analyze any potential threat and give recommendations to responsible authorities. After an incideSic. xnt, there might be a need for decontamination of the affected area, depending on the type of agent and the quantity released; this is also an area for international cooperation, as expertise is not always available in the country under attack. From a European perspective, it can be questioned whether each country can afford or be motivated to set up qualified rapid response teams that could, at short notice, be deployed to the scene of a bioterrorist attack. Perhaps this could be one area for cooperation between countries. What could be a realistic goal for such teams in a European context? In the area of research and development, to enhance our knowledge of agents of concern and to develop rapid methods for identification and detection of agents, international cooperation is vital, given today’s scarce economic resources. Another area for cooperation across borders is the training of personnel in handling situations involving the threat or use of biological warfare agents.

#### Bioterror causes extinction

Krstić '17 [Marko; January 2017; assistant professor of microelectronics and physics at the University of Belgrade, PhD in Electrical Engineering and Computer Science from the University of Belgrade; "Tendency of using chemical, biological, radiological and nuclear weapons for terrorist purposes," Military Technical Courier, Vol. 65, No. 2, p. 481-498] SD

The studies of a few cases of earlier CBRN actions have led experts to identify the key characteristicsof terrorist groupsthat could potentially have an interest to use theseweapons. It is thought that conservatism is inherent in terrorist organizations, but it must not be forgotten that some terrorists are inclined toinnovationsin weapons and tactics**,** as well as to taking risksin actions or in the choice of weapons**.** Many experts agree that most terrorist organizations want to use proven methods to achieve desired effects. Innovations, especially in the field of CBRN weapons, often indicate terrorists are likely to be led by other factors rather than by pure curiosity and desire to experiment. For some individuals, repression and democratic and strong rule of law are positive determinants of the emergence of CBRN actions which points to a new and more complex global security environment with an increasing risk of terrorists trying to perform a CBRN attack. It is a frightening fact that a single terrorist or isolated terrorist group could improvise a biological weaponor use other ways to spread anthrax, smallpoxor other biological agents and thereby cause mass casualties and destroy the health care system of a state. CBRN weapons are secretly shipped to terrorists or hostile governments and represent a significant and growing threat to many countries. Although the threat of CBRN attacks is widely recognized as the central issue of national security, most analysts assume that the primary danger is a threat of the military use of these weapons in conventional wars with traditional military means while the threat of covert attacks, which include terrorism**,** is rashly and unfairly neglected. Covert attacks are difficult to deter or prevent and CBRN weapons suitable for this type of attack are available to a growing number of enemy states and groups. At the same time, restrictions on their use appear to be diminishing, and so-called new terrorists do not always escalate and become apparent only by using unconventional weapons. These weapons are easily spread or transmitted from person to person, have a high mortality rateand a potential impact on public health, causing mass casualties that can crush health systems and cause public panic and social disruption, thus requiring special efforts to suppress them. When assessing the threat of CBRN weapons, we should take into account the change in capacity to carry out terrorist attacks that are on the rise among countries and non-government elements. Analysts believe that the fear of chemical and biological terrorist attacks is excessive, they point out that, in the past, very few attacks involved these weapons, and even those few attempts that have occurred were mostly thwarted by the authorities. A relative ease with which biological weapons can be obtained, along with other current changes and turbulences in the world, sets the stage for another type of warfare in the 21st century. The potential for CBRN terrorism has widely grown since 11 September, when some of these materials were used. The danger of terrorist use of nuclear weapons and other weapons of mass destruction represents a very serious threat for many countries; if a terrorist group could gain access to this weapon, it is highly likely it would use it, or threaten to use it. Although there is very little information on terrorists and their ability to come into possession of nuclear weapons or on their intentions to get them, the risk of CBRN weapons has certainly increased since the terrorists started to become more familiar with these agents and their harmful consequences. Discovering the nature of the threat of biological weapons, as well as the appropriate response to them requires an emphasis on the biological characteristics of these instruments of war and terror. Preparing for a terrorist attack may seem daunting and there are a small number of people with practical experience and a good knowledge of CBRN weapons, because until recently there was no need to own them. In the past, most of the planning regarding emergency response to terrorism concentrated on the concerns of open attacks (bombing). However, the threats of CBRN weapons are taken seriously, especially in the USA, where media, fascinated by new weapons of mass destruction, encourage a growing fear for public safety. Terrorists who have significant human and material resources are much more likely to realize their intentions than lone perpetrators or small terrorist groups. A CBRN terrorism threat is certainly a matter of concern; however, terrorists will face many obstacles in the implementation of an attack of this kind. This includes the acquisition of materials and preparation for spreading them as well as a selection and a survey of a chosen objective and a correct dose required to achieve a desired effect. The growing threat of CBRN terrorism Terrorism can be defined as a deliberate act of violence intended to cause damage, but also to create an appropriate political and ideological situation, so that the use of these non-traditional weapons of terror outside the context is obvious, and the goals will not be military, but civilian ones (Bioterrorism, chemical weapons, and radiation terrorism, nd). Toxic substances, regardless of whether they are of animal, vegetable or mineral origin, were used throughout the history for political assassinations and sabotage; despite the risk of severe penalties, the prospects for success favoured the use of toxic substances. Such use has always been reduced, however, since only a small number of people had access to substances and possessed the ability of learn how to use them (Pascal, 1999). CBRN weapons are rightly viewed with a special sense of horror, their effects can be devastating and indiscriminating, and they take the most stringent toll among the most vulnerable population, non-combatants (e.g. a biological attack cannot be detected sufficiently fast after the disease spreads through the population). Moreover, chemical and biological weapons are a particularly attractive alternative for groups that do not have the ability to produce nuclear weapons, and this risk raises complex but important ethical issues (London, 2003). The common name for CBRN terrorism which causes the death of a large number of people, large scale damage and a strong echo worldwide is post-industrial or hyper-terrorism. This means that non-state elements possess and dispose of assets that were previously held only by states, but unlike them, which often fear reprisals after WMD attacks, terrorists, having no geographical location, are ready to use WMD with much less scrupulousness and fear (Kurmnik, Ribnikar, 2003). Some authors have described the factors that make chemical, biological, radiological and nuclear terrorist attacks in many ways unique and demanding, such as an