# 2NR

# 1NC

## Case

### 1NC – Extinction

#### Extinction outweighs because it precludes the possibility of future value, and existential focus is good and valuable – acknowledging and discussing possibility of self-destruction shifts targets away from each other and towards extinction.

Khan ‘18

Risalat Khan is an activist and intrapreneur from Bangladesh passionate about addressing climate change, biodiversity loss, and other existential challenges. He was featured by The Guardian as one of the “young climate campaigners to watch” (2015). As a campaigner with the global civic movement Avaaz (2014-17), Risalat was part of a small core team that spearheaded the largest climate marches in history with a turnout of over 800,000 across 2,000 cities. After fighting for the Paris Agreement, Risalat led a campaign joined by over a million people to stop the Rampal coal plant in Bangladesh to protect the Sundarbans World Heritage forest, and elicited criticism of the plant from Crédit Agricolé through targeted advocacy. Currently, Risalat is pursuing an MPA in Environmental Science and Policy at Columbia University as a SIPA Environmental Fellow. He also regularly consults with mission-driven organizations on building effective and loving team cultures. Previously, he graduated magna cum laude from Amherst College, where he launched a campaign that eventually resulted in the replacement of the College’s racist mascot ‘Lord Jeff’ with a cuddly ‘Mammoth’. Finally, Risalat is absolutely blown away to be alive at this amazing time in history, and approaches life like a roller-coaster ride, “5 reasons why we need to start talking about existential risks”, World Economic Forum, 10 January 2018, accessed: 15 December 2020, <https://www.weforum.org/agenda/2018/01/5-reasons-start-talking-existential-risks-extinction-moriori/>, R.S.

I find the story of the Moriori profound. It teaches me two lessons. Firstly, that human culture is far from immutable. That we can struggle against our baser instincts. That we can master them and rise to unprecedented challenges. Secondly, that even this does not make us masters of our own destiny. We can make visionary choices, but the future can still surprise us.

This is a humbling realization. Because faced with an uncertain future, the only wise thing we can do **is prepare** for possibilities. Standing at the launch pad of the Fourth Industrial Revolution, the possibilities seem endless. They range from an era of abundance to the end of humanity, and everything in between. How do we navigate such a wide and divergent spectrum?

I am an optimist. From my bubble of privilege, life feels like a rollercoaster ride full of ever more impressive wonders, even as I try to fight the many social injustices that still blight us. However, the accelerating pace of change amid uncertainty elicits one fundamental observation. Among the infinite future possibilities, only **one outcome is** truly **irreversible: extinction.**

Concerns about extinction are often dismissed as apocalyptic alarmism. Sometimes, they are. But repeating that mankind is still here after 70 years of existential warning about nuclear warfare is a straw man argument. The fact that a 1000-year flood has not happened does not negate its possibility. And there have been far too many nuclear near-misses to rest easy.

As the World Economic Forum’s Annual Meeting in Davos discusses how to create a shared future in a fractured world, here are five reasons why the possibility of existential risks should raise the stakes of conversation:

1. **Extinction is the rule, not the exception**

More than 99.9% of all the species that ever existed are gone. Deep time is unfathomable to the human brain. But if one cares to take a tour of the billions of years of life’s history, we find a litany of forgotten species. And we have only discovered a mere fraction of the extinct species that once roamed the planet.

In the speck of time since the first humans evolved, more than 99.9% of all the distinct human cultures that have ever existed are extinct. Each hunter-gatherer tribe had its own mythologies, traditions and norms. They wiped each other out, or coalesced into larger formations following the agricultural revolution. However, as major civilizations emerged, even those that reached incredible heights, such as the Egyptians and the Romans, eventually collapsed.

It is only in the very recent past that we became a truly global civilization. Our interconnectedness continues to grow rapidly. “Stand or fall, we are the last civilization”, as Ricken Patel, the founder of the global civic movement Avaaz, put it.

2. **Environmental pressures can drive extinction**

More than 15,000 scientists just issued a ‘warning to humanity’. They called on us to reduce our impact on the biosphere, 25 years after their first such appeal. The warning notes that we are far outstripping the capacity of our planet in all but one measure of ozone depletion, including emissions, biodiversity, freshwater availability and more. The scientists, not a crowd known to overstate facts, conclude: “soon it will be too late to shift course away from our failing trajectory, and time is running out”.

In his 2005 book Collapse, Jared Diamond charts the history of past societies. He makes the case that overpopulation and resource use beyond the carrying capacity have often been important, if not the only, drivers of collapse. Even though we are making important incremental progress in battles such as climate change, we must still achieve tremendous step changes in our response to several major environmental crises. We must do this even while the world’s population continues to grow. These pressures are bound to exert great stress on our global civilization.

3. **Superintelligence**: unplanned obsolescence?

Imagine a monkey society that foresaw the ascendance of humans. Fearing a loss of status and power, it decided to kill the proverbial Adam and Eve. It crafted the most ingenious plan it could: starve the humans by taking away all their bananas.

Foolproof plan, right? This story describes the fundamental difficulty with superintelligence. A superintelligent being may always do something entirely different from what we, with our mere mortal intelligence, can foresee. In his 2014 book Superintelligence, Swedish philosopher Nick Bostrom presents the challenge in thought-provoking detail, and advises caution.

Bostrom cites a survey of industry experts that projected a 50% chance of the development of artificial superintelligence by 2050, and a 90% chance by 2075. The latter date is within the life expectancy of many alive today.

Visionaries like Stephen Hawking and Elon Musk have warned of the existential risks from artificial superintelligence. Their opposite camp includes Larry Page and Mark Zuckerberg. But on an issue that concerns the future of humanity, is it really wise to ignore the guy who explained the nature of space to us and another guy who just put a reusable rocket in it?

4. Technology: known knowns and **unknown unknowns**

Many fundamentally disruptive technologies are coming of age, from bioengineering to quantum computing, 3-D printing, robotics, nanotechnology and more. Lord Martin Rees describes potential existential challenges from some of these technologies, such as a bioengineered pandemic, in his book Our Final Century.

Imagine if North Korea, feeling secure in its isolation, could release a virulent strain of Ebola, engineered to be airborne. Would it do it? Would ISIS?

Projecting decades forward, we will likely develop capabilities that are unthinkable even now. The unknown unknowns of our technological path are profoundly humbling.

5. **'The Trump Factor'**

Despite our scientific ingenuity, we are still a confused and confusing species. Think back to two years ago, and how you thought the world worked then. Has that not been upended by the election of Donald Trump as US President, and everything that has happened since?

The mix of billions of messy humans will forever be unpredictable. When the combustible forces described above are added to this melee, we find ourselves on a tightrope.

What choices must we now make now to create a shared future, in which we are not at perpetual risk of destroying ourselves?

Common enemy to common cause

Throughout history, we have **rallied against the ‘other’.** Tribes have overpowered tribes, empires have conquered rivals. Even today, our fiercest displays of unity typically happen at wartime. We give our lives for our motherland and defend nationalistic pride like a wounded lion.

But like the early Morioris, we 21st-century citizens find ourselves on an increasingly unstable island. We may have a violent past, but we have no more dangerous enemy than ourselves. Our task is to find our own Nunuku’s Law. Our own shared contract, based on equity, would help us navigate safely. It would ensure a future that unleashes the full potential of our still-budding human civilization, in all its diversity.

We cannot do this unless we are humbly grounded in the possibility of our own destruction. Survival is life’s primal instinct. In the absence of a common enemy, we must find **common cause in survival.** Our future may depend on whether we realize this.

#### ROTB vote for better debater

### 1NC – Rant

#### Zero internal links to this aff solving its own impacts – no explanation of how banning a single technology is sufficient to catalyze a shift to different modes of computation or destroy speed – that means neg on presumption – every line from every impact card they’ve read is an alt-cause completely divorced from space appropriation – absent causal evidence that defends a specific internal link you should not let Ben fiat away the entire global order’s propensity for technological acceleration, state interests, conflicts, or existing global dynamics.

