### 1

#### Un-disclosed affs are a voting issue – Testing – they make it impossible to adequately test the aff without adequate pre-round prep – favors newness over engagement – disclosure solves their offense – you just have to disclose the plan text and advantage area before the round

Graphical user interface, text, application

Description automatically generated

#### No RVIs: 1. Logic- aff doesn’t win for proving they’re fair or educational. 2. Chilling effect- debaters won’t read legitimate theory for fear of losing to a prepped-out counter-interp- proliferates abuse. 3. Substantive education- RVIs force a collapse to theory which crowds-out substance.

### 2

#### The standard is maximized expected well-being.

#### 1] Non-natural moral facts are epistemically inaccessible

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

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

#### 2] Only consequentialism explains degrees of wrongness—if I break a promise to meet up for lunch, that is not as bad as breaking a promise to take a dying person to the hospital. Only the consequences of breaking the promise explain why the second one is much worse than the first.

#### 3] Psychology - the most qualified brain studies and the introduction of optogenetics demonstrates neural connections to maximize pleasure and minimize pain.

**Schaffer 17** MIT technology review, Amanda Schaffer is a freelance journalist who writes about science and medicine for Slate, the New York Times, and other publications. Neuroscientist Kay Tye tackles the physical basis of emotions and behavior. [“How the Brain Seeks Pleasure and Avoids Pain” MIT research lab <https://www.technologyreview.com/2017/06/27/150948/how-the-brain-seeks-pleasure-and-avoids-pain/> 6/27/17]//Mberhe

As a child, Kay Tye was immersed in a life of science. “I grew up in my mom’s lab,” she says. At the age of five or six, she earned 25 cents a box for “restocking” bulk-ordered pipette tips into boxes for sterilization as her mother, an acclaimed biochemist at Cornell University, probed the genetics of yeast. (Tye’s father is a theoretical physicist known for his work on cosmic inflation and superstring theory.) Today, Tye runs her own neuroscience lab at MIT. Under large black lights reminiscent of a fashion shoot, she and her team at the Picower Institute for Learning and Memory can observe how mice behave when particular brain circuits are turned on or off. Nearby, they can record the mice’s neural activity as the animals move toward a particular stimulus, like sugar water, or away, if they’re crossing a floor that delivers mild electric shocks. Elsewhere, they create brain slices to test in vitro, since these samples retain their physiological activity, even outside the body, for up to eight hours. Tye has been at the forefront of efforts to pinpoint the sources of anxiety and other emotions in the brain by analyzing how groups of neurons work together in circuits to process information. In particular, her work has contributed to a profound shift in researchers’ understanding of the amygdala, a brain area that has been thought of as central to fear responses: she has found that signaling in the amygdala can in fact reduce anxiety as well as increase it. To gain such insights, she has also made crucial advances in a technique, called optogenetics, that allows researchers to activate or suppress particular neural circuits in lab animals using light. Optogenetics was developed by Stanford neuroscientist and psychiatrist Karl ­Deisseroth, and it represented a breakthrough in efforts to determine the role of specific parts of the brain. While Tye was working in his laboratory as a postdoc, she demonstrated, for the first time, that it was possible to pinpoint and control specific groups of neurons that were sending signals to specific target neurons. This fine-grained approach is important because drugs that treat conditions like anxiety currently do not target specific circuits, let alone individual neurons; rather, they operate throughout the brain, which often leads to undesirable side effects. Tye’s research may eventually help open the door to drugs that affect only specific neural circuits, reducing anxiety with fewer side effects. Such work has earned formal accolades, including a Presidential Early Career Award for Scientists and Engineers from President Obama, a Freedman Prize for neuroscience, and a TR35 award, recognizing outstanding researchers under the age of 35. Tye has also won high praise from others in her field who admire the creative breadth of her ambition. “She’s not afraid to ask the most fundamental questions, the ones most other scientists shy away from,” says Sheena Josselyn of the University of Toronto and the Hospital for Sick Children Research Institute. The questions she takes on involve emotions and phenomena that loom large in human experience, such as reward-seeking, loneliness, and compulsive overeating. Her goal is to understand their neural basis—to bridge the gap between brain, as understood by neuroscientists, and the mind, as conceived more expansively by psychiatrists, psychologists, and other students of human behavior. Would-be novelist Though it might seem as if Tye was born to be a scientist, she says her choice of career was anything but inevitable. In high school, she was ambivalent about science and gravitated instead toward writing; she wrote plays, short stories, and poetry. “In my mind, I was going to be a novelist,” she recalls. Still, while applying to college, she included MIT on her list, partly to humor her parents, Bik-Kwoon Tye and Henry Tye, both of whom had earned PhDs there in 1974. And when she received an acceptance letter, her father found it hard to disguise his feelings as his eyes welled with tears. “I’d never in my life seen my dad cry,” she says. She decided that she ought to give scientific learning a more dedicated try. She also convinced herself (with parental encouragement) that focusing on the natural world would give her more to write about down the road. As a freshman at MIT, Tye joined the lab of Suzanne Corkin, who was working with H.M., one of the most famous patients in the history of neuroscience. H.M., whose name was revealed to be Henry Molaison upon his death in 2008, suffered from profound amnesia after a lobotomy to treat seizures; studying his condition allowed researchers to probe the neural underpinnings of memory. One of Tye’s roles in the group was to make H.M. a peanut butter and jelly sandwich for lunch. He would eat it and then, moments later, with crumbs still on his face, ask, “Did we have lunch yet?” “It made me appreciate that these basic functions, like memory, that are so key to who we are have biological substrates in the brain,” she says. Neuroscience can be intimidating and filled with jargon, she adds. But the experience with H.M., along with an inspiring introductory psychology class taught by Steven Pinker, “made it seem worth it to slog through the all-nighters” to understand the biological mechanisms behind psychological constructs. Still, after graduation, Tye wanted to make sure she was “looking around,” thinking about who she was and who she wanted to be. So she spent a year backpacking in Australia, where she worked on a farm, lived in a yoga ashram, taught yoga, camped out on the beach, and worked on a novel. She found that writing was “hard and lonely.” She enjoyed teaching yoga but didn’t see it as a satisfying career path. “I came out of that year surprisingly ready to go to grad school,” she says. Diving back into the academic world, she initially struggled to find a lab that would accept her and almost dropped out after her first year. But she found a mentor in Patricia Janak, who became her advisor, and earned a PhD in neuroscience at the University of California, San Francisco, in 2008. A surprise in the amygdala In 2009, Tye joined Deisseroth’s lab at Stanford. Deisseroth had already developed optogenetics, which gave researchers a much more precise way to identify the contributions of individual neurons within a circuit. Along with others in the lab, Tye used optogenetics to probe the connection between two parts of the amygdala, an almond-shaped region that is crucial to anxiety and fear. She first identified neurons in one area (known as the basolateral amygdala) that formed connections to neurons in another amygdalar area (known as the central nucleus) by sending out projections of nerve fibers. When she stimulated those basolateral amygdala neurons, she was able to reduce anxiety in mice. That is, she could cause the animals to spend more time in open spaces and less time cowering to the side. This was surprising, because when researchers stimulated the amygdala as a whole, the mice’s behavior grew more anxious. At first, everyone asked, “Are you sure you’re using the tool right? What’s going on?” she recalls. But after meticulous validation, in 2011, Tye and the group published their results in Nature, showing that some circuitry within the amygdala helps to calm animals down. This paper also represented a breakthrough in optogenetic technique. For the first time, researchers were able to zero in on and manipulate a specific part of a brain circuit: particular groups of neurons communicating with known target neurons. The technique, known as optogenetic projection-specific manipulation, is now considered one of the key tools of neuroscience. In 2012, Tye came to MIT as an assistant professor of brain and cognitive sciences at the Picower, continuing her work on anxiety. While setting up her lab, she targeted neurons within the amygdala that seemed to have the opposite effect on mouse anxiety, causing it to increase. These brain cells are also located in the basolateral amygdala, but they send projections to a nearby region known as the ventral hippocampus. When Tye stimulated this circuit using optogenetics, the mice avoided open spaces, apparently suffering from anxiety. (When she inhibited the connections from forming, the animals hung out in the open again, their anxiety seemingly alleviated.) Tye proposed that neighboring neurons in the amygdala can have opposite effects on animals’ behavior, depending on the targets to which they send signals. Threats and rewards At the time, most researchers studying the amygdala still tended to focus mainly on its role in fear. Yet Tye suspected that activity in this part of the brain might encode a stimulus as either rewarding or threatening, good or bad, helping individuals decide how to respond. “There are many stimuli we encounter in our daily lives that are ambiguous,” says Conor ­Liston of the Brain and Mind Research Institute at Weill Cornell. “A social interaction, for example, can be either threatening or rewarding, and we need brain circuits devoted to differentiating which is which.” By looking at the relative strength of the currents passing through two glutamate receptors known to indicate synaptic strength, Tye discovered that different neural connections in mice were reinforced depending on whether a particular stimulus was linked to a reward or a threat. When mice learned to associate a sound with a treat of sugar, she found stronger synaptic input to the neurons in the basolateral amygdala that were sending information to the nucleus accumbens, which is part of the brain’s reward circuitry. On the other hand, when mice learned to associate the sound with mild electric shocks to their feet, input signals grew stronger in circuits leading from the basolateral amygdala to the centromedial amygdala, which is involved in pain and fear. In addition, she demonstrated a trade-off: when one of these circuits grew more active, the other grew less so. In other words, she had found how the brain encodes information that allows mice to differentiate between stimuli that are rewarding and those that are potentially harmful. The results were published in Nature in 2015. In recent work, Tye also probed the circuitry involved in making split-second decisions when both threatening and rewarding cues are present at the same time. She and her team focused this time on connections between the amygdala and the prefrontal cortex, an area responsible for higher-order thinking. (Specifically, they examined interactions between the basolateral amygdala and the prelimbic medial prefrontal cortex.) Using optogenetics and other techniques, they showed that this circuitry was active when the animals were simultaneously exposed to a potential sugar treat and a potential electric shock and had to make a decision about how to behave. Her results, which appeared in April in Nature Neuroscience, help illuminate how animals figure out what to do in the face of complex and sometimes contradictory cues.