element of surprise, invisible agents, ordnance, the risk of repetition and new types of risks (Ruggiero, Voss, 2015). In the past 30 years, the use of CBRN weapons has become a major concern for many nations around the world. The public has become insensitive to traditional terrorist attacks that seem to be a less efficient way for terrorist organizations to achieve their goals. What causes shock and fear is actually presenting the properties of weapons which can be used by terrorist organizations to enhance their efforts and the effectiveness of attacks. CBRN terrorism is often a synonym for weapons of mass destruction, although this form of terrorism and related incidents do not require attacks and inflicting harm to large numbers of people they do not even require deadly attacks at all. The number of studies on this type of terrorism is limited due to the lack of available data on this terrorism type. There is a very small number of databases of CBRN incidents, and even the existing ones have relatively little to do with them and they are compared to conventional terrorism (Jesse, 2012). Some experts emphasize the factors that promote such attacks and these factors include the availability of information and expertise, increased frustration of terrorists, demonization of the target population, as well as a millennial, apocalyptic or messianic vision. Experts also differ in opinion when it comes to possible perpetrators of CBRN incidents, and include religious fundamentalists and cults1 as possible perpetrators of such attacks, especially when these groups address to ethereal audience, emphasizing the hatred of unbelievers (Ivanova, Sandler, 2007). Concerns about super terrorism which involves the use of CBRN weapons are mainly focused on what terrorists can do in the context of our social reality, with an emphasis on terrorist motivations, initiatives and limitations. When considering which terrorist groups may be inclined to commit CBRN terrorism, it is important to recognize the spectrum of these acts, as well as to analyze the following categorization: (a) massive casualty events produced by conventional weapons; (b) CBRN scams; (c) conventional attack on a nuclear facility; (d) limited-scale chemical or biological attack or a radiological dispersion; (e) large scale chemical or biological attack or a radiological dispersion; and (f) CBRN strikes (super terrorism) that can lead to thousands of victims. In addition to the motivation and willingness to inflict mass casualties in any way, terrorists must have technical and financial capabilities to come into possession of material and acquire skills for these types of weapons and materials and carry out a successful attack. Chemical and biological weapons can pose a risk to terrorists thus deterring them from using such weapons (Post, 2005, pp.148-151). The possibility that terrorists use chemical or biological substances may increase over the next decade, according to US intelligence agencies. According to CIA2, an interest among non-state actors, including terrorists, for biological and chemical materials is real and growing, and the number of potential perpetrators is increasing. The agency also noted that many of these groups had developed an international network and did not need to rely on state sponsors for financial and technical support. However, it is believed that it is less likely that terrorists would choose chemical and biological weapons over conventional explosives, because these weapons are difficult to control and their results are unpredictable (Condesman, Burke, 2001). The risk of CBRN weapons is growing since terrorists are better acquainted with these agents and their potential for causing harm3. These agents possess desirable characteristics as **weapons** of terror; they are biologically invisible to the naked eye, odorless and potentially lethal in the form of particles; natural organisms are so readily available, and can be "camouflaged" in natural disasters and used to spread fear and various diseases. Chemical agents quickly attack the critical physiological centers of the body, disabling or killing the victim. Biological and chemical weapons require the application of huge amounts of resources and result in different effects, causing fear and panic in the contaminated areas. Often referred to as "weapons of mass destruction", but, in medical terms, they are weapons of potential mass casualties because they can lead to massive death toll in the absence of preventive measures and timely response (Meyer, Spinella, 2014, pp.645-656). "Bioterrorism is the intentional use of microorganisms or toxins derived from living organisms used for hostile purposes intended to cause disease or death in man, animals and plants, on which they depend". The threat of bioterrorist attacks is real, and each individual is a potential terrorist, when terrorists are "invisible" prior to an attack which also can be "invisible" in the form of causing infectious diseases or epidemics. Citizens who are not aware they are infected are potential safety hazard and so-called dangerous bodies (Mijalković, 2011). In the last ten years, the issue of CBRN weapons has attracted the attention of experts, but a list of priorities by the heads of states has never been established. Biological weapons almost became forgotten after they had been banned by the 1972 Convention on Biological Weapons. A significant attention was paid to them during the 90s of the last century. The important thing is that biological weapons attract much less attention than other similar weapons, but probably represent the greatest danger, and in addition to their use in war, they are available as instruments of terror in peace. Some countries showed willingness to use such weapons against defenseless populations to achieve strategic objectives, and in this regard, some analysts believe that those who attacked the World Trade Center in 1993 applied cyanide on their bombs (this was not confirmed, but a large amount of cyanide was found in possession of the perpetrators). Such a group will prove to be less inefficient, because if terrorists decide to shock and surprise the government by inflicting enormous damage, CBRN weapons will become more attractive and more accessible (Bettis, 1998). Motives and forms of behavior of individuals and groups who acquired or used CBRN weapons have existed since long ago and there is no doubt that modern society is vulnerable to such attacks (Tucker, 2000). Fear of biological terrorism is certainly greater than the fear of the conventional forms of terrorism; some of these fears are justified and some are often exaggerated. Some agents are really very contagious and deadly, and if used properly, have a potential to result in casualties similar to those in a nuclear attack. Perhaps the scariest aspect of biological weapons is that the body is attacked without warning, people are afraid of the threat as it is invisible, and cannot be heard or felt. The history of warfare, terrorism and crime involving biological agents in the last century is considerably less dangerous and more deadly than the history of conventional warfare (Parachini, 2001). Today, some states and some terrorist groups can more easily overcome technological barriers due to the increased flow of information and access to previously unavailable technologies. Along with nuclear and chemical weapons, biological weapons are part of an unholy trinity of weapons of mass destruction (Davis, Johnson-Winegar, 2000, pp.15-28). The society is now faced with the threat of anapocalyptic and asymmetric war **scenario** in which kamikaze attackers are able to arm themselves with WMD4 without even having to have a "physical" weapon to create fear; they probably still prefer simple, proven methods: a stampede in an enclosed place, or just an explosive device, which will kill many people5 (Palmer, 2004, pp.3-9). Early detection and response to biological or chemical terrorism are crucial to solving this problem (U.S. Congress House, 2003, p.117).

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#### The aff is not a break from dualistic thinking but reifies it. Appeals to space as being the dominion of all humankind, free to explore for the benefit of our common heritage, promote an image of humanity unburdened by its material environment.