### 1NC – Computation - D

#### Life isn’t determined by technology.

Susen, 19—Reader in Sociology at the School of Arts and Social Sciences of City, University of London (Simon, “No escape from the technosystem?,” Philosophy & Social Criticism, October 9, 2019, dml)

A major irony of Feenberg’s book is the following contradiction: on several occasions, he criticizes, and distances himself from, technological determinism; key parts of his argument suggest, however, that he himself flirts with, if not subscribes to, technological determinism. He rightly maintains, and convincingly demonstrates, that ‘society and technology are inextricably imbricated’.240 This insight justifies the underlying assumption that there is no comprehensive study of society without a critical sociology of technology. Yet, to contend that ‘[s]ocial groups exist through the technologies that bind their members together’241 is misleading. For not all social groups are primarily defined by the technologies that enable their members to relate to, and to bond with, one another. Indeed, not all social relations, or social bonds, are based on, let alone determined by, technology. Of course, Feenberg is right to argue that ‘technologically mediated groups influence technical design through their choices and protests’.242 Ultimately, though, the previous assertion is tautological. This becomes clear if, in the above sentence, we replace the word ‘technological(ly)’ with terms such as ‘cultural(ly)’, ‘linguistical(ly)’, ‘political(ly)’, ‘economic(ally)’, or indeed another sociological qualifier commonly used to characterize the specificity of a social relation. Hence, we may declare that ‘culturally, linguistically, politically, and economically mediated groups influence cultural, linguistic, political, and economic conventions through their choices and protests’. In saying so, we are stating the obvious. If, however, we aim to make a case for cultural, linguistic, political, or economic determinism, then this is problematic to the extent that we end up reducing the constitution of social arrangements to the product of one overriding causal set of forces (whether these be cultural, linguistic, political, economic, technological, or otherwise). While declaring that he is a critic of technological determinism, Feenberg – in central passages of his book – gives the impression that he is one of its fiercest advocates. Feenberg’s techno-Marxist evolutionism is based on the premise that ‘progress is realized essentially through technosystem change’243 – that is, on the assumption that, effectively, human progress is reducible to technological development. Feenberg is right to stress that ‘[t]echnical progress is joined indissolubly to the democratic enlargement of access to its benefits and protection from its harms’.244 ‘Concretization’,245 understood in this way, conceives of progress as a ‘local, context-bound phenomenon uniting technical and normative dimensions’.246 We may add, however, that progress has not only technical (or technological) but also economic, cultural, and political dimensions, which contain objective, normative, and subjective facets. At times, the differentiation between these aspects is blurred, if not lost, in Feenberg’s account, given his tendency to overstate the power of technology at the expense of other crucial social forces. In other words, progress is not only ‘inextricably entangled with the technosystem’,247 but it is also indissolubly entwined with the economic, cultural, and political systems in which it unfolds and for (or against) which it exerts its objective, normative, and subjective power. The preceding reflection takes us back to the problem of techno-reductionism: The struggle over the technosystem began with the labor movement. Workers’ demands for health and safety on the job were public interventions into production technology.248 All struggles over social (sub)systems have not only a technological but also various other (notably economic, cultural, and political) dimensions. Demands made by particular subjects (defined by class, ethnicity, gender, age, or ability – or a combination of these sociological variables) are commonly expressed in public interventions not only into production technology, but also into economic, cultural, and political systems. In all social struggles (including class struggle), technology can be an important means to an end, but it is rarely an end in itself. Put differently, social struggles are partly – but seldom essentially, let alone exclusively – about technology.

#### Balance-of-power concerns structure state behavior.

**Blagden ’18** [David; 2018; Senior Lecturer in International Security at the Strategy and Security Institute at the University of Exeter*; Realism, Uncertainty, and the Security Dilemma: Identity and the Tantalizing Promise of Transformed International Relations*, *Constructivism Reconsidered: Past, Present, and Future,* “Chapter 12,” p. 205-216]

The previous section documented how social variables might be taken as having the potential to transform international politics. This section now turns to an explanation of why it is so hard to fulfill such seeming transformational promise. Running throughout is the argument that while playing a particular social role or expressing a particular cultural identity are certainly state interests, they are necessarily subordinate to political survival (as a sovereign entity with control over its own foreign policy), “physiological” security (the safety from death and harm of the state’s population), and economic prosperity (a baseline level of which is necessary to ensure physiological security). Put simply, if a state and its population do not exist, it cannot achieve anything else—such as fulfilling a social role or expressing a cultural identity—either.36 And since survival, security, and prosperity all have a material base—as Wendt recognizes via his “rump materialism” (he simply does not think the material base yields determinate outcomes)—so too must states necessarily put the defense of such interests ahead of social role fulfillment if they want to be in a position to play any sort of role in future.37 That is not to suggest that states do not sometimes—or, indeed, often—make ideationally driven foreign policy choices that are detrimental to their other interests. It is simply a description of states’ incentive structure, which much of the time they end up following.

It is necessary at this point to defend the notion that there is, in fact, a material base independent of the social world and that characteristics of that material base can yield causal outcomes. After all, military technology does not descend as manna from heaven, but rather is created via human agency in response to perceived threats, and thus it necessarily contains a dose of military culture and broader social identity from the outset. The same goes for the overall share of national economic resources allocated to defense, and indeed, money itself is a socially constructed store of value, albeit one premised upon underlying materially underpinned wealth.38 Any assessment of strategic priorities is necessarily filtered through the strategic-cultural lens of the institution(s) doing the assessing; asking one’s navy for an analysis of the relative merits of sea denial versus power projection, for example, necessarily delivers an answer infused with that navy’s historical trajectory, its sense of its role in the nation and the world, its internal politics, and so forth. The broader question of whether the sea— like other geographical features—constitutes a strategic barrier or a highway similarly requires cultural interpretation.

Even technologies with such seemingly self-evident destructive power as nuclear weapons are not self-evidently “good” or “bad,” either morally or strategically, absent social interpretation. One might see them as “bad” because of the potential humanitarian consequences of their use (or because of the constraints they impose on conventional military options), or “good” because of the casualties in conventional war they prevent (and deterrence that they enable at low relative cost). Their political meaning is thus socially constructed, even if the physiological effects on human bodies of their detonation have only one possible outcome. If military technology and resources require a social component to be both developed and meaningfully deployed, then Wendt’s contention that there is indeed a “rump” material base but that it is simply indeterminate—in the absence of a friend/enemy distinction—as a cause of international outcomes becomes alluring.39

Crucially, however, each of these social choices involves a decisive material effect that is not open to interpretation. It may be debatable whether nuclear weapons are “good” or “bad,” but the effect that one will have on the city and its population of frail, carbon-based human animals over which it detonates represents a single, determinate outcome—and a state facing another state armed with them must therefore make certain necessary calculations based around that capability.40 In the same vein, while the strategic threat/opportunity constituted by geographical features, such as the oceanic moats enjoyed by the United States and United Kingdom, may be a matter of interpretation, the underlying material factor—humans’ inability to cross water without spending resources on capital (ships) that could otherwise have been spent on further ground forces—yields certain necessary outcomes. Indeed, the very foundation of relations between major powers after 1945—secure second-strike nuclear deterrence and its disincentivization of conventional aggression41—rests on a physical “fact”: the relative impenetrability of water to the electro-magnetic spectrum and the associated survivability that it provides to ballistic missile submarines.