#### 4] Actor specificity: A] Governments must aggregate since every policy benefit some and harms others, which also means side constraints freeze action. B] States lack wills or intentions since policies are collective actions. Actor-specificity comes first since different agents have different ethical standings. Takes out util calc indicts since they’re empirically denied and link turns them because the alt would be *no* action.

### 3

#### Commercial space race favors American Companies that cements space dominance – losing green-lights Chinese dominance across the board.

Autry and Kwast 19 – Director of the Southern California Commercial Spaceflight Initiative-USC, PhD & former Prof of Entrepreneurship & Strategy-UC Irvine; Lt. Gen & Cmdr-USAF, Prof-Air University Greg Autry, PhD & MBA-UC Irvine, Director of the Southern California Commercial Spaceflight Initiative-USC, served on the NASA Agency Review Team and as White House Liaison at NASA, former Professor of Entrepreneurship, Strategy, & Econ-UC Irvine, on the editorial board of the New Space Journal, co-author of Death by China, Beijing’s Fight for the Final Frontier, and Steven L. Kwast, Lt Gen-USAF, Commander & President of Air University-Maxwell AFB, MA in Public Policy-Harvard's Kennedy School of Government, former National Defense Fellow-Institute for the Study of Conflict, Ideology and Policy at Boston University, America Is Losing the Second Space Race to China, 22 August 2019, <https://foreignpolicy.com/2019/08/22/america-is-losing-the-second-space-race-to-china/>

--will get to space and control info flows – selling satellites for cheap to poorest and broadcasting lies about US + shielding events in Tibet – undermines US cred and soft power

--will also get huge money from space and do sbsp – means they’ll have free energy to hold over the rest of the world

--Commercial sector key – need creative disruption, not bureaucracy and groupthink of the DOD to get to space quicker and more innovatively

America Is Losing the Second Space Race to China The private sector can give the United States a much-needed rocket boost. The current U.S. space defense strategy is inadequate and on a path to failure. President Donald Trump’s vision for a Space Force is big enough. As he said on June 18, “It is not enough to merely have an American presence in space. We must have American dominance in space.” But the Air Force is not matching this vision. Instead, the leadership is currently focused on incremental improvements to existing equipment and organizational structures. Dominating the vast and dynamic environment of space will require revolutionary capabilities and resources far deeper than traditional Department of Defense thinking can fund, manage, or even conceive of. Success depends on a much more active partnership with the commercial space industry— and its disruptive capabilities.