Ferrando 16 [(Francesca, Ph.D. in philosophy, M.A. in Gender Studies, Professor.@ NYU) “Why Space Migration Must Be Posthuman”, 2016, http://ndl.ethernet.edu.et/bitstream/123456789/76546/1/147.pdf.pdf#page=136yperlink] TDI

In 2008, NASA released an official Statement on the Environmental Impact (PEIS), which takes into consideration the environmental impact of space tech- nology on Earth, but it does not acknowledge its impact on other celestial bodies, such as the Moon or other planets of the Solar System. Critical to this type of anthropocentric and Earth-centric approach, William Kramer underlines: “there is no comprehensive process required...for assessing human impacts on those extraterrestrial environments” (2014, 216). Space technology and space-based human activity shall be analyzed from a view which takes into account their effects not only on humans and on Earth, but on outer space as well. In order to address this issue, we first need to engage with the question asked by Reinman (2009): is (outer) space an environment? If so, it shall be regulated under specific environ- mental conditions. In Reinman’s opinion, “space at large should not enjoy a moral status equal to Earth” (ibid., 86), as she grants a primacy to Earth based on bio-centric values: “In many ways Earth, with its unique, abundant life, is special. There is nothing quite like it in the Solar System” (ibid.). Although the point raised by Reinman is of key importance to our discussion, from a posthuman perspective, regarding the Earth as “special” because of its life abundance is problematic, being supported by an Earth-centric, bio-centric and quantitative principle which supremacy is not inherently justified; life itself, in fact, is a slippery concept.

The current understanding of life is merely descriptive, not definitive: the border between animate/inanimate is difficult to mark and is often transgressed.24 Viruses, for instance, exhibit some of the characteristics which are common to organic life, while they are missing others, challenging the biological concept of life itself.25 More in general, it can be stated that life is not a clearly defined notion; instead, as Michel Foucault noted: “Life...is a category of classification, relative, like all the other categories, to the criteria one adopts” (1966; Engl. Transl. 1970, 161). Going back to Reinman’s conclusions, she underlines an aspect of strategic relevance for a posthumanist sensitivity: “humans’ actions towards their surroundings will continue to affect people whether we live on Earth or in space” (2009, 86). Let’s reflect further upon this point. The non-human agency of matter (Barad 2007), as high- lighted within the frame of New Materialism, plays a key role in allowing us to recognize agency to planets, stars and asteroids. The relational onto-epistemological approach of New Materialism makes us think on the possible astro-ecological impacts of Moon mining, or of terraforming in Mars,26 on the balance of the solar system and, eventually, on their orbits. Even the environmentally-sound concept of space-based solar power (cf. Ernst 2013) should be considered from perspectives others than Earth. Object-Oriented Ontology, and in particular the notion of “Hyperobjects” (Morton 2013), highlights the material viscosity of objects whose performance exceeds both a particular space and a particular time: reading the current opening of the space market from this perspective will unmask the long-term irreversible consequences of our present actions.

Space is the next frontier, where new resources, habitats and life forms are currently being sought: in November 2015, the United States Government passed the “Commercial Space Launch Competitiveness Act “[t]o facilitate a pro-growth environment for the developing commercial space industry by encouraging private sector investment” (U.S. Commercial Space Launch Competitiveness Act 2015). Although approaching outer space as a resource may spark interest and funding, from an heideggerian perspective, it is ontologically limiting and epistemologically partial, based on an Earth-centered policy sustained by an anthropocentric Weltanschauung. Furthermore, the “Space Act” may contravene the international regulations laid down by the “Outer Space Treaty” (1967), a key document ratified by 104 countries, including the US, which still represents the legal framework for space activity. The Office for Outer Space Affairs of the United Nations summarizes the following principles as the main ones sustaining the Treaty:

the exploration and use of outer space shall be carried out for the benefit and in the interests of all countries and shall be the province of all mankind; outer space shall be free for exploration and use by all States; outer space is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means; States shall not place nuclear weapons or other weapons of mass destruction in orbit or on celestial bodies or station them in outer space in any other manner; the Moon and other celestial bodies shall be used exclusively for peaceful purposes; astronauts shall be regarded as the envoys of mankind; States shall be responsible for national space activities whether carried out by gov- ernmental or non-governmental entities; States shall be liable for damage caused by their space objects; and States shall avoid harmful contamination of space and celestial bodies. (Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space 1967)

As we can see, this document is based on the principle of the common heritage of humankind, according to which “outer space is not subject to national appropriation by claim of sovereignty”. Conceived during the Cold War, the Treaty inaugurates a post-nationalistic post-bellic approach to space, setting a new paradigm which has departed from the dualistic imprinting of “us” against “them”. Although still within an anthropocentric schemata focussed on the interests of “mankind”, the step is huge. For instance, celestial bodies shall be used “for peaceful purposes” and shall not be contaminated; astronauts are considered the “envoys” of humankind.27 The human frame has been opened and expanded: posthumanism has entered the gates to the heavens.

It is now time to consider the impact of space encountering on human identity and existential insights, by delving into the specific change of perspective brought along by space traveling. This radical shift, known as the overview effect, consists of a series of epiphanies experienced by astronauts looking at the Earth from outer space. In his book The Overview Effect: Space exploration and human evolution (1998), Frank White relates such a shift in consciousness to that specific geographical perspective, stating: “Mental processes and views of life cannot be separated from physical location” (3). Humans are embodied beings; their materiality is a process supported and deeply affected by their surroundings. White further asserts this point by emphasizing the fact that the astronauts in Earth orbits and the lunar astronauts have different types of epiphanies: “The orbital astronaut sees the Earth as huge and himself or herself as less significant. The lunar astronaut sees the Earth as small and feels the awesome grandeur of the entire universe...Both pro- grams change the astronaut’s perception of the Earth and of his or her own identity, but in quite different ways” (ibid., 36). To White, the overview effect is so significant, that he affirms: “It is possible to grasp the true implications of this evolutionary process only by seeing it from the viewpoint of the universe as a whole, and from that perspective, the Overview Effect may point to humankind’s purpose as a species” (ibid., 5). The overview effect is of key importance to space ethics, allowing us to approach the topic of space migration not only from the usual utilitarian perspective, but also from an onto-epistemological standpoint: resonating with Heidegger, space physically becomes “a way of revealing”.