The same goes for the decision over what share of national economic resources to allocate to defense. Choosing a proportion may indeed be a socially and ideationally informed political choice, but the underlying size of the resource pools—and the military potentiality that they underpin— rests on the total size of the state’s capital stock (both human and physical), which is not a matter of social interpretation. And while military technology is indeed developed in response to human agency, it is done so from within the technical bounds of the feasible. Such rebuttals apply more widely: while the balance of power, including resources and technology, is indeed necessarily interpreted through states’ social lenses, it nonetheless conditions the bounds of the possible even in the absence of social content. And when those possibilities include hostile use, certain behaviors are necessitated by prudent states seeking survival for their populations.

Realists should indeed be castigated if they infer predictions solely from the balance of currently existing military hardware—a thin and intellectually impoverished understanding of relative power—and critics are correct to point out that a large stock of materiel is not the same as being able to compel another to do that which they would not otherwise have done, in line with the behavioral output understanding of power commonly associated with Dahl (as distinct from the input understanding).42 But viewing total state power in terms of overall assets, defined as the state’s total stock of physical,43 financial,44 and human capital,45 does a better job of first encompassing all the relevant resources—equipment, stores of value, human bodies and brains—and, second, providing an effective measurable proxy for the underlying causes of behavioral power (given that the latter can only be observed ex post, and is therefore not an effective predictor of outcomes). None of this is to deny that there is a social element to the construction of all these power resources, or indeed that the “material” itself involves a large dose of social input, and this chapter is therefore not attempting to “settle” the debate over the precise nature of the relationship. It is simply to point out, rather, that states’ power resources and their effects are not wholly socially constructed and that the nonsocial element produces certain effects.

Turning to specific arguments over states’ pursuit of status, the notion that achieving a particular elevated status and thus fulfilling a certain international-social role might be a goal of states is relatively uncontentious.46 For instance, one insightful recent constructivist work on Britain’s pursuit of international status suggests at the outset that states’ social roles are not the same as their interests, ambitions, values, or capabilities.47 Yet the same work later asserts that social role actually produces national interests, thus implying that states cannot in fact have interests besides those constituted by identity.48 Such conceptual tensions are symptomatic of a theoretical dilemma: the more minimal former assertion is the harder to refute, yet the more ambitious latter claim is necessary if constructivists are to escape the realist retort that fulfilling a social role is merely an interest of states—and a subordinate one to materially underpinned survival at that—rather than the interest. Escaping this retort is in turn necessary if constructivists are to be able to claim that anarchy is indeed what states make of it socially, since transforming the prevailing culture of anarchy would require states to lower their guard against each other—and thus accept higher risk to their survival, at least while the hoped-for transformation was taking place—in pursuit of an international-social value.

The less contentious point—that playing a particular social role is one of multiple interests—opens the way to conceding that the most fundamental state interests remain “political” survival (of state territory and institutions), “biological” security (of the citizenry’s bodies), and preserving some baseline level of economic prosperity, since a state that cannot survive cannot achieve anything else. But if that is the case, then from these materially underpinned vital interests follows a need to be capable of defending them against potential foes—and that, if it comes to it, means accomplishing certain military missions.49 Such military capability is necessarily underpinned by material resources, even as it also has a socially constructed dimension. Such capability can be provided independently (internal balancing), via allies (external balancing), or through some combination of the two—prudent strategy, including eschewing avoidable confrontation and aligning with the preferences of powerful allies, is a key aspect of state success50—but either way, it rests on some friendly actor’s underlying resources. And reliance on external balancing brings its own dangers, as recently experienced by European NATO, when one’s allies turn coercive.51

In short, such an analysis—while conceding that social role and status are important to states, all else held equal, and that such concerns sometimes drive them to act in imprudent ways—nonetheless suggests that hedging against abandonment, coercion, or outright destruction via balance-of-power positioning is likely to remain pervasive. This is not to say that there will not be variation in the extent and severity of such competition. All manner of ideational variables might exacerbate or reduce tensions, as discussed above, and even in the absence of such social forces, overt, intensive competition may yield self-destructive outcomes if it increases another side’s insecurity and causes them to adopt a more offensively capable strategic posture in response.52 The point, rather, is simply that conflict will never be a wholly absent possibility and that that reality must condition states’ calculations—often to the point of some level of defensive hedging, if the state has the resources and technology to make that feasible—even in times of broadly cooperative relations.

A similar retort can be made against the claims that threat perception and military doctrine are both so fundamentally skewed by culture that they may be commonly and wholly disconnected from balance-of-power concerns, and which subsequently allow for an end to military balancing, mutual threat, and security competition. While this short chapter is clearly not the place for an extensive review, the success of many states— particularly resource-rich ones—in aping military technological and professional best practice would seem to suggest that much of the time states are able to achieve what Gray, borrowing from marketing theory, dubs “good enough” force postures in the face of strategic uncertainty.53 Similarly, when states do “die” in the face of foreign aggression—a rare occurrence in post-1945 international politics—it is more often as a consequence of their relative military weakness and geographical vulnerability than as a consequence of a failure to perceive a looming threat.54 Indeed, a key contribution of the neoclassical realist research program has been to demonstrate that while domestic-political variables may filter strategic behavior in multifarious and often nefarious ways, there are still underlying balance-of-power structural pressures at the international-systemic level that states usually respond to, even if they do so belatedly or imperfectly.55 In short, while Waltzian “socialization” toward accurately perceiving threats and formulating effective military doctrine may frequently be hindered—and sometimes terminally compromised—by cultural factors, as a description of the workings of the international system as a whole (as he intended his theory to be), realist predictions of enduring concern and possible competition over the distribution of material power are not undermined by this recognition.56 Tellingly, despite their strong ideational commitments toward democracy promotion and human rights enforcement under the banner of upholding international order, Western states have recently had the reprioritization of balancing against increasingly capable rivals forced upon them by developments in the balance of power, whether that be China’s rise in Asia for the United States or Russia’s (partial) resurgence in Europe for the rest of NATO.57

Finally, even national identity and the nationalism it engenders—the ideational “master variable” underpinning the nation-state system—is itself forged by the interaction of political group identity and the survival imperative under structural anarchy. To paraphrase Tilly, war makes the state, and the state makes war.58 Modern nation-states may have originated as political groups of individually weak human beings with some shared identity connection, but their choice to form states as protective war machines capable of generating the military power necessary to defend against similar political units, and the subsequent mutual reinforcement of national identity and state strength, is very much consistent with realism’s predictions of the consequences of international structural anarchy. Indeed, as noted earlier, Mearsheimer uses these grounds to argue that nationalism and realism are mutually supportive theories.59 In the post– Cold War world, moreover, mutually threatening political groups’ need to generate the military power necessary for security under anarchy—the security dilemma, in short—helps to explain the explosion of ferocious ethnonationalist and sectarian conflict within and between the new states emerging from the collapse of previously multiethnic communist federations, secular Middle Eastern autocracies, and so forth.60 Such conflict has in turn forged the identity of the states and state-like entities emerging from it. In short, while it is certainly not impossible for national identities to shift, as noted above, the process of their generation nonetheless suggests that they are endogenous to—rather than readily capable of exogenously shifting to transform—international systemic security competition and balance-of-power positioning, that they are as much a dependent variable as an independent variable.

Uncertainty and the Menacing Shadow of the Future

The previous section outlined why some of the otherwise most convincing constructivist variables at work in international politics nevertheless cannot promise to transform international politics away from a world of “realist,” security-motivated balance-of-power positioning. This section turns to discuss why this is something that social variables will continue to struggle with as long as there is an international system.