U.S. military space planners are preparing to repeat a conflict they imagined back in the 1980s, which never actually occurred, against a vanished Soviet empire. Meanwhile, China is executing a winning strategy in the world of today. It is burning hard toward domination of the future space markets that will define the next century. They are planning infrastructure in space that will control 21st-century telecommunications, energy, transportation, and manufacturing. In doing so, they will acquire trillion-dollar revenues as well as the deep capabilities that come from continuous operational experience in space. This will deliver space dominance and global hegemony to China’s authoritarian rulers.

Despite the fact that many in the policy and intelligence communities understand exactly what China is doing and have been trying to alert leadership, Air Force leadership has convinced the White House to fund only a slightly better satellite command with the same leadership, while sticking a new label onto their outmoded thinking. A U.S. Space Force or Corps with a satellite command will never fulfill Trump’s call to dominate space. Air Force leadership is demonstrating the same hubris that Gen. George Custer used in convincing Congress, over President Ulysses S. Grant’s better experience intuition, that he could overtake the Black Hills with repeating rifles and artillery. That strategy of technological overconfidence inflamed conflict rather than subduing it, and the 7th Cavalry were wiped out at the Battle of the Little Bighorn.

The West was actually won by the settlers, ranchers, miners, and railroad barons who were able to convert the wealth of the territory itself into the means of holding it. They laid the groundwork that made the 20th century the American Century and delivered freedom to millions of people in Europe and Asia. Of course, they also trampled the indigenous people of the American West in their wake—but empty space comes with no such bloody cost. The very emptiness and wealth of this new, if not quite final, frontier, however, means that competition for resources and strategic locations in cislunar space (between the Earth and moon) will be intense over the next two decades. The outcome of this competition will determine the fate of humanity in the next century.

China’s impending dominance will neutralize U.S. geopolitical power by allowing Beijing to control global information flows from the high ground of space. Imagine a school in Bolivia or a farmer in Kenya choosing between paying for a U.S. satellite internet or image provider or receiving those services for free as a “gift of the Chinese people.” It will be of little concern to global consumers that the news they receive is slanted or that searches for “free speech” link to articles about corruption in Western democracies. Nor will they care if concentration camps in Tibet and the Uighur areas of western China are obscured, or if U.S. military action is presented as tyranny and Chinese expansion is described as peacekeeping or liberation.

China’s aggressive investment in space solar power will allow it to provide cheap, clean power to the world, displacing U.S. energy firms while placing a second yoke around the developing world. Significantly, such orbital power stations have dual use potential and, if properly designed, could serve as powerful offensive weapons platforms.

China’s first step in this process is to conquer the growing small space launch market. Beijing is providing nominally commercial firms with government-manufactured, mobile intercontinental ballistic missiles they can use to dump launch services on the market below cost. These start-ups are already undercutting U.S. pricing by 80 percent. Based on its previous success in using dumping to take out U.S. developed industries such as solar power modules and drones, China will quickly move upstream to attack the leading U.S. launch providers and secure a global commercial monopoly. Owning the launch market will give them an unsurmountable advantage against U.S. competitors in satellite internet, imaging, and power.

The United States can still build a strategy to win. At this moment, it holds the competitive advantage in every critical space technology and has the finest set of commercial space firms in the world. It has pockets of innovative military thinkers within groups like the Defense Innovation Unit, under Mike Griffin, the Pentagon’s top research and development official. If the United States simply protects the intellectual property its creative minds unleash and defend its truly free markets from strategic mercantilist attack, it will not lose this new space race. The United States has done this before. It beat Germany to the nuclear bomb, it beat the Soviet Union to the nuclear triad, and it won the first space race.

None of those victories was achieved by embracing the existing bureaucracy. Each of them depended on the president of the day following the only proven path to victory in a technological domain: establish a small team with a positively disruptive mindset and empower that team to investigate a wide range of new concepts, work with emerging technologies, and test innovative strategies. Today that means giving a dedicated Space Force the freedom to easily partner with commercial firms and leverage the private capital in building sustainable infrastructure that actually reduces the likelihood of conflict while securing a better economic future for the nation and the world.

#### Public sector space growth undermines innovation necessary to maintain U.S space dominance.

**Beames 21** [Charles Beames, Charles is currently the Executive Chairman of York Space Systems, a leader in commercial satellite design and manufacturing, as well as Chairman of the SmallSat Alliance. He is also a retired Air Force Colonel, having served 23 years in space & intelligence leadership positions around the world, 9-30-2021, Forbes, "It Is Time Our Government Stops Competing Against The Commercial Space Industry", <https://www.forbes.com/sites/charlesbeames/2021/09/30/it-is-time-our-government-stops-competing-against-the-commercial-space-industry/> accessed on 12-21-2021] Adam

* A2 Public sector fill in
* Also works as a link for the innovation DA

With its fiery engines and impressive reusable rockets, SpaceX is the most visible example of the power of private enterprise in space. Every month, SpaceX makes another great leap further into the stars with another launch and often carrying satellites from other companies. Conservative estimates suggest that tens of thousands more are scheduled to be launched over the next five years to perform missions limited to the providence of major nations only a decade ago.

An outstanding example of an agency leveraging corporate R&D rather than spending its own capital is the Space Development Agency (SDA). When devising its strategy to build the nation’s next-generation missile tracking and communication systems, SDA mandated that the satellites hosting the specialized instruments onboard must be built on an off-the-shelf commodity bus already in rate production. SDA has already awarded four successful companies at a fixed price contract with 10 others deemed competitive, which means we can expect that very little development is required.

Every time the government develops their own version of the same technologies, it inhibits the investment and creative thinking necessary for America’s next big play in space. The boldest and most innovative investors and engineers in the commercial sector shy away from space as a business opportunity when the government insists on staying in the ring, because there are no longer the 10-20X multiples on private investment that commercial opportunities in the tech sector can deliver. Institutional investors do still pour capital into traditional defense companies, especially in times of increasing hostilities. Unfortunately for them, however, the valuation multiples on revenue are far lower – about 2X – and only match the pace of government expansion.

We must rethink the policy incentive structure of last century’s space industrial model to reward unbounded free market economic growth instead of companies whose market cap only grows with more national defense spending. Admittedly, there are instances in which it is still necessary for the government to develop their own satellite, component or rocket, but it is increasingly rare.