#### Their view of “junk” as a threat to techno-capital expansion is an attempt to bury their co-constitutive ecology. It is only the image of the objects of our accumulation remaining to haunt us.

Ivakhiv 18 [(Adrian, Professor of Environmental Thought and Culture at the University of Vermont) Shadowing the Anthropocene: Eco-Realism for Turbulent Times, 2018] TDI

The signs are there for those who pay attention to them. Reports of melting glaciers and impending crashes. Crashes of the ocean’s fish stocks, mass extinctions on a scale not seen in 65 million years. Stock market crashes, internet seizures and data breaches, doomsday viruses online and off. Plane crashes and mysterious disappearances in Indian or Mediterranean seas. Rising sea levels and strengthening storms, with tag-teamed hurricanes battering and flooding coastal areas. Hundred-year droughts arriving in back to back years. Swirling accumulations of trash in the middles of the world’s oceans. Accumulations of toxic particles, radioactive dust, and microscopic plastic pellets in the bodies and bloodstreams of every living thing on Earth. Accumulations of space junk in the atmosphere. Mountains of waste, electronic and otherwise, building up to WALL·E-like sce- narios, but without Disney/Pixar’s (or the Buy-N-Large corpo- ration’s) interstellar cruise-ship escape.

Sooner or later, the trash will hit the fan, the crash will burst the dam, the supercollider will hit with the full force of its im- pact. The mad rush for land, for survival, for salvation, will begin in earnest, even for the most protected of us. These are among the material ecologies that make up the era tendentiously and contentiously called the Anthropocene, the New Era of the Human. There are other kinds of ecologies be- sides these material ones: social ecologies, and perceptual ecologies. I’ll explain why it’s better to think in threes than in twos, and why the social, the material, and the perceptual make a useful frame for thinking of the ecologies that constitute the world.

Our social ecologies work the same way as our material ecologies, with blowback to widening inequalities and horrific injustices coming in the form of movements of growing refugee populations—economic refugees, climate refugees, refugees from wars fought over the stakes of all these crashes and the political violence and terror that accompanies them.

Between the material and the social are the fleshy, intersensorial dynamics from which the material and the social, or the “objective” and the “subjective,” continually emerge. Drawing from the ecosophies of Félix Guattari and Gregory Bateson, I will call these our mental or perceptual ecologies. Blowback there comes as guilt, bad dreams, ghostly observances fractur- ing our sensory perceptions, inarticulate rage against those who question the tacitly held consensus. This is the hauntedness of the present by the abyss of an ungraspable and inconceivable future. It is these affective undercurrents that are our responses to the eyes of the world haunting us from out of the corners of our vision. (More on those eyes later.) They are what makes us feel that things aren’t right—a hint at the traumatic kernel of real- ity that both psychoanalyst Jacques Lacan and, with a different inflection, Buddhist philosophers have placed at the origin of the self, but which in a collective sense is coming back to haunt us globally.

We misperceive the nature of the world for the same reasons that we misperceive the nature of our selves. Every social and linguistic order interpellates its members—it shapes and hails them into existence with a call of “Hey you!” Each does it differ- ently. But over the course of the storied history of humans — not the meta-narrative of the Anthropos, just the patchy tale of humanity in its quiverings and coruscations—most such or- ders have incorporated into that interpellation some sense of responsibility to more-than-human entities or processes. In whatever way they were conceived—as spirits or divinities, or as kin, or in terms of synthetic narrative or conceptual meta- phors like life-force, the Way, the path, li and ren, 礼 and 仁, the four directions, Muntu and Ubuntu, Buen Vivir, Nepantla, some gift-giving and life-renewing sacrifice, and so on—these have typically borne a central connection to the kinds of relations we now categorize as ecological. (At least for those social orders that worked.)

Modern western capitalism has fragmented these relations, setting us up individually in relation to the products of a seem- ingly limitless marketplace. But it has left us collectively rudder- less. So if scientists, the empirical authorities of our time, tell us we are fouling our habitat, we have yet to figure out how to respond to that, at least at the global scales where most of the problems become manifest.

This is why it is the relational, more than the substantive or “objectal,” that humans, especially westerners, need to come to terms with. That is in part the argument of this book. Commodity capitalism has been profoundly successful at encouraging us to think that objects are real, and at projecting value into those objects so that they serve the needs of individuals, even if they never manage to do that (which is, of course, the point). The effects of our actions, on the other hand, are systemic and relational, and we won’t understand them unless we come to a better appreciation of how systems and relational ecologies work and of how we are thoroughly enmeshed within them.

At the same time, it is the objects that haunt us: the refuse swirling around in the middle of the Pacific, the mountains of excreted e-waste, the stuff we send down our chutes, out our drains, off to the incinerator, the river, the ocean, the atmosphere—the black holes, out of sight and out of mind, from which we hope they never re-emerge. When they do re-emerge, in our fantasies and nightmares, we reify them as the Thing, a Demon, a Host—as in Bong Joon-Ho’s thriller of that name, about a river monster embodying the legacy of industrial pollution in South Korea’s Han River. The objects become sublime. If our consumptive, commodity-captivated and spectacle- enraptured society has privileged the object over the process, the thing at the center of our attention over the relations that constitute it, this thing-centeredness should not surprise us. In part, it is an effect of the human perceptual apparatus, with its heavy reliance on vision, a sensory modality that shows clear edges to objects and that facilitates distanced observation and predation. Where traditional cultures de-emphasized the visual in favor of the auditory or multisensorial, the narrative, and the relational, societies like ours—fragmented and individualized, intensely visually mediated, and ecologically and historically disembedded societies (in the sense described by Karl Polanyi in his paradigm defining The Great Transformation)1 — push the ontological objectivism, literally the “thing-ism,” about as far as it can go.

#### Viewing humanity as distinct from and in relation to “nature” is inherently violent – concerns about purity and contamination spill into violent discourses of race, sexuality, and immigration that culminate in eugenics.