The principal barrier to states ever setting aside their inclination to guard against each other and instead embrace each other as “friends”—no matter how strong their leaders’ or citizens’ desire to transform the culture of international anarchy—is uncertainty over others’ intentions, particularly their future intentions.61 Following the logic of the prisoners’ dilemma, a state62 that trusts that another means it no harm while the other state concludes that it now has an opportunity to pursue advantage may be punished severely for its complacency, rendering such trust perilous, particularly in security affairs, where defection from cooperation could result in the end of the “game” for one party.63

The meaning and implications of this “uncertainty” assumption merit consideration, however. Human beings are constantly trying to impose certainty on a contingent world via cognitive heuristics and neural shortcuts, for the sake of their own mental well-being.64 Indeed, since humans derive meaning and value from the self-imposed certainty of ideational reinforcement, so too they can derive benefit from the entrenchment of both amity with and enmity against “others,” even when this creates other complications and dangers.65 As a result, much of international politics is influenced by habit, both the habit of friendship and the habit of animosity.66 “Uncertainty” also means different things to different people: for realists, it is a condition from which to infer fear about others’ possible behavior; for constructivists, by contrast, it may simply refer to the inherent indeterminacy of information until it is imbued with social content.67 It may be possible to build trust in others’ benign intent over time and thereby escape security competition, meanwhile, through their costly signaling: forgoing capabilities and policy options that a potential aggressor would not want to do without.68 States can also have the certain “friendship” of those with whom they are balancing against a third-party threat, and if that threat is long-lived, then so too may be the certainty of alliance.69

Illustrating this “uncertainty about uncertainty,”70 consider one of the highest profile oft-invoked security dilemmas: the Cold War escalation of U.S.-Soviet hostility, during which the most seminal security dilemma theorization took place.71 Robert Jervis—one of the concept’s foremost progenitors—subsequently questioned whether the Cold War can be understood as a security dilemma after all, understood as a tragic cycle of mutual threat between nonrevisionist security seekers driven by uncertainty over the other’s intentions. Neither side was “uncertain” over whether the other was an adversary. And as subsequent archival revelations document, each side did want to destroy the other, and correctly inferred as much of its opponent.72

Jervis’s “recantation” of the Cold War-as-security-dilemma is itself bounded, however, and this bounding sheds light on the ways in which varieties of uncertainty can still operate even between states with “certain” mutual intent. “Greedy” states versus “security-seeking” states are themselves binary ideal types that mask an underlying spectrum. Practically all states are greedy, in terms of wanting to improve their lot, if the costs are low enough.73 Conversely, few states are greedy to the point of total unconcern for security; not even Nazi Germany desired limitless global war. While there may not have been uncertainty over each side’s Cold War intent, therefore—enmity-driven desire to defeat and ultimately destroy the other—there was still uncertainty over underlying motivations. 74 A desire to exterminate an enemy population may entail quite different behavior than a desire for ideological supremacy, for example, and the two may therefore merit different policy responses, even though both fall within the domain of “hostile” intent. Such doubt over motivations—even within the cognitively “certain” domain of U.S.-Soviet enmity—still added up to a variety of security dilemma: the most salient question for Americans was not “is the Soviet Union an enemy?” but rather “what might Moscow do about situation X, in Y circumstances, at time Z?” The same is evident in major power politics today. Washington is not “uncertain” over whether or not China and Russia are its “adversaries,” defined in broad and obvious terms, but there is a high degree of uncertainty over what types of rivals they represent and their associated future strategic choices. Recognition of uncertainty’s nonbinary nature, in short, does not undermine the argument that states’ inability to know others’ future behavior with perfect reliability incentivizes them to worry about possible future dangers. Realists disagree over prospects for avoiding security competition through signaling motivations, of course,75 but all variants are united by recognizing the enduring significance of the balance of material power.76

On top of these qualifications to the uncertainty-over-intentions assumption come disagreements over the most appropriate response to such uncertainty. Conceding that we can never know another state’s future intentions with mathematical certainty, and therefore that the worst-case outcome—surprise attack by a concealed aggressor—will always remain a hypothetical possibility does not necessarily imply that security is maximized by treating such a scenario as likely. Provoking war for fear of possible future war is like committing suicide for fear of death, and given the balancing often generated by hostile behavior, provoking others into uniting against oneself through attempted power maximization can ultimately reduce one’s security.77 While worst-case contingencies always merit consideration, policy planning—particularly decisions over how much of the national resource base to devote to defense (“guns”) versus consumption and productive investment (“butter”)78—necessitates probabilistic calculations of the relative dangers of overarmament (provoking balancing alongside domestic economic immiseration) versus underarmament (attack by a better-armed adversary).79 Intense security competition can therefore be an irrational and self-defeating response to mere uncertainty over future intentions, in the absence of other threat data.80 Both “realist” and “constructivist” variables can feature among this threat data and therefore play a crucial part in determining the optimal strategic response to such intentions uncertainty, and that in turn conditions whether the potential threat posed by each side’s capabilities, be they latent or realized, manifests itself as a security dilemma. For many realists, the offense-defense balance of technology and geography determines whether uncertainty over others’ intentions merits military confrontation and determines the (in)stability of states’ strategic relations.81 For constructivists, the solidarity/enmity borne of sociocultural similarity/difference may be equally decisive.

But neither of these observations—that uncertainty neither carries a single meaning nor prescribes a single strategy—undermines the core claim that survival has a material base that necessitates continual security-motivated concern for one’s position in the balance of power. Survival may indeed be “multiply realizable,” with social/ideational variables informing the path taken, alongside various “realist” variables. But given all states’ need to safeguard a materially based hierarchy of interests without wholesale reliance on others’ politically contingent (and therefore capricious) benevolence—whether that be potential abandonment by erstwhile allies, potential attack by erstwhile neutrals, or potential coercion by either—their position in the balance of power will always remain relevant to their future security. And given that situation, the conditions for mutual threat and an associated security dilemma to re-emerge are unlikely to be permanently expunged, despite such a deterioration going unrealized indefinitely in many cases due to other overlying factors.82 Fear of future conflict—at least against some state, if not against any specific state—thus remains an endemic feature of international politics. And much of that is still down to the enduring concerns of structurally based realism: international-systemic anarchy, its absence of a reliable sovereign enforcer of global peace, and the associated dangers of offensively capable peers of unreliably benevolent intent.

Tellingly, while many contemporary states have achieved mutual “friendship,” they have rarely sustained it once the strategic factors holding them together—such as alliance against a mutual threat, shared membership of a great(er) power’s dependency network, or some other mutually beneficial exchange—have disappeared. This suggests that such “friendship” is as much a dependent variable (an outcome of realist balancing behavior) as an independent variable (a transformational force in international politics).83 Even within the zone of friendship that had come to characterize the European “community” by the late 1980s, for example—probably the deepest case of intersubjective recognition, cooperation, and sovereignty pooling to date—Britain and France still worried intensely about the potential power imbalances created by German reunification, and they were not content until reunified German power was subordinated via a restated US commitment to NATO.84 As noted previously, moreover, via both Trump and Brexit—ideationally motivated shifts in foreign policy orientation85—Euro-Atlantic security relations have recently displayed a dramatic backsliding, raising the specter of alliance breakdown and coercive confrontation. The relative power of all sides is critical to their ability to resist/dispense such coercion and safeguard future security even in the possible absence of alliance support. Even within the EU, the ability of members to resist or dispense coercion comes down to relative power: witness Greece’s experience at German hands in the context of the Eurozone crisis, and contrast it with the lack of sanction for Franco-German breaches of EU rules.86 And between NATO and Russia, a 1990s moment of optimism over developing friendship has retrenched to coercive confrontation as an outcome of each other’s choices.87 All these developments—which can be interpreted as negative movement along the spectrum between cooperation and conflict—illustrate the continuing centrality of relative power to safeguarding a hierarchy of national interests without dependence on the changeable commitments of others.

As a consequence, the base conditions for the security dilemma will always exist between sovereign states under anarchy, even if it lies wholly dormant for most states most of the time, thanks to overlying factors. Interstate friendship does not render deterioration to a security dilemma impossible, and neither does interstate animosity preclude stable and durable cooperation.88 So while identity—which in any case is “sticky” and slow to change—certainly matters to security relations, it is unlikely to trump some combination of power and informational variables.89 Of course, if international relations were transformed by the emergence of a single world-state, the system would no longer be anarchic and the units-formerly-known-asstates would not need to rely on relative power for their security, and thus such competition would end.90 That requirement, however, does not look likely to be fulfilled anytime soon.