The U.S. government once again must transition to become a consumer of commercial space goods and services so that America’s space industry outpaces its adversaries. An organic, commercial space marketplace exists now and must be rewarded, not stifled. We are on a tight schedule, because near-peer competitors like China (and others) are aware of this strategic competition and instead choose to [leverage their nascent technologies to outpace us](https://www.forbes.com/sites/charlesbeames/2020/10/14/the-dragon-is-breathing-down-our-neck-action-is-americas-best-weapon/?sh=67a437724cb5).

The role for the government is larger and more strategic than ever before, but it is our capital markets that are our biggest advantage in Great Power competition. We must maximize this strength by encouraging private investments in the new space economy, promoting competition among commercial providers, and not competing against the very technologies we hope to leverage to secure America’s promising future in space.

#### Undermines fourth gen warfighting – space dominance key.

**Yoo 18** – Emanuel S. Heller Professor of Law at the University of California, Berkeley, and a visiting scholar at AEI since 2003. He served as a deputy assistant attorney general in the Office of the Legal Counsel of the U.S. Department of Justice from 2001 to 2003, where he worked on constitutional and national security matters, as General Counsel of the U.S. Senate Committee on the Judiciary from 1995-96, and as a law clerk to Justice Clarence Thomas of the U.S. Supreme Court (John, Winning the Space Race, October 15th, <http://www.aei.org/publication/winning-the-space-race/>) \*edited for offensive language

Control of space already **underlies the United States’ predominance in nuclear and conventional warfare.** Intercontinental and submarine launched ballistic missiles, the **heart of the US nuclear deterrent**, pass through space to reach their targets. Reconnaissance satellites monitor rival nations for missile launches, strategic deployments, and major troop movements. Communications satellites provide the high-speed data transfer that stitches the US Armed Forces together, from generals issuing commands to pilots controlling drones. With economic rivals such as China and India, and rogue states like Iran and North Korea developing space programs that pursue similar missions, the importance of space technology to US interests and international peace will only increase. Space not only enhances military operations, but also exposes new vulnerabilities. Anti-satellite missiles can make an opponent’s space-based communication networks easier to disable than purely ground-based systems. Losing reconnaissance satellites could ~~blind~~ gut the US’s strategic monitoring and disabling the GPS system would degrade its operational and tactical abilities. Space invites asymmetric warfare because anti-satellite attacks could even the technological odds against western powers that have become dependent on information-enhanced operations. As the nation most dependent on space-based networks, **the United States may have the most to lose.** Strategists divide competition in this emerging arena into four categories. First is space support, which refers to the launching and management of satellites in orbit. The second is force enhancement, which seeks to improve the effectiveness of terrestrial military operations. The importance of these basic missions is well-established. Indeed, the very first satellites performed a critical surveillance role in the strategic competition between the United States and the Soviet Union. Spy satellites replaced dangerous aerial reconnaissance flights in providing intelligence on rival nuclear missile arsenals. Later space-based systems provided the superpowers with early warnings of ballistic missile launches. These programs **bolstered stability and aided progress in nuclear arms reduction talks**. Satellites created “national technical means” of verification: the capability to detect compliance with arms control treaties without the need to intrude on territorial sovereignty. They **reduced the chances of human miscalculation** by increasing the information available to decision makers about the intentions of other nations. The US has made the most progress in the second mission, force enhancement, by using space to boost conventional military abilities. GPS enables the exact deployment of units, the synchronization of combat maneuvers, clearer identification of friend and foe, and precision targeting. In its recent wars, the US has used satellite information to find the enemy, even to the level of individual leaders, deploy on-station air or ground forces, and fire precision-guided munitions to destroy targets with decreased risk of collateral damage. American military leaders have argued that continued integration of space and conventional strike capabilities will allow the US to handle the twenty-first century threats—**terrorism, rogue nations, asymmetric warfare, and** regional challengers—more effectively with less resources.

#### Nuclear war causes extinction.

**Starr 15** (Steven. “Nuclear War: An Unrecognized Mass Extinction Event Waiting To Happen.” Ratical. March 2015. <https://ratical.org/radiation/NuclearExtinction/StevenStarr022815.html> TG)

A war fought with 21st century strategic nuclear weapons would be more than just a great catastrophe in human history. If we allow it to happen, such a war would be a mass extinction event that [ends human history](https://ratical.org/radiation/NuclearExtinction/StarrNuclearWinterOct09.pdf). There is a profound difference between extinction and “an unprecedented disaster,” or even “the end of civilization,” because even after such an immense catastrophe, human life would go on. But extinction, by definition, is an event of utter finality, and a nuclear war that could cause human extinction should really be considered as the ultimate criminal act. It certainly would be the crime to end all crimes. The world’s leading climatologists now tell us that nuclear war threatens our continued existence as a species. Their studies predict that a large nuclear war, especially one fought with strategic nuclear weapons, would create a post-war environment in which for many years it would be too cold and dark to even grow food. Their findings make it clear that not only humans, but most large animals and many other forms of complex life would likely vanish forever in a nuclear darkness of our own making. The environmental consequences of nuclear war would attack the ecological support systems of life at every level. Radioactive fallout produced not only by nuclear bombs, but also by the destruction of nuclear power plants and their spent fuel pools, would poison the biosphere. Millions of tons of smoke would act to [destroy Earth’s protective ozone layer](https://www2.ucar.edu/atmosnews/just-published/3995/nuclear-war-and-ultraviolet-radiation) and block most sunlight from reaching Earth’s surface, creating Ice Age weather conditions that would last for decades. Yet the political and military leaders who control nuclear weapons strictly avoid any direct public discussion of the consequences of nuclear war. They do so by arguing that nuclear weapons are not intended to be used, but only to deter. Remarkably, the leaders of the Nuclear Weapon States have chosen to ignore the authoritative, long-standing scientific research done by the climatologists, research that predicts virtually any nuclear war, fought with even a fraction of the operational and deployed nuclear arsenals, will leave the Earth essentially uninhabitable.