Carroll 18 [(Myles, PhD Candidate, Department of Political Science, York University, Toronto, Ontario), “Narrating technonatures: discourses of biotechnology in a neoliberal era”, Journal of Political Ecology, Volume 25 Issue 1,2018, https://journals.librarypublishing.arizona.edu/jpe/article/id/2078/

Although they may have been strategically useful for mobilizing public awareness and concern over the surreptitious introduction of GM foods into the food system, nature purity discourses are problematic for two reasons. First, appeals to nature have been used to justify racist, sexist, heterosexist and colonial systems of oppression and domination, whilst underpinning common conservative justifications for material inequality (Sturgeon 2009). Instead of being part of the struggle for a more socially just world, the nature purity side of the anti-GMO campaign acts to further entrench nature-essentialism. Central to feminist, antiracist, queer and postcolonial struggles is the destabilization and problematization of truth claims rooted in nature (Soper 1995). This is because "nature" has been used as a justification for white, male and Western superiority. The ideas that women are "naturally" more emotional, weaker, or less intelligent than men; that colonized peoples are "closer to nature" and therefore less civilized than Westerners; that the sexuality of queer people is inherently "unnatural"; that it is "human nature" to be greedy and selfish; or that "natural selection" is what determines who is rich and who is poor have long been mobilized as justifications for systemic oppression. It is not only transgenic crops that are seen as monstrous, contaminating and polluting. We must ask which forms of human corporeality and self-expression come to be similarly framed and defamed when such discourses are presented and accepted as truth.4

This semantic link between eschewing GMOs' unnaturalness and the social implications of understanding certain human subjectivities as "unnatural" or "out of place" is no more obvious than in the policies of Austria's Freedom Party. Their overall policy approach to GMOs demonstrates concern over purity, contamination, dirt; and parallels their attitudes toward immigrants. Just as they eschew the violation of the genetic purity of their crops, they do not want the genetic purity of the Austrian nation to be contaminated with foreign blood and culture. It is not hard to see in such purity-based rejections of contaminant populations, whether transgenic crops or asylum seekers, the encroaching veil of eugenics. As Haraway (1997: 61) says, "the history and current politics of racial and immigration discourses in Europe and the United States ought to set off acute anxiety ... [We] cannot help but hear in the biotechnology debates the unintended tones of fear of the alien and suspicion of the mixed." If part of the project of radical emancipatory politics has been to deconstruct and dispel the notion that there is a "natural" order that is inherently "pure", "true" and "just", then invocations of the nature-as-pure narrative run counter to that project. They reinforce the notion that there is a nature that holds the essence of truth; that governs us and dictates the contours of morality to us, and that we must accept and obey. Rather than appealing to natural essentialisms as the MAdGE campaign does, we must critique, deconstruct and interrogate such claims to nature-as-truth.

Second, nature-as-pure narratives are problematic because they prevent us from seeing how the current manifestation of GMOs is a result of contingent and mutable political economic arrangements that are themselves necessarily violent but not necessary. Outright rejections of GMOs based on their "unnaturalness" force us into a dichotomy whereby we can either have GMOs governed within the framework of neoliberal capitalism, or we must get rid of them altogether. The potential for GMOs to be incorporated into an agri-food system that is socially just is precluded from the discussion, and the tenuous and contingent link between biotechnology and neoliberalism goes unchallenged. Concerns for the ethical implications of a world where market rationality and the profit motive dictate everything and nothing is left to "nature" are understandable (see Rifkin 1997). But this is a world of our current capitalist system given technological omnipotence and ethical free-reign, and not an intrinsic consequence of technoscience itself. Moreover, while the political economic implications of such a critique may be encouraging as a warning against the long-term consequences of biotechnological capitalism, the case of Tasmania's Clean and Green policy demonstrates that these discourses can just as easily be mobilized in the interests of capital and to the cause of neoliberalization. Tasmania uses the neoliberal cultural lexicon to achieve its brand status as clean and green. Without a deeper critique of the pernicious effects of GMO agriculture as it is currently constituted under capitalism, oppositional movements that lambast GMOs' violation of nature can just as likely be the basis of a new niche-market accumulation strategy for capital as an emancipatory resistance effort against it.

While these activist groups' and political parties' rhetoric mobilize nature-culture dualisms that constitute the natural and cultural worlds as ontologically distinct and oppositional, I want to emphasize that the use of these discourses and dualisms is not some clever ploy of activists to prey on the irrational fears of unsuspecting publics, but a reflection of deeply engrained cultural beliefs about nature and our relationship with(in) it. Rhetoric situated within a nature-culture dualistic framing is not the result of any deliberate attempt by activists to exploit the strategic expediency of those discourses, even if they may ultimately be of strategic benefit. Also, it is important to note that the extent to which groups' rhetoric adheres to the framing of natural purity discourse and extends nature-culture dualistic thinking is highly variable and contradictory. Just as culture and society cannot be separated from the so-called "natural" world, neither can dualistic framings and rhetoric be separated from the cultural context from which they emanate.

It is in this way that we can understand the use of nature purity narratives as a critique rooted in what Gramsci termed "common sense." Oppositional actors articulate their concerns through the cultural lexicon thatis immediately intelligible to them, in this case, the "unnaturalness" of GMOs. Because of the cultural pervasiveness of nature-culture dualisms, this line of criticism is intuitively resonant with publics, and reflects common sense understandings of the world that do not require a deeper reflexive analysis of structural dynamics to make sense. However, though these common sense framings are thus easily accessible to publics, they prevent us from understanding underlying conditions that may ultimately be more critically problematic. For this reason, Gramsci calls for the renovation of common sense into good sense, or a critical, reflexive understanding of the underlying and relational bases of injustice and oppression. With the case of GMOs, this might include a deconstructive approach to the idea that GMOs are "unnatural" coupled with a critical political economic analysis of the way GMOs are imbricated within neoliberal capitalist power relations and the pernicious social, political and ecological consequences that may bring. Yet this is not to say that each movement falls on one side of a good sense-common sense dualism. On the contrary, real world activism often combines common sense and good sense framings, both consciously and unconsciously. Still, there are clear examples of movements that have rooted their critiques in the tangible political-economic consequences of GMOs under neoliberalism and avoided eschewing GMOs as unnatural, indicating that the distinction between common sense approaches and good sense approaches deserves analytical consideration. I will now examine these good sense approaches to anti-GMO activism.

#### The alternative is to see that nature is us—recognizing the logic of the 1AC as the primary barrier to overcoming challenges to our environment and beyond.