Conclusion

Conflict and cooperation is not some binary “either/or” condition, but rather a spectrum. So too the security concerns borne of uncertainty over motivations are not some irreversible “on/off” switch, be that permanently severe or permanently solved. There is certainly far more peace in the world than the most pessimistic readings of realism would seem to imply,91 and ideational similarity and solidarity—as well as the power and informational variables beloved of realists—clearly have something to do with this. Interests within the parameters of continuing to survive are socially constituted, and even the route to survival itself represents an ideationally informed choice. But the need to safeguard a materially underpinned hierarchy of interests if states are to continue to exist—a necessary prerequisite to performing any kind of social role—still incentivizes them to value their position in the balance of power as a safeguard against future dangers. Of course, states can and do disregard certain incentive structures in favor of others.92 But until all states are known to have done so—a high bar indeed—the potential for security competition to re-emerge in the international system will continue to exist. And knowing that, states will continue to prize the capabilities to provide for their own security . . . and so on, creating enduring conditions for security dilemmas to one day reappear, even though they go overlain by other factors in most international relationships most of the time.

Both realists and constructivists therefore have work to do, in terms of both refining their paradigmatic cores and recognizing the necessity of analytically eclectic cross-pollination to explain many of the most pressing questions of real-world international politics. Realists must do more to incorporate identity as a variable that produces systemically significant variation in behavior rather than as some adjunct bolt-on, whether that be via the post-1990s boom of neoclassical theorization or attempts at microfoundationally elaborated structural realism.93 Porter’s work on the interaction of power and habit in determining US grand strategy is a good recent example, while—as noted earlier—Snyder’s Myths of Empire remains a key benchmark.94 Constructivists, for their part, must continue to investigate the relationship between states’ potentially infinite array of socially constituted interests, their materially underpinned hierarchy of core survival requirements, and the enduring concern for relative power that the latter generates. Along the way, both sides must be circumspect in their appeals to allegedly “smoking-gun” examples. For realists to claim that structure alone explains World War II or the Cold War, for example— missing the universalist ideologies of German Nazism, Soviet communism, or US liberalism—would be a stretch indeed. Equally, constructivists’ most beloved examples—amicable US-Canadian relations along an easily passable land border, the relative underarmament of Germany and Japan, greater American fear of a few North Korean atomic bombs than hundreds of British thermonuclear warheads, the rise of European Union, and so forth—can all be readily explained with reference to balances of capability and information. “Analytic eclecticism” is easy to profess, but the most pressing contemporary questions of world politics require that theorists practice it too.

For those not interested in resolving paradigm wars or “isms” debates, meanwhile, the intersection of material-structural pressures on state behavior with socially constituted foreign policy preferences provides ample scope for investigating crucial real-world questions of our time. Viewed in rationalist terms, this might involve investigating the role of social variables in informing leaders’ utility functions, and thus their preference orderings under the overall structural constraint of needing to ensure continued survival. Just how far could the United States meddle in the Middle East at the behest of domestic interests, for example, before it critically harmed its power position vis-à-vis China? Extending the previous point, has US unipolarity created unique space for a “crazy” foreign policy that disregards the balance of power—both by the United States itself and by close US allies—and will this change if or when unipolarity wanes?95 Relatedly, just how far can the likes of Germany and Japan sustain their pacifistic foreign policy orientations in the face of US relative decline or disengagement and the likely associated need for them to provide more for their own security? Changing tack, how does a small power like Sweden—say—make its trade-off between providing mobile forces for an EU Battlegroup (a cause it values), on the one hand, and maintaining large amounts of conscripts and armor on its eastern border to hedge against Russia (a threat that it cannot be rid of), on the other? Are UK efforts to rebrand as an “aid superpower” facilitated by a nuclear deterrent and the US alliance, say, providing leeway to follow an ideational foreign policy under the cover of a “good enough” military umbrella? In short, there is scope for any number of midlevel theories of foreign policy under the constraint of still recognizing that interstate balance-of-power considerations continue to structure the international system.

#### Their theory is backwards – speed and communication accelerate political reorganization.

Bleiker 2

Roland Bleiker, Whitman College, Walla Walla, WA, “Politics After Seattle: Dilemmas of the Anti-Globalisation Movement,” Cultures & Conflicts, 20 June 2002, accessed: 29 September 2020, <https://journals.openedition.org/conflits/1057>, R.S.

Globalisation has not annihilated dissent. Quite to the contrary. There are at least two domains in which speed has magnified the possibilities for interfering with the conduct of global politics. First, speed provides activists with a range of new tools to organise and co-ordinate their actions. Many of the protesters that went to Seattle, Melbourne and Prague, for instance, were **brought together by e-mail** correspondences **and** a variety of **web-sites** that organised resistance against neo-liberal forms of globalisation. The increased ability to exchange information across large differences has had a tremendous influence on the mobilisation of dissent within civil society. Social **movements and NGOs** that had hitherto existed in isolation can **now easily communicate** with each other. They can share data and insights about similar concerns and organise common actions in ways that was **not possible before.**27 A study on citizen activism against the Multilateral Agreement on Investment (MAI), for instance, suggests that the Internet played a vital role in the relative success of the movement - the MAI was at least temporarily pushed off the OECD agenda. The Internet was central to the camping insofar as it facilitated communication among activists, permitted publication of a related information and helped to put pressure on politicians and policy-makers in member states.28 Cyber-based protest organisation has become more extensive and sophisticated as activists have learned from previous experiences. The protests in Quebec City, for instance, have given raise to numerous web-sites that exchange information and coordinate future actions.29 Not surprisingly, this move into cyberspace takes place at both sides of the struggle. The World Bank, for instance, has started plans for a major online conference in order to avoid another round of public protests.30 Second, and perhaps even more importantly, speed has fundamentally changed the spatial dynamics of dissident practices. Protest actions, such as street demonstrations or acts of civil disobedience, used to take place in a mostly local context. They engaged the spatial dynamics that were operative in the interactive relationship between ruler and ruler. The contraction of space, however, has altered the very foundations of these socio-political dynamics. An act of protest, as it took place in Seattle, now interacts in a much wider and more complex array of political spaces. Images of a protest march may flicker over television screens world-wide only hours after people have taken to the street. As a result, a local act of **resistance** can **acquire** almost immediately a much larger, **cross-territorial dimension.** Any protest action that draws sufficient media attention has the potential to engender a political process that transcends its immediate spatial environment. It competes for the attention of global television audiences and thus interferes with the struggle over values that ultimately shapes the world we live in. "A world united by Benetton slogans, Nike sweatshops and McDonald's jobs might not be anyone's utopian global village," says Naomi Klein, "but its fibre-optic cables and shared cultural references are nonetheless laying the foundations for the first truly international people's movement. But the recent wave of global protests is hardly the first international movement of its kind. Nor is it as unproblematic as Klein suggests. For some the revolution of speed is too random to allow for critical interference and, indeed, for human agency. Jean Baudrillard, for instance, believes that the distinctions between reality and virtuality, political practice and simulation are blurred to the extent that they are no longer recognisable.32 Our media culture, he says, has annihilated reality in stages, such that in the end its simulating image « bears no relation to any reality whatever : it is its own pure simulacrum. » Television, the unproblematic transmission of the hyperreal, has conditioned our mind such that we have lost the ability to penetrate beneath the manifest levels of surface. Patterns of global protest do not confirm the pessimistic views that Baudrillard and others espouse. The blurring of reality and virtuality has not annihilated dissent. The fact that televised images are hyperreal does not necessarily diminish their influence. Independently of how instantaneous, distorted and simulated images of a protest action may be, they still influence our perceptions of issues, and thus also our political responses to them. To accept the logic of speed, then, is not to render political influence obsolete, but to acknowledge multiple and overlapping spatial and temporal spheres within which political practices are constantly being shaped and reshaped. Judged from such a vantage-point, the actions in Seattle and other cities are not quite as ineffective as they appear at first sight. Even without engendering immediate institutional transformations, traces of these protest events continue to influence the struggle over global values - and thus over the direction of politics. The repeated presence of protest actions around the world guarantees that a number of key issues, from environmental protection to minimal labour standards, remain discussed in the public sphere. Indeed, even before Seattle, O'Brien and his collaborators had already concluded that the interaction between social movements and multilateral economic institutions has transformed the nature of global economic governance. The authors label this transformation "complex multilateralism" in order to recognise that actors other than states now can and do express the public interest and shape issues of governance.34 The ensuing dynamics testify for the emergence of a new kind of global politics - one in which key political struggles occur beyond the control of the national state. Consider, for instance, how global networks of **communication** have **enabled indigenous peoples** in the United States, Canada, Australia and New Zealand **to engage in** forms of **activism that ensured** them an **audience beyond their** immediate **surroundings.** For William Connelly, this tendency confirms that speed has multiple dimensions : not only the encroaching and disabling one that Baudrillard (and to some extent Virilio) argue, but also one that "supports the possibility of democratic pluralization."35 Some even think ahead towards a time in which we can speak of unconditional universal hospitality - a situation in which rights and responsibilities would no longer be circumscribed by the spatial and political logic of national sovereignty.36