## Case

### Underview

#### Aff gets one 1ar shell: Norming—multiple shells create no risk outs that spread out the 2nr and make testing each of them impossible—if they have 4 minutes on a frivolous shell like spec status they can win on it via brute force even though it’s a bad norm. It’s not automatically dtd because

Presumption and Permiss Negate – aff has to prove an active obligation if there is no obligation you negate and

### Framework OV

#### 1] Hijack—only util can account for degrees of wrongness, telling someone their shirt looks nice when it doesn’t is better than telling a slave owner where a runaway slave is which means aggregation controls the internal link to your fw

#### 2] NC collapses to the AC—if each person has infinite value, having more of that value is a good thing so you have to aggregate

#### 3] Extinction comes first under any framework

Pummer 15 [Theron, Junior Research Fellow in Philosophy at St. Anne's College, University of Oxford. “Moral Agreement on Saving the World” Practical Ethics, University of Oxford. May 18, 2015] AT

There appears to be lot of disagreement in moral philosophy. Whether these many apparent disagreements are deep and irresolvable, I believe there is at least one thing it is reasonable to agree on right now, whatever general moral view we adopt: that it is very important to reduce the risk that all intelligent beings on this planet are eliminated by an enormous catastrophe, such as a nuclear war. How we might in fact try to reduce such existential risks is discussed elsewhere. My claim here is only that we – whether we’re consequentialists, deontologists, or virtue ethicists – should all agree that we should try to save the world. According to consequentialism, we should maximize the good, where this is taken to be the goodness, from an impartial perspective, of outcomes. Clearly one thing that makes an outcome good is that the people in it are doing well. There is little disagreement here. If the happiness or well-being of possible future people is just as important as that of people who already exist, and if they would have good lives, it is not hard to see how reducing existential risk is easily the most important thing in the whole world. This is for the familiar reason that there are so many people who could exist in the future – there are trillions upon trillions… upon trillions. There are so many possible future people that reducing existential risk is arguably the most important thing in the world, even if the well-being of these possible people were given only 0.001% as much weight as that of existing people. Even on a wholly person-affecting view – according to which there’s nothing (apart from effects on existing people) to be said in favor of creating happy people – the case for reducing existential risk is very strong. As noted in this seminal paper, this case is strengthened by the fact that there’s a good chance that many existing people will, with the aid of life-extension technology, live very long and very high quality lives. You might think what I have just argued applies to consequentialists only. There is a tendency to assume that, if an argument appeals to consequentialist considerations (the goodness of outcomes), it is irrelevant to non-consequentialists. But that is a huge mistake. Non-consequentialism is the view that there’s more that determines rightness than the goodness of consequences or outcomes; it is not the view that the latter don’t matter. Even John Rawls wrote, “All ethical doctrines worth our attention take consequences into account in judging rightness. One which did not would simply be irrational, crazy.” Minimally plausible versions of deontology and virtue ethics must be concerned in part with promoting the good, from an impartial point of view. They’d thus imply very strong reasons to reduce existential risk, at least when this doesn’t significantly involve doing harm to others or damaging one’s character. What’s even more surprising, perhaps, is that even if our own good (or that of those near and dear to us) has much greater weight than goodness from the impartial “point of view of the universe,” indeed even if the latter is entirely morally irrelevant, we may nonetheless have very strong reasons to reduce existential risk. Even egoism, the view that each agent should maximize her own good, might imply strong reasons to reduce existential risk. It will depend, among other things, on what one’s own good consists in. If well-being consisted in pleasure only, it is somewhat harder to argue that egoism would imply strong reasons to reduce existential risk – perhaps we could argue that one would maximize her expected hedonic well-being by funding life extension technology or by having herself cryogenically frozen at the time of her bodily death as well as giving money to reduce existential risk (so that there is a world for her to live in!). I am not sure, however, how strong the reasons to do this would be. But views which imply that, if I don’t care about other people, I have no or very little reason to help them are not even minimally plausible views (in addition to hedonistic egoism, I here have in mind views that imply that one has no reason to perform an act unless one actually desires to do that act). To be minimally plausible, egoism will need to be paired with a more sophisticated account of well-being. To see this, it is enough to consider, as Plato did, the possibility of a ring of invisibility – suppose that, while wearing it, Ayn could derive some pleasure by helping the poor, but instead could derive just a bit more by severely harming them. Hedonistic egoism would absurdly imply she should do the latter. To avoid this implication, egoists would need to build something like the meaningfulness of a life into well-being, in some robust way, where this would to a significant extent be a function of other-regarding concerns (see chapter 12 of this classic intro to ethics). But once these elements are included, we can (roughly, as above) argue that this sort of egoism will imply strong reasons to reduce existential risk. Add to all of this Samuel Scheffler’s recent intriguing arguments (quick podcast version available here) that most of what makes our lives go well would be undermined if there were no future generations of intelligent persons. On his view, my life would contain vastly less well-being if (say) a year after my death the world came to an end. So obviously if Scheffler were right I’d have very strong reason to reduce existential risk. We should also take into account moral uncertainty. What is it reasonable for one to do, when one is uncertain not (only) about the empirical facts, but also about the moral facts? I’ve just argued that there’s agreement among minimally plausible ethical views that we have strong reason to reduce existential risk – not only consequentialists, but also deontologists, virtue ethicists, and sophisticated egoists should agree. But even those (hedonistic egoists) who disagree should have a significant level of confidence that they are mistaken, and that one of the above views is correct. Even if they were 90% sure that their view is the correct one (and 10% sure that one of these other ones is correct), they would have pretty strong reason, from the standpoint of moral uncertainty, to reduce existential risk. Perhaps most disturbingly still, even if we are only 1% sure that the well-being of possible future people matters, it is at least arguable that, from the standpoint of moral uncertainty, reducing existential risk is the most important thing in the world. Again, this is largely for the reason that there are so many people who could exist in the future – there are trillions upon trillions… upon trillions. (For more on this and other related issues, see this excellent dissertation). Of course, it is uncertain whether these untold trillions would, in general, have good lives. It’s possible they’ll be miserable. It is enough for my claim that there is moral agreement in the relevant sense if, at least given certain empirical claims about what future lives would most likely be like, all minimally plausible moral views would converge on the conclusion that we should try to save the world. While there are some non-crazy views that place significantly greater moral weight on avoiding suffering than on promoting happiness, for reasons others have offered (and for independent reasons I won’t get into here unless requested to), they nonetheless seem to be fairly implausible views. And even if things did not go well for our ancestors, I am optimistic that they will overall go fantastically well for our descendants, if we allow them to. I suspect that most of us alive today – at least those of us not suffering from extreme illness or poverty – have lives that are well worth living, and that things will continue to improve. Derek Parfit, whose work has emphasized future generations as well as agreement in ethics, described our situation clearly and accurately: “We live during the hinge of history. Given the scientific and technological discoveries of the last two centuries, the world has never changed as fast. We shall soon have even greater powers to transform, not only our surroundings, but ourselves and our successors. If we act wisely in the next few centuries, humanity will survive its most dangerous and decisive period. Our descendants could, if necessary, go elsewhere, spreading through this galaxy…. Our descendants might, I believe, make the further future very good. But that good future may also depend in part on us. If our selfish recklessness ends human history, we would be acting very wrongly.” (From chapter 36 of On What Matters)