Baskin 15 [(Jeremy, Senior Fellow at the Melbourne School of Government where he focuses on the legitimacy and accountability of knowledge) Paradigm Dressed as Epoch: The Ideology of the Anthropocene, 2015, Environmental Values] TDI

Even the limited examples from the literature already cited suggest that the assumptions of proponents of the Anthropocene about managerialism, technology and expertise are transparent and explicit. In almost all major accounts of the concept it is assumed that responding to the end of nature, and the challenges of the Anthropocene, requires a trinity of techniques: clear management of the Earth and Earth-systems, guided by experts (and scientists/engineers in particular), using the most advanced technology possible (including large- scale technology).

The challenges themselves are typically framed by a sense of emergency. The great weight of accumulating scientific data is recruited, to show how the human species and its planet are at risk. Landscapes and seascapes are being transformed, boundaries are being breached, non-linear processes have been unleashed, system pressures are rising and tipping points are either happening or looming; and all of this is both unprecedented in human history and fundamentally anthropogenic in cause.

Certainly recognition of the made-ness of the natural world means acknowledging that this carries responsibilities for the relevant human socie- ties, even a degree of conscious management. For leading proponents of the Anthropocene, the scale of management required is commonly seen, implicitly or explicitly, as global: since we face global problems, global management is needed to run the Earth in the Anthropocene. But what does it mean to frame policies within a global, universalist goal of ‘running the Earth’, and what condition are we trying to manage it towards?

Those of a more Aidosean inclination have spoken of the need to manage a return to the Holocene, or Holocene-like conditions, since this is ‘the only global environment that we are sure is “safe operating space” for the complex, extensive civilization that Homo sapiens has constructed’ (Steffen et al., 2011b: 747). This is the best way to manage the risks we face as we increasingly cross the planetary boundaries. The Prometheans, by contrast, argue that we should manage our way towards ‘a better Anthropocene’ (Ellis, 2011). The internal logic of the argument surely lies with the Prometheans. If humanity acknowledges and embraces its role as Earth-manager, and if we are indeed ‘post-nature’ and ‘nature is us’, then it is clearly impossible to return the Earth to the Holocene (or at least it would take millennia to do so). Why not aim for a ‘better’ Earth, or a more benign climate in which Norwegians are less cold, and Saudi Arabians less hot? For our purposes, however, the point is that the Aidosean and Promethean versions differ over the direction and goals of plan- etary management, rather than the need for it.

Managing the Anthropocene is also understood to come with special responsibilities for the scientific and engineering community (Crutzen, 2002). Only they are likely to have the knowledge, data and skills required in this new Age of Humans. At one level, one should not read too much into this, since the key proponents of the concept happen to be scientists and, not surprisingly, are more alert to the extent of their own knowledge and insights. Certainly sci- entists in the Anthropocene would have a key role as diagnosticians and, with engineers, as generators of specific technologies. But there is something troubling in the idea of scientists as both informants and saviours. Whilst policy needs to be informed by science, experience teaches that we should remain wary of the idea that policy can or should be guided by the science (Jasanoff, 1990; Pielke, 2007). As we know from the ‘climate wars’, the barriers to bringing down carbon-dioxide concentrations are almost entirely related to global and local politics, vested interests, deep-rooted values, economic structures and so on. For well over a decade they have been almost entirely unrelated to there being a lack of scientific data or new technologies (see Pielke, 2007: 71–2).

Proponents of the Anthropocene almost always draw a link between the concept and the need for (or, at least, the need to research and consider) large-scale technological interventions, and, in particular, geo-engineering. Geo-engineering, or climate engineering, involves the large-scale, intentional manipulation of the climate system, to regulate the Earth’s chemistry and the global temperature. The most commonly cited scheme involves solar radia- tion management by stratospheric aerosol injection: in practice, shrouding the upper atmosphere of the planet in a fine layer of sulphuric particles, on an ongoing basis, with the aim of cooling the earth to offset the warming effects of rising greenhouse-gases. Most key articles from the scientific community which advocate the Anthropocene concept either endorse geo-engineering, call for the capability to be developed, or simply make it imaginable (for example: Crutzen, 2002, 2006; Ellis and Haff, 2009). A minority clearly find the idea uncomfortable and incompatible with planetary stewardship, even whilst re- taining it as an option (for example: Steffen et al., 2011a).

A LEGITIMATING IDEOLOGY?

We now see the emerging shape of the mainstream Anthropocene paradigm, and its narrative. The idea (and the evidence) that humanity is now the dominant earth-shaping force combines with the data showing that the condition of the patient is serious, possibly terminal. Humanity and its planet are now in a critical and exceptional state. This both generates and draws upon an attrac- tion to global-scale technological ‘solutions’ and earth management, under the guidance of the scientists/engineers best placed to understand, interpret and help shape the necessary interventions. These are responses aimed either at bringing us back from the brink, or at taking us to a new and better-managed future Earth. In both versions, the Anthropocene is both diagnosis and cure, both description and prescription.

It is important to note the deeply authoritarian and de-politicising tendencies of Anthropocene discourse. Proponents regularly talk of a ‘global sustainability crisis’ (Steffen et al., 2011b: 740) and a ‘climate emergency’, and suggest that humanity and its planet are now in ‘operating in a no-analogue state’ (Crutzen and Steffen, 2003: 253). This is not uncommon in much envi- ronmental discourse. But its effect, in the context of the Anthropocene, is that framing through exceptionality can legitimate the need for exceptional rule and authoritarian responses. This is enhanced by the promise of technology (machines, techniques, human-centred risk management) as the basis of action and ‘salvation’. The emphasis on ‘the rule of experts’, and the associated endorsement of a technocratic consciousness, depoliticises society and tends to reduce the political to the technical, justifying decisions on technical grounds. It also helps explain a related interest by many Anthropocene proponents in notions of Earth governance, which is not explored here.