### 1NC – Computation Good

#### Computational entanglement solves crisis escalation.

Corneliu Bjola 19, Head of the Oxford Digital Diplomacy Research Group, University of Oxford, 11/10/19, “Diplomacy in the Age of Artificial Intelligence,” http://www.realinstitutoelcano.org/wps/portal/rielcano\_en/contenido?WCM\_GLOBAL\_CONTEXT=/elcano/elcano\_in/zonas\_in/ari98-2019-bjola-diplomacy-in-the-age-of-artificial-intelligence

Taking note of the fact that developments in AI are so dynamic and the implications so wide-ranging, another report prepared by a German think tank calls on Ministries of Foreign Affairs (MFAs) to immediately begin planning strategies that can respond effectively to the influence of AI in international affairs. Economic disruption, security & autonomous weapons, and democracy & ethics are the three areas they identify as priorities at the intersection of AI and foreign policy. Although they believe that transformational changes to diplomatic institutions will eventually be needed to meet the challenges ahead, they favour, in the short term, an incremental approach to AI that builds on the successes (and learns from the failures) of “cyber-foreign policy”, which, in many countries, has been already internalised in the culture of the relevant institutions, including of the MFAs.13 In the same vein, the authors of a report prepared for the Centre for a New American Security see great potential for AI in national security-related areas, including diplomacy. For example, AI can help improve communication between governments and foreign publics by lowering language barriers between countries, enhance the security of diplomatic missions via image recognition and information sorting technologies, and support international humanitarian operations by monitoring elections, assisting in peacekeeping operations, and ensuring that financial aid disbursements are not misused through anomaly detection.14

From an AI perspective, consular services could be a low-hanging fruit for AI integration in diplomacy as decisions are amenable to digitisation, the analytical contribution is reasonable relevant and the technology favours collaboration between users and the machine. Consular services rely on highly structured decisions, as they largely involve recurring and routinised operations based on clear and stable procedures, which do not need to be treated as new each time a decision has to be made (except for crisis situations, which are discussed further below). From a knowledge perspective, AI-assisted consular services may embody declarative (know-what) and procedural knowledge (know-how) to automate routinised operations and scaffold human cognition by reducing cognitive effort. This can be done by using data mining and data discovery techniques to organize the data and make it possible to identify patterns and relationships that would be difficult to observe otherwise (e.g., variation of demand for services by location, time, and audience profile).

Case study #1: AI as Digital Consul Assistant

The consulate of country X has been facing uneven demand for emergency passports, visa requests and business certifications in the past five years. The situation has led to a growing backlog, significant loss of public reputation and a tense relationship between the consulate and the MFA. An AI system trained with data from the past five years uses descriptive analytics to identify patterns in the applications and concludes that August, May and December are the most likely months to witness an increase of the demand in the three categories next year. AI predictions are confirmed for August and May but not for December. AI recalibrates its advice using updated data and the new predictions help consular officers manage requests more effectively. As the MFA confidence in the AI system grows, the digital assistant is then introduced to other consulates experiencing similar problems.

Digital platforms could also emerge as indispensable tools for managing diplomatic crises in the digital age and for good reasons. They can help embassies and MFAs make sense of the nature and gravity of the events in real-time, streamline the decision-making process, manage the public’s expectations, and facilitate crisis termination. At the same time, they need to be used with great care as factual inaccuracies, coordination gaps, mismatched disclosure level, and poor symbolic signalling could easily derail digital efforts of crisis management.15 AI systems could provide great assistance to diplomats in times of crisis by helping them make sense of what it is happening (descriptive analytics) and identify possible trends (predictive analytics). The main challenge for AI is the semi-structured nature of the decisions to be taken. While many MFAs have pre-designed plans to activate in case of a crisis, it is safe to assume that reality often defies the best crafted plans. Given the high level of uncertainty in which crisis decision-making operates and the inevitable scrutiny and demand of accountability to occur if something goes wrong, AI integration can work only if humans retain control over the process. As a recent SIPRI study pointed out, AI systems may fail spectacularly when confronted with tasks or environments that differ slightly to those they were trained for. Their algorithms are also opaque, which makes difficult for humans to explain how they work and whether they include bias that could lead to problematic –if not dangerous– behaviours.16

#### It prevents, rather than causing, endless warfare.

James Andrew Lewis 18, senior vice president at the Center for Strategic and International Studies, Ph.D. from the University of Chicago, January 2018, “Rethinking Cybersecurity: Strategy, Mass Effect, and States,” https://espas.secure.europarl.europa.eu/orbis/sites/default/files/generated/document/en/180108\_Lewis\_ReconsideringCybersecurity\_Web.pdf, p. 16-17

Cyber Operations and Interstate Conflict

International relations are being reshaped by the confluence of several powerful trends, some created by new technologies, some by the powerful reaction to American hegemony, and some from the fraying of the international order created after 1945. In contrast to sunny millennial optimism, efforts to improve cybersecurity must be designed for a period where, for an unknown duration, there will be increased conflict as states challenge the liberal postwar order. We are at the end of a sustained period of strategic stability17 and conflict, albeit at low levels, will be the norm. Conflict between states will take new forms and cyber operations will be an important part of this. They are ideal for the new strategic environment, given their opacity, the lack of clear norms, and inadequate defenses.

Opponent actions that stay below this threshold inhabit a "gray area," that is neither peace nor war, where the United States and its allies, unable to use military force in response, have so far been stymied in designing and articulated an effective reply. Opponents will exploit gray areas in international law to coerce without triggering armed conflict. Deterrence will be more difficult in this opaque environment, and we will see increased use by our opponents of coercive acts that fall below thresholds for the use of force or armed attack.

The future of armed conflict is that major powers will try to avoid armed confrontation. Wars between big, heavily armed states are expensive and risky, particularly if they have nuclear weapons. The major powers will not renounce the use of force and coercion—Russia, the United States, China, Iran, North Korea, and others use force or the threat of force all the time— but they will try to avoid war with each other. If major powers do stumble into conventional war, cyber attacks will be a part of the fighting, but the real nature of cyber conflict involves something other than warfare and lacks the sharp discontinuity between war and peace. The experience of the last decade suggests that the norm for interstate conflict will be increasingly continuous and not kinetic.