#### 4] No Intent Foresight Distinction

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

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

#### 5] Indexical negate – we have proven an index under which the aff is false so vote neg since you can't weigh between indexes. 2] Morally repugnant- it would justify individuals operating under the index that Nazism is true and that being a legit perspective

### AT: Contention

#### Contention –

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

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

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

### AT: Debris

#### It takes centuries and adaptation solves

**Muelhaupt 19** (Ted Muelhaupt 19, Associate Principal Director of the Systems Analysis and Simulation Subdivision (SASS) and Manager of the Center for Orbital and Reentry Debris Studies at The Aerospace Corporation, M.S., B.S. Aerospace and Aeronautical Engineering & Mechanics, University of Minnesota - Twin Cities, Senior Member of the American Institute of Aeronautics and Astronautics, “How Quickly Would It Take For the Kessler Syndrome To Destroy All The Satellites In LEO? And Could You See This Happening From Earth?”, Quora, 2/28/2019, https://www.quora.com/How-quickly-would-it-take-for-the-Kessler-Syndrome-to-destroy-all-the-satellites-in-LEO-And-could-you-see-this-happening-from-Earth

The dynamics of the Kessler Syndrome are real, and most people studying it agree on the concept: if there is sufficient density of objects and mass, a chain reaction of debris breaking up objects and creating more debris can occur. But the timescale of this process takes decades and centuries. There are many assumptions that go into these models. Though there is still argument about this, many people in the field think that the process is already underway in low earth orbit. But others, including myself, think we can stop it if we take action. This is a slow motion disaster that we can prevent.

But in spite of hype to the contrary, we will never “lose access to space”. Certain missions may become impractical or too expensive, and we may decide that some orbits are too risky for humans. Even that depends on the tolerance for the risk. But robots don’t have mothers, and if we feel it is worthwhile we will take the risk and fly the satellites where we need to.

To the specifics of the question, it will take many decades. It will not destroy all satellites in LEO. You won’t be able to see it from the ground unless you were extraordinarily lucky, and you happened to see a flash from a collision in the instant you were looking, with just the right lighting.

#### Non UQ – squo debris thumps.

**Orwig 16** [(Jessica, MS in science and tech journalism from Texas A&M, BS in astronomy and physics from Ohio State) “Russia says a growing problem in space could be enough to spark a war,” Insider,’ January 26, 2016, <https://www.businessinsider.com/russia-says-space-junk-could-spark-war-2016-1>] TDI

NASA has already [warned that](https://www.businessinsider.com/space-junk-at-critical-density-2015-9) the large amount of space junk around our planet is growing beyond our control, but now a team of Russian scientists has cited another potentially unforeseen consequence of that debris: War.

Scientists estimate that anywhere from 500,000 to 600,000 pieces of human-made space debris between 0.4 and 4 inches in size are currently orbiting the Earth and traveling at speeds over [17,000 miles per hour](https://www.nasa.gov/mission_pages/station/news/orbital_debris.html).

If one of those pieces smashed into a military satellite it "may provoke political or even armed conflict between space-faring nations," Vitaly Adushkin, a researcher for the Institute of Geosphere Dynamics at the Russian Academy of Sciences, reported in a paper set to be published in the peer-reviewed journal [Acta Astronautica](https://www.sciencedirect.com/science/article/pii/S0094576515303416), which is sponsored by the International Academy of Astronautics.

#### Warming doesn’t cause extinction.

**Farquhar 17** (Sebastian Farquhar 17, leads the Global Priorities Project (GPP) at the Centre for Effective Altruism, et al., 2017, “Existential Risk: Diplomacy and Governance,” https://www.fhi.ox.ac.uk/wp-content/uploads/Existential-Risks-2017-01-23.pdf)

The most likely levels of global warming are very unlikely to cause human extinction.15 The existential risks of climate change instead stem from tail risk climate change – the low probability of extreme levels of warming – and interaction with other sources of risk. It is impossible to say with confidence at what point global warming would become severe enough to pose an existential threat. Research has suggested that warming of 11-12°C would render most of the planet uninhabitable,16 and would completely devastate agriculture.17 This would pose an extreme threat to human civilisation as we know it.18 Warming of around 7°C or more could potentially produce conflict and instability on such a scale that the indirect effects could be an existential risk, although it is extremely uncertain how likely such scenarios are.19 Moreover, the timescales over which such changes might happen could mean that humanity is able to adapt enough to avoid extinction in even very extreme scenarios. The probability of these levels of warming depends on eventual greenhouse gas concentrations. According to some experts, unless strong action is taken soon by major emitters, it is likely that we will pursue a medium-high emissions pathway.20 If we do, the chance of extreme warming is highly uncertain but appears non-negligible. Current concentrations of greenhouse gases are higher than they have been for hundreds of thousands of years,21 which means that there are significant unknown unknowns about how the climate system will respond. Particularly concerning is the risk of positive feedback loops, such as the release of vast amounts of methane from melting of the arctic permafrost, which would cause rapid and disastrous warming.22 The economists Gernot Wagner and Martin Weitzman have used IPCC figures (which do not include modelling of feedback loops such as those from melting permafrost) to estimate that if we continue to pursue a medium-high emissions pathway, the probability of eventual warming of 6°C is around 10%,23 and of 10°C is around 3%.24 These estimates are of course highly uncertain. It is likely that the world will take action against climate change once it begins to impose large costs on human society, long before there is warming of 10°C. Unfortunately, there is significant inertia in the climate system: there is a 25 to 50 year lag between CO2 emissions and eventual warming,25 and it is expected that 40% of the peak concentration of CO2 will remain in the atmosphere 1,000 years after the peak is reached.26 Consequently, it is impossible to reduce temperatures quickly by reducing CO2 emissions. If the world does start to face costly warming, the international community will therefore face strong incentives to find other ways to reduce global temperatures.