This Promethean version is the one likely to be most attractive to the powerful and the privileged in the event that nature starts tipping, and as ‘the period of consequences’, to use Churchill’s memorable phrase, becomes in- creasingly apparent. It can also be thought of as ‘full-belly Anthropocene’, or the ‘Anthropocene of the rich’, to adapt Guha and Martinez-Alier’s resonant phrase (1997).7

Discourses of the Anthropocene certainly may have some ability to chal- lenge the notion of human ‘progress’ and ‘the belief systems and assumptions that underpin neo-classical economic thinking, which in turn has been a major driver of the Great Acceleration’ (Steffen et al., 2011a: 861–2). But, as a con- cept, it appears overall to legitimate the dominant order, even if unintentionally. In my argument, it does this in three major ways: by universalising/normalisng the affluent contemporary consumer as the human of the Anthropocene (thereby obscuring the social reality of unequal responsibility for impacts, and the pathological pursuit of endless and unequal growth); by its elevation and sacralisation of this particular humanity (reinserting it into nature only to reelevate it within and above it as a force of nature); and by its ability to legitimise a range of major and potentially highly dangerous interventions into the workings of the earth, and some deeply authoritarian state practices, none of which are likely to be exercised in the interests of most of the world’s people.

### 4

#### CP Text: States should restrict asteroid mining in geosynchronous orbit.

Solves first adv and sets up multilaterialism bc all their debris evidence (eg. scoles) only talks about debris causing collisions in the geostationary orbit---only need to get rid of mining there at worse and let priv companies mine anywhere else in the universe.

## Case

Vague plan texts bad---Interp: A plan text must specify to what extent they are restricting the appropriation of outer space. Violation: they defend that states should just “restrict” asteroid mining.

1. Causes shifty affs---makes them a moving target. Voter for fairness bc all neg ground is compromised by shifty 1ars that can skirt out of topic generics by “clarifying” their plan text differently in the next speech. 2. Logical policymkaing--- all policy proposals are highly specific and rely on accuracy to get votes, not catching opponents with no answers.

Justifies new 2nr arguments---because 1ar can potentially shift out of the entirety of their text, neg should be able to answer it with new nr responses for reciprocity---else, they moot the entirety of nc and I have no ground in the nr.

All sovlency and inherency specific to the US---hold them accountable to explaining solvency for all states.

#### Alt cause – broad space privatization and existing debris.

Muelhapt et al 19 [(Theodore J., Center for Orbital and Reentry Debris Studies, Center for Space Policy and Strategy, The Aerospace Corporation, 30 year Space Systems Analyst and Operator, Marlon E. Sorge, Jamie Morin, Robert S. Wilson), “Space traffic management in the new space era,” Journal of Space Safety Engineering, 6/18/19, <https://doi.org/10.1016/j.jsse.2019.05.007>] TDI

The last decade has seen rapid growth and change in the space industry, and an explosion of commercial and private activity. Terms like NewSpace or democratized space are often used to describe this global trend to develop faster and cheaper access to space, distinct from more traditional government-driven activities focused on security, political, or scientific activities. The easier access to space has opened participation to many more participants than was historically possible. This new activity could profoundly worsen the space debris environment, particularly in low Earth orbit (LEO), but there are also signs of progress and the outlook is encouraging. Many NewSpace operators are actively working to mitigate their impact. Nevertheless, NewSpace represents a significant break with past experience and business as usual will not work in this changed environment. New standards, space policy, and licensing approaches are powerful levers that can shape the future of operations and the debris environment.

2. Characterizing NewSpace: a step change in the space environment

In just the last few years, commercial companies have proposed, funded, and in a few cases begun deployment of very large constellations of small to medium-sized satellites. These constellations will add much more complexity to space operations. Table 1 shows some of the constellations that have been announced for launch in the next decade. Two dozen companies, when taken together, have proposed placing well over ~~20,000~~ [twenty thousand] satellites in orbit in the next ~~10~~ [10]years. For perspective, fewer than ~~8100~~[eight thousand one hundred] payloads have been placed in Earth orbit in the entire history of the space age, only 4800 [1] remain in orbit and approximately 1950 [2] of those are still active. And it isn't simply numbers – the mass in orbit will increase substantially, and long-term debris generation is strongly correlated with mass.

[Table 1 Omitted]

This table is in constant flux. It is based largely on U.S. filings with the Federal Communications Commission (FCC) and various press releases, but many of the companies here have already altered or abandoned their original plans, and new systems are no doubt in work. Although many of these large constellations may never be launched as listed, the traffic created if just half are successful would be more than double the number of payloads launched in the last 60 years and more than 6 times the number of currently active satellites.

Current space safety, space surveillance, collision avoidance (COLA) and debris mitigation processes have been designed for and have evolved with the current population profile, launch rates and density of LEO space.

By almost any metric used to measure activity in space, whether it is payloads in orbit, the size of constellations, the rate of launches, the economic stakes, the potential for debris creation, the number of conjunctions, NewSpace represents a fundamental change.

3. Compounding effects of better SSA, more satellites, and new operational concepts

The changes in the space environment can be seen on this figurative map of low Earth orbit. Fig. 1 shows the LEO environment as a function of altitude. The number of objects found in each 10 km “bin” is plotted on the horizontal axis, while the altitude is plotted vertically. Objects in elliptical orbits are distributed between bins as partial objects proportional to the time spent in each bin. Some notable resident systems are indicated in blue text on the right to provide an altitude reference. The (dotted) red line shows the number of objects in the current catalog tracked by the U.S. Space Surveillance Network (SSN). All the COLA alerts and actions that must be taken by the residents are due to their neighbors in the nearby bins, so the currently visible risk is proportional to the red line.



The red line of the current catalog does not represent the complete risk; it indicates the risk we can track and perhaps avoid. A rule of thumb is that the current SSN LEO catalog contains objects about 10 cm or larger. It is generally accepted that an impact in LEO with an object 1 cm or larger will cause damage likely to be fatal to a satellite's mission. Therefore, there is a large latent risk from unobserved debris. While we cannot currently track and catalog much smaller than 10 cm, experiments have been performed to detect and sample much smaller objects and statistically model the population at this size [3]. The (solid) blue line represents the model of the 1 cm and larger debris that is likely mission-ending, usually called lethal but not trackable. If LEO operators avoid collisions with all the objects in the red line, they are nonetheless inherently accepting the risk from the blue line. This risk is already present.

The (dashed) orange line is an estimate of the population at 5 cm and larger and is thus an estimate of what the catalog might conservatively be a few years after the Space Fence, a new radar system being built by the Air Force, comes on line (currently planned for 2019) [4]. Commercial companies offering space surveillance services, such as LeoLabs, ExoAnalytics, Analytic Graphics Inc., Lockheed, and Boeing, might also add to the number of objects currently tracked. Space Policy Directive 3 (SPD-3) [13] specifically seeks to expand the use of commercial SSA services.

Existing operators can expect a sharp increase in the number of warnings and alerts they will receive because of the increase in the cataloged population. Almost all the increase will come from newly detected debris [5].

The pace of safety operations for each satellite on orbit will significantly change because of the increase in the catalog from the Space Fence. This effect is compounded because the NewSpace constellations described in Table 1 will drastically change the profile of satellites in LEO. The green bars in Fig. 1 represent the number of objects that will be added to the catalog (red or orange lines) from only the NewSpace large LEO constellations at their operational altitudes. This does not include the rocket stages that launch them, or satellites in the process of being phased into or removed from the operational orbits. Neighbors of one of these new constellations may face a radically different operations environment than their current practices were designed to address.

Satellites in these large LEO constellations typically have planned operational lifetimes of 5–10 years. Some companies have proposed to dispose of their satellites using low thrust electric propulsion systems, which would spiral satellites down over a period of months or years from operating altitudes as high as 1500 km through lower orbits where the Hubble Space Telescope, the International Space Station, and other critical LEO satellites operate [6]. Similar propulsive techniques would raise replacement satellites from lower launch injection orbits to higher operational orbits. These disposal and replenishment activities will add thousands of satellites each year transiting through lower altitudes and posing a risk to all resident satellites in those lower orbits. More importantly, failures will occur both among transiting satellites and operational constellations, potentially leaving hundreds more stranded along the transit path.

#### Public sector mining thumps.

NASA 19 [“NASA Invests in Tech Concepts Aimed at Exploring Lunar Craters, Mining Asteroids,” NASA, June 11, 2019, <https://www.nasa.gov/press-release/nasa-invests-in-tech-concepts-aimed-at-exploring-lunar-craters-mining-asteroids>] TDI

NASA Invests in Tech Concepts Aimed at Exploring Lunar Craters, Mining Asteroids

Robotically surveying lunar craters in record time and mining resources in space could help NASA establish a sustained human presence at the Moon – part of the agency’s broader [Moon to Mars exploration](https://www.nasa.gov/specials/moon2mars/) approach. Two mission concepts to explore these capabilities have been selected as the first-ever Phase III studies within the [NASA Innovative Advanced Concepts](https://www.nasa.gov/niac) (NIAC) program.

“We are pursuing new technologies across our development portfolio that could help make deep space exploration more Earth-independent by utilizing resources on the Moon and beyond,” said Jim Reuter, associate administrator of NASA’s Space Technology Mission Directorate. “These NIAC Phase III selections are a component of that forward-looking research and we hope new insights will help us achieve more firsts in space.”

The Phase III proposals outline an aerospace architecture, including a mission concept, that is innovative and could change what’s possible in space. Each selection will receive as much as $2 million. Over the course of two years, researchers will refine the concept design and explore aspects of implementing the new technology. The inaugural Phase III selections are:

Robotic Technologies Enabling the Exploration of Lunar Pits

William Whittaker, Carnegie Mellon University, Pittsburgh

This mission concept, called Skylight, proposes technologies to rapidly survey and model lunar craters. This mission would use high-resolution images to create 3D model of craters. The data would be used to determine whether a crater can be explored by human or robotic missions. The information could also be used to characterize ice on the Moon, a crucial capability for the sustained surface operations of NASA’s Artemis program. On Earth, the technology could be used to autonomously monitor mines and quarries.

[Mini Bee Prototype to Demonstrate the Apis Mission Architecture and Optical Mining Technology](https://www.nasa.gov/directorates/spacetech/niac/2019_Phase_I_Phase_II/Mini_Bee_Prototype)

Joel Sercel, TransAstra Corporation, Lake View Terrace, California

This flight demonstration mission concept proposes a method of asteroid resource harvesting called optical mining. Optical mining is an approach for excavating an asteroid and extracting water and other volatiles into an inflatable bag. Called Mini Bee, the mission concept aims to prove optical mining, in conjunction with other innovative spacecraft systems, can be used to obtain propellant in space. The proposed architecture includes resource prospecting, extraction and delivery.

#### Asteroid mining fails---their UQ ev is only specific to the US, not the all states.

Fickling 20 [(David, Bloomberg opinion columnist, previously at Guardian and Financial Times, MA in Eng Lit from Cambridge) “We’re Never Going to Mine the Asteroid Belt,” Bloomberg Opinion, December 21, 2020, <https://www.bloomberg.com/opinion/articles/2020-12-21/space-mining-on-asteroids-is-never-going-to-happen>] TDI

It’s wonderful that people are shooting for the stars — but those who declined to fund the expansive plans of the nascent space mining industry were right about the fundamentals. Space mining won’t get off the ground in any foreseeable future — and you only have to look at the history of civilization to see why.

One factor rules out most space mining at the outset: gravity. On one hand, it guarantees that most of the solar system’s best mineral resources are to be found under our feet. Earth is the largest rocky planet orbiting the sun. As a result, the cornucopia of minerals the globe attracted as it coalesced is as rich as will be found this side of Alpha Centauri.

Gravity poses a more technical problem, too. Escaping Earth’s gravitational field makes transporting the volumes of material needed in a mining operation hugely expensive. On Falcon Heavy, the large rocket being developed by Elon Musk’s SpaceX, transporting a payload to the orbit of Mars comes to as little as [$5,357 per kilogram](https://www.spacex.com/media/Capabilities&Services.pdf) — a drastic reduction in normal launch costs. Still, at those prices just lofting a single half-ton drilling rig to the asteroid belt would use up the annual exploration budget of a small mining company.

Power is another issue. The international space station, with 35,000 square feet of solar arrays, generates up to 120 kilowatts of electricity. That drill would need a [similar-sized power plant](https://www.rocktechnology.sandvik/en/products/exploration-drill-rigs-and-tools/compact-core-drill-rigs/) — and most mining companies operate multiple rigs at a time. Power demands rise drastically once you move from exploration drilling to mining and processing. Bringing material back to Earth would raise the costs even more. Japan’s Hayabusa2 satellite spent six years and 16.4 billion yen ($157 million) recovering a single gram of material from the asteroid Ryugu and returning it to Earth earlier this month.

**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