#### Externally solves global environmental sustainability -- extinction.

David Victor 19, professor of international relations at the School of Global Policy and Strategy and director of the Laboratory on International Law and Regulation, Co-Chair of the Brookings Initiative on Energy and Climate, 1/10/19, “How artificial intelligence will affect the future of energy and climate,” https://www.brookings.edu/research/how-artificial-intelligence-will-affect-the-future-of-energy-and-climate/

HOW AI WILL IMPROVE CLIMATE POLICY

Since the chief protagonist in the climate change story, CO2, has a long atmospheric lifetime, there is only a sluggish relationship between changes in emissions and the accumulated concentrations; in turn, those concentrations have a sluggish impact on the climate. Even if AI were part of some massive transformation in the energy system, the built-in inertia of that energy system, along with the inertia in the climate system, virtually guarantees that the world is in for a lot of climate change. All this is grim news and means that widely discussed goals, such as stopping warming at 1.5 or 2 degrees Celsius are unlikely to be realized.

These geophysical and infrastructural realities give rise to a new policy reality: adaptation is urgent.[7] They also mean that emergency responses to extreme climate impacts—for example, solar geoengineering, might be needed as well.

Existing research shows that there is a huge difference in the impact on public welfare from scenarios where climate change affects a society that doesn’t have an adaptation plan compared with a society that takes active adaptive measures. For example, the most recent U.S. climate-impact assessment released in November 2018 demonstrates that active adaptation measures can radically reduce losses from some climate impacts—often with benefits that far exceed the costs.[8] Extreme climate change is going to be ugly and will require hard choices—such as which coastlines to protect or abandon. Without smart adaptation strategies, it will be a lot worse.

One of the central insights from the science of climate impacts is that extreme events will cause most of the damage. A world that is a bit warmer and wetter (and a bit drier in some places) is a world that societies, within reason, can probably adapt to—especially if those gradual changes are easy to anticipate. But a world that has more extreme events—put differently, climate events that have a higher variance—is a world that requires a lot more preparedness. A farming area that faces a new, significant risk of truly extreme drought for example, such as a decade-long dust bowl, will need to prepare as if that extreme event is commonplace. It will need irrigation systems, the option of planting hardier crops and other possible interventions that sit ready when the extreme events come.

Once those systems are purchased, much of the expense is borne and it makes sense to use them all the time. This has been the experience, for example, with the Thames river barrier or a similar Dutch flood barrier—these systems were designed and installed at vast expense with extreme events in mind, and now they are being used much more frequently. Climate impacts are, fundamentally, stochastic events centered around shifting medians—a warmer world, for example, is one where median temperature rises and where the whole distribution of temperatures from cold to hot shifts hotter. But the tails in that statistical distribution also probably fatten, and for some impacts, those tails get a lot fatter. Machine learning techniques will probably improve the ability to understand the shapes of those tails.

This logic of extreme events as the main drivers of climate impacts and response strategies has some big implications for how societies will plan for adaptation and how AI can help—possibly in transformative ways.

First, AI can help focus and adjust adaptation strategies. Because uncertainty is high and extreme events are paramount, policymakers, firms, and households will not know where to act nor what expense is merited. They will have a large portfolio of responses, each with an option value. Machine learning can help improve the capacity to assess those option values more rapidly. Such techniques might also make it possible to rely more heavily on market forces to weigh which options generate private and public welfare—if so, AI could help reduce one of the greatest dangers as societies develop adaptation strategies, which is that they commit vast resources to adaptation without guiding resources to their greatest value. High levels of uncertainty, along with acute private incentives that can mis-allocate resources—for example, local construction firms and organized labor might favor some kinds of adaptive responses (e.g., building sea walls and other hardened infrastructure) even when other less costly options are available—mean that adaptation needs could generate a massive call on resources and thus a massive opportunity for mischief and mis-allocation.

Second, most adaptation efforts are intrinsically local and regional affairs. As a matter of geophysics, climate change harms public welfare when general perturbations in the oceans and atmosphere get translated into specific climatological events that are manifest in specific places—specific coastlines, mountainous regions, public lands, and natural ecosystems. As a matter of public policy, the actors whose responses have the biggest leverage on local impacts are managers of local infrastructures—coastal and urban planners, developers, city managers, and the like. Politically, this is one of the reasons why, despite all the difficulties in mobilizing action to control emissions, it is likely that as communities realize what’s at stake with adaptation, they will respond. Local responses generate, for the most part, local benefits. A big challenge in all this local response, however, is that local authorities are intrinsically decentralized and usually not steeped in technical expertise. Getting the best information on climate impacts and response strategies—let alone keeping that information aligned with local circumstances and shifting odds for climate impacts—is all but impossible. AI could help lower that cost and, in effect, democratize quality climate impacts response.

#### Informatization of war reduces violence.

Thomas Rid 13, THOMAS RID is a Reader in War Studies at King’s College London, 12-1-2013, "Cyberwar and Peace," Foreign Affairs, https://www.foreignaffairs.com/articles/2013-10-15/cyberwar-and-peace