#### Commercial mining solves extinction from scarcity, climate, terror, war, and disease.

Pelton 17—(Director Emeritus of the Space and Advanced Communications Research Institute at George Washington University, PHD in IR from Georgetown).. Pelton, Joseph N. 2017. The New Gold Rush: The Riches of Space Beckon! Springer. Accessed 8/30/19.

Are We Humans Doomed to Extinction? What will we do when Earth’s resources are used up by humanity? The world is now hugely over populated, with billions and billions crammed into our overcrowded cities. By 2050, we may be 9 billion strong, and by 2100 well over 11 billion people on Planet Earth. Some at the United Nations say we might even be an amazing 12 billion crawling around this small globe. And over 80 % of us will be living in congested cities. These cities will be ever more vulnerable to terrorist attack, natural disaster, and other plights that come with overcrowding and a dearth of jobs that will be fueled by rapid automation and the rise of artifi cial intelligence across the global economy. We are already rapidly running out of water and minerals. Climate change is threatening our very existence. Political leaders and even the Pope have cautioned us against inaction. Perhaps the naysayers are right. All humanity is at tremendous risk. Is there no hope for the future? This book is about hope. We think that there is literally heavenly hope for humanity. But we are not talking here about divine intervention. We are envisioning a new space economy that recognizes that there is more water in the skies that all our oceans. Th ere is a new wealth of natural resources and clean energy in the reaches of outer space—more than most of us could ever dream possible. There are those that say why waste money on outer space when we have severe problems here at home? Going into space is not a waste of money. It is our future. It is our hope for new jobs and resources. The great challenge of our times is to reverse public thinking to see space not as a resource drain but as the doorway to opportunity. The new space frontier can literally open up a “gold rush in the skies.” In brief, we think there is new hope for humanity. We see a new a pathway to the future via new ventures in space. For too long, space programs have been seen as a money pit. In the process, we have overlooked the great abundance available to us in the skies above. It is important to recognize there is already the beginning of a new gold rush in space—a pathway to astral abundance. “New Space” is a term increasingly used to describe radical new commercial space initiatives—many of which have come from Silicon Valley and often with backing from the group of entrepreneurs known popularly as the “space billionaires.” New space is revolutionizing the space industry with lower cost space transportation and space systems that represent significant cost savings and new technological breakthroughs. “New Commercial Space” and the “New Space Economy” represent more than a new way of looking at outer space. These new pathways to the stars could prove vital to human survival. If one does not believe in spending money to probe the mysteries of the universe then perhaps we can try what might be called “calibrated greed” on for size. One only needs to go to a cubesat workshop, or to Silicon Valley or one of many conferences like the “Disrupt Space” event in Bremen, Germany, held in April 2016 to recognize that entrepreneurial New Space initiatives are changing everything [ 1 ]. In fact, the very nature and dimensions of what outer space activities are today have changed forever. It is no longer your grandfather’s concept of outer space that was once dominated by the big national space agencies. The entrepreneurs are taking over. The hopeful statements in this book and the hard economic and technical data that backs them up are more than a minority opinion. It is a topic of growing interest at the World Economic Forum, where business and political heavyweights meet in Davos, Switzerland, to discuss how to stimulate new patterns of global economic growth. It is even the growing view of a group that call themselves “space ethicists.” Here is how Christopher J. Newman, at the University of Sunderland in the United Kingdom has put it: Space ethicists have offered the view that space exploration is not only desirable; it is a duty that we, as a species, must undertake in order to secure the survival of humanity over the longer term. Expanding both the resource base and, eventually, the habitats available for humanity means that any expenditure on space exploration, far from being viewed as frivolous, can legitimately be rationalized as an ethical investment choice. (Newman) On the other hand there are space ethicists and space exobiologists who argue that humans have created ecological ruin on the planet—and now space debris is starting to pollute space. Th ese countervailing thoughts by the “no growth” camp of space ethicists say we have no right to colonize other planets or to mine the Moon and asteroids—or at least no right to do so until we can prove we can sustain life here on Earth for the longer term. However, for most who are planning for the new space economy the opinion of space philosophers doesn’t really fl oat their boat. Legislators, bankers, and aspiring space entrepreneurs are far more interested in the views of the super-rich capitalists called the space billionaires. A number of these billionaires and space executives have already put some very serious money into enterprises intent on creating a new pathway to the stars. No less than five billionaires with established space ventures—Elon Musk, Paul Allen, Jeff Bezos, Sir Richard Branson, and Robert Bigelow—have invested millions if not billions of dollars into commercializing space. They are developing new technologies and establishing space enterprises that can bring the wealth of outer space down to Earth. This is not a pipe dream, but will increasingly be the economic reality of the 2020s. These wealthy space entrepreneurs see major new economic opportunities. To them space represents the last great frontier for enterprising pioneers. Th us they see an ever-expanding space frontier that offers opportunities in low-cost space transportation, satellite solar power satellites to produce clean energy 24h a day, space mining, space manufacturing and production, and eventually space habitats and colonies as a trajectory to a better human future. Some even more visionary thinkers envision the possibility of terraforming Mars, or creating new structures in space to protect our planet from cosmic hazards and even raising Earth’s orbit to escape the rising heat levels of the Sun in millennia to come. Some, of course, will say this is sci-fi hogwash. It can’t be done. We say that this is what people would have said in 1900 about airplanes, rocket ships, cell phones and nuclear devices. The skeptics laughed at Columbus and his plan to sail across the oceans to discover new worlds. When Thomas Jefferson bought the Louisiana Purchase from France or Seward bought Alaska, there were plenty of naysayers that said such investment in the unknown was an extravagant waste of money. A healthy skepticism is useful and can play a role in economic and business success. Before one dismisses the idea of an impending major new space economy and a new gold rush, it might useful to see what has already transpired in space development in just the past five decades. The world’s first geosynchronous communications satellite had a throughput capability of about 500 kb / s. In contrast, today’s state of the art Viasat 2 —a half century later— has an impressive throughput of some 140 Gb/s. Th is means that the relative throughput is nearly 300,000 greater, while its lifetime is some ten times longer (Figs. 1.1 and 1.2 ). Each new generation of communications satellite has had more power, better antenna systems, improved pointing and stabilization, and an extended lifetime. And the capabilities represented by remote sensing satellites , meteorological satellites , and navigation and timing satellites have also expanded their capabilities and performance in an impressive manner. When satellite applications first started, the market was measured in millions of dollars. Today commercial satellite services exceed a quarter of a billion dollars. Vital services such as the Internet, aircraft traffi c control and management, international banking, search and rescue and much, much more depend on application satellites. Th ose that would doubt the importance of satellites to the global economy might wish to view on You Tube the video “If Th ere Were a Day Without Satellites?” [ 2 ]. Let’s check in on what some of those very rich and smart guys think about the new space economy and its potential. (We are sorry to say that so far there are no female space billionaires, but surely this, too, will come someday soon.) Of course this twenty-fi rst century breakthrough that we call the New Space economy will not come just from new space commerce. It will also come from the amazing new technologies here on Earth. Vital new terrestrial technologies will accompany this cosmic journey into tomorrow. Information technology, robotics, artificial intelligence and commercial space travel systems have now set us on a course to allow us humans to harvest the amazing riches in the skies—new natural resources, new energy, and even totally new ways of looking at the purpose of human existence. If we pursue this course steadfastly, it can be the beginning of a New Space renaissance. But if we don’t seek to realize our ultimate destiny in space, Homo sapiens can end up in the dustbin of history—just like literally millions of already failed species. In each and every one of the five mass extinction events that have occurred over the last 1.5 billion years on Earth, some 50–80 % of all species have gone the way of the T. Rex, the woolly mammoth, and the Dodo bird along with extinct ferns, grasses and cacti. On the other hand, the best days of the human race could be just beginning. If we are smart about how we go about discovering and using these riches in the skies and applying the best of our new technologies, it could be the start of a new beginning for humanity. Konstantin Tsiokovsky, the Russian astronautics pioneer, who fi rst conceived of practical designs for spaceships, famously said: “A planet is the cradle of mankind, but one cannot live in a cradle forever.” Well before Tsiokovsky another genius, Leonardo da Vinci, said, quite poetically: “Once you have tasted flight, you will forever walk the earth with your eyes turned skyward, for there you have been, and there you will always long to return.” The founder of the X-Prize and of Planetary Resources, Inc., Dr. Peter Diamandis, has much more brashly said much the same thing in quite diff erent words when he said: “The meek shall inherit the Earth. The rest of us will go to Mars.” The New Space Billionaires Peter Diamandis is not alone in his thinking. From the list of “visionaries” quoted earlier, Elon Musk, the founder of SpaceX; Sir Richard Branson, the founder of Virgin Galactic; and Paul Allen, the co-founder of Microsoft and the man who financed SpaceShipOne, the world’s first successful spaceplane have all said the future will include a vibrant new space economy. Th ey, and others, have said that we can, we should and we soon shall go into space and realize the bounty that it can offer to us. Th e New Space enterprise is today indeed being led by those so-called space billionaires , who have an exciting vision of the future. They and others in the commercial space economy believe that the exploitation of outer space may open up a new golden age of astral abundance. They see outer space as a new frontier that can be a great source of new materials, energy and various forms of new wealth that might even save us from excesses of the past. Th is gold rush in the skies represents a new beginning. We are not talking about expensive new space ventures funded by NASA or other space agencies in Europe, Japan, China or India. No, these eff orts which we and others call New Space are today being forged by imaginative and resourceful commercial entrepreneurs. Th ese twenty-fi rst century visionaries have the fortitude and zeal to look to the abundance above. New breakthroughs in technology and New Space enterprises may be able to create an “astral life raft” for humanity. Just as Columbus and the Vikings had the imaginative drive that led them to discover the riches of a new world, we now have a cadre of space billionaires that are now leading us into this New Space era of tomorrow. These bold leaders, such as Paul Allen and Sir Richard Branson, plus other space entrepreneurs including Jeff Bezos of Amazon and Blue Origin, and Robert Bigelow, Chairman of Budget Suites and Bigelow Aerospace, not only dream of their future in the space industry but also have billions of dollars in assets. These are the bright stars of an entirely new industry that are leading us into the age of New Space commerce. These space billionaires, each in their own way, are proponents of a new age of astral abundance. Each of them is launching new commercial space industries. They are literally transforming our vision of tomorrow. These new types of entrepreneurial aerospace companies—the New Space enterprises—give new hope and new promise of transforming our world as we know it today. The New Space Frontier What happens in space in the next few decades, plus corresponding new information technologies and advanced robotics, will change our world forever. These changes will redefi ne wealth, change our views of work and employment and upend almost everything we think we know about economics, wealth, jobs, and politics. Th ese changes are about truly disruptive technologies of the most fundamental kinds. If you thought the Internet, smart phones, and spandex were disruptive technologies, just hang on. You have not seen anything yet. In short, if you want to understand a transition more fundamental than the changes brought to the twentieth century world by computers, communications and the Internet, then read this book. There are truly riches in the skies. Near-Earth asteroids largely composed of platinum and rare earth metals have an incredible value. Helium-3 isotopes accessible in outer space could provide clean and abundant energy. There is far more water in outer space than is in our oceans. In the pages that follow we will explain the potential for a cosmic shift in our global economy, our ecology, and our commercial and legal systems. These can take place by the end of this century. And if these changes do not take place we will be in trouble. Our conventional petro-chemical energy systems will fail us economically and eventually blanket us with a hydrocarbon haze of smog that will threaten our health and our very survival. Our rare precious metals that we need for modern electronic appliances will skyrocket in price, and the struggle between “haves” and “have nots” will grow increasingly ugly. A lack of affordable and readily available water, natural resources, food, health care and medical supplies, plus systematic threats to urban security and systemic warfare are the alternatives to astral abundance. The choices between astral abundance and a downward spiral in global standards of living are stark. Within the next few decades these problems will be increasingly real. By then the world may almost be begging for new, out of- the-box thinking. International peace and security will be an indispensable prerequisite for exploitation of astral abundance, as will good government for all. No one nation can be rich and secure when everyone else is poor and insecure. In short, global space security and strategic space defense, mediated by global space agreements, are part of this new pathway to the future.

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