Cyberwar Is Coming!” declared the title of a seminal 1993 article by the RAND Corporation analysts John Arquilla and David Ronfeldt, who argued that the nascent Internet would fundamentally transform warfare. The idea seemed fanciful at the time, and it took more than a decade for members of the U.S. national security establishment to catch on. But once they did, a chorus of voices resounded in the mass media, proclaiming the dawn of the era of cyberwar and warning of its terrifying potential. In February 2011, then CIA Director Leon Panetta warned Congress that “the next Pearl Harbor could very well be a cyberattack.” And in late 2012, Mike McConnell, who had served as director of national intelligence under President George W. Bush, warned darkly that the United States could not “wait for the cyber equivalent of the collapse of the World Trade Centers.” Yet the hype about everything “cyber” has obscured three basic truths: cyberwar has never happened in the past, it is not occurring in the present, and it is highly unlikely that it will disturb the future. Indeed, rather than heralding a new era of violent conflict, so far the cyber-era has been defined by the opposite trend: a computer-enabled assault on political violence. Cyberattacks diminish rather than accentuate political violence by making it easier for states, groups, and individuals to engage in two kinds of aggression that do not rise to the level of war: sabotage and espionage. Weaponized computer code and computer-based sabotage operations make it possible to carry out highly targeted attacks on an adversary’s technical systems without directly and physically harming human operators and managers. Computer-assisted attacks make it possible to steal data without placing operatives in dangerous environments, thus reducing the level of personal and political risk. These developments represent important changes in the nature of political violence, but they also highlight limitations inherent in cyberweapons that greatly curtail the utility of cyberattacks. Those limitations seem to make it difficult to use cyberweapons for anything other than one-off, hard-to-repeat sabotage operations of questionable strategic value that might even prove counterproductive. And cyber-espionage often requires improving traditional spycraft techniques and relying even more heavily on human intelligence. Taken together, these factors call into question the very idea that computer-assisted attacks will usher in a profoundly new era. THE THIN CASE FOR CYBERWAR One reason discussions about cyberwar have become disconnected from reality is that many commentators fail to grapple with a basic question: What counts as warfare? Carl von Clausewitz, the nineteenth-century Prussian military theorist, still offers the most concise answer to that question. Clausewitz identified three main criteria that any aggressive or defensive action must meet in order to qualify as an act of war. First, and most simply, all acts of war are violent or potentially violent. Second, an act of war is always instrumental: physical violence or the threat of force is a means to compel the enemy to accept the attacker’s will. Finally, to qualify as an act of war, an attack must have some kind of political goal or intention. For that reason, acts of war must be attributable to one side at some point during a confrontation. No known cyberattack has met all three of those criteria; indeed, very few have met even one. Consider three incidents that today’s Cassandras frequently point to as evidence that warfare has entered a new era. The first of these, a massive pipeline explosion in the Soviet Union in June 1982, would count as the most violent cyberattack to date -- if it actually happened. According to a 2004 book by Thomas Reed, who was serving as a staffer on the U.S. National Security Council at the time of the alleged incident, a covert U.S. operation used rigged software to engineer a massive explosion in the Urengoy-Surgut-Chelyabinsk pipeline, which connected Siberian natural gas fields to Europe. Reed claims that the CIA managed to insert malicious code into the software that controlled the pipeline’s pumps and valves. The rigged valves supposedly resulted in an explosion that, according to Reed, the U.S. Air Force rated at three kilotons, equivalent to the force of a small nuclear device. But aside from Reed’s account, there is hardly any evidence to prove that any such thing happened, and plenty of reasons to doubt that it did. After Reed published his book, Vasily Pchelintsev, who was reportedly the KGB head of the region when the explosion was supposed to have taken place, denied the story. He surmised that Reed might have been referring to a harmless explosion that happened not in June but on a warm April day that year, caused by pipes shifting in the thawing ground of the tundra. Moreover, no Soviet media reports from 1982 confirm that Reed’s explosion took place, although the Soviet media regularly reported on accidents and pipeline explosions at the time. What’s more, given the technologies available to the United States at that time, it would have been very difficult to hide malicious software of the kind Reed describes from its Soviet users. Another incident often related by promoters of the concept of cyberwar occurred in Estonia in 2007. After Estonian authorities decided to move a Soviet-era memorial to Russian soldiers who died in World War II from the center of Tallinn to the city’s outskirts, outraged Russian-speaking Estonians launched violent riots that threatened to paralyze the city. The riots were accompanied by cyber-assaults, which began as crude disruptions but became more sophisticated after a few days, culminating in a “denial of service” attack. Hackers hijacked up to 85,000 computers and used them to overwhelm 58 Estonian websites, including that of the country’s largest bank, which the attacks rendered useless for a few hours. Estonia’s defense minister and the country’s top diplomat pointed their fingers at the Kremlin, but they were unable to muster any evidence. For its part, the Russian government denied any involvement. In the wake of the incident, Estonia’s prime minister, Andrus Ansip, likened the attack to an act of war. “What’s the difference between a blockade of harbors or airports of sovereign states and the blockade of government institutions and newspaper websites?” he asked. It was a rhetorical question, but the answer is important: unlike a naval blockade, the disruption of websites is not violent -- indeed, not even potentially violent. The choice of targets also seemed unconnected to the presumed tactical objective of forcing the government to reverse its decision on the memorial. And unlike a naval blockade, the attacks remained anonymous, without political backing, and thus unattributable. A year later, a third major event entered the cyber-Cassandras’ repertoire. In August 2008, the Georgian army attacked separatists in the province of South Ossetia. Russia backed the separatists and responded militarily. The prior month, in what might have been the first time that an independent cyberattack was launched in coordination with a conventional military operation, unknown attackers had begun a campaign of cyber-sabotage, defacing prominent Georgian websites, including those of the country’s national bank and the Ministry of Foreign Affairs, and launching denial-of-service attacks against the websites of Georgia’s parliament, its largest commercial bank, and Georgian news outlets. The Georgian government blamed the Kremlin, just as the Estonians had done. But Russia again denied sponsoring the attacks, and a NATO investigation later found “no conclusive proof” of who had carried them out. The attack set off increasingly familiar alarm bells within American media and the U.S. national security establishment. “The July attack may have been a dress rehearsal for an all-out cyberwar,” an article in The New York Times declared. Richard Clarke, a former White House cybersecurity czar, warned that the worst was yet to come: the Georgian attack did not “begin to reveal what the Russian military and intelligence agencies could do if they were truly on the attack in cyberspace.” Yet the actual effects of these nonviolent events were quite mild. The main damage they caused was to the Georgian government’s ability to communicate internationally, thus preventing it from getting out its message at a critical moment. But even if the attackers intended this effect, it proved short-lived: within four days after military confrontations had begun in earnest, the Georgian Foreign Ministry had set up an account on Google’s blog-hosting service. This move helped the government keep open a channel to the public and the news media. What the Internet took away, the Internet returned. ISTOCK.COM / -ANTONIO- Overblown: keyboard as grenade. IN CODE WE TRUST? Perhaps the strongest evidence presented by advocates of the concept of cyberwar is the Stuxnet operation launched against Iran by the United States and Israel. Stuxnet, part of a set of attacks known as Operation Olympic Games, was a sophisticated multiyear campaign to sabotage Iran’s nuclear enrichment facility in Natanz by inserting a harmful computer worm into the software that ran the facility’s centrifuges, causing them to overload. American and Israeli developers started designing the project as early as 2005, and it launched in 2007, growing more sophisticated until its discovery in 2010. The attack was groundbreaking in several ways. The developers built highly target-specific intelligence into the code, enabling the Stuxnet software to make autonomous decisions in its target environment. Most important, Stuxnet represented the first and only physically destructive cyberattack launched by one state (or, in this case, two states) against another. Yet even cyberattacks that cause damage do so only indirectly. As an agent of violence, computer code faces a very basic limit: it does not have its own force or energy. Instead, any cyberattack with the goal of material destruction or harming human life must utilize the force or energy embedded in its target: for example, shutting down an air traffic control system and causing trains or planes to crash or disrupting a power plant and sparking an explosion. Yet besides Stuxnet, there is no proof that anyone has ever successfully launched a major attack of this sort. Lethal cyberattacks, while certainly possible, remain the stuff of fiction: none has ever killed or even injured a single human being. Thanks to its lack of direct physical impact, code-induced violence also has less emotional impact. It would be difficult for a cyberattack to produce the level of fear that coordinated campaigns of terrorism or conventional military operations produce. Owing to their invisibility, cyberweapons also lack the symbolic power of traditional ones. Displays of weaponry, such as the elaborate military parades put on by China and North Korea, sometimes represent nothing more than nationalist pageantry. But revealing one’s arsenal can also serve tactical and strategic ends, as when countries deploy aircraft carriers to demonstrate their readiness to use force or carry out operations designed to intimidate the enemy, such as using military aircraft to conduct deliberately low flyovers. Indeed, displaying weapons systems and threatening to use them can prove more cost-efficient than their actual use. But cyberweapons are hard to brandish. Perhaps the most crucial limitation of violence in cyberspace is its almost entirely destructive quality: unlike traditional political violence, which can maintain trust in institutions and states as well as undermine it, violence in cyberspace can do only the latter. Any established political order comes with a certain degree of inherent violence; consolidated states, after all, survive only if they maintain monopolies on the legitimate use of force. By encouraging trust in the ability of state institutions to protect property and safeguard citizens, this inherent violence buttresses a state’s power and allows the state to establish the rule of law. But cyber-violence lacks this ability, since it does little or nothing to build up trust in institutions; indeed, it is very difficult to imagine how cyberattacks could be used to enforce rules or laws, either domestically or internationally. Digital surveillance presents a more complicated picture. In democracies, intelligence agencies tread a thin line between providing security and eroding public trust in the state, as demonstrated by the recent controversy over the U.S. National Security Agency’s data-collection practices. In authoritarian countries, digital surveillance can assist the state’s coercive use of force, but it cannot replace it. Such limitations, however, should not lead anyone to dismiss the corrosive potential of cyberattacks. Indeed, such assaults can undermine social trust in a more direct way than traditional political violence. Cyberattacks are more precise; they do not necessarily undermine the state’s monopoly of force in a wholesale fashion. Instead, they can be tailored to attack specific companies or public-sector organizations and used to undermine those groups’ authority selectively. Stuxnet provides a good example of this dynamic. Putting aside the question of whether the attack was an act of war, its primary intention was to undermine the trust of the Iranian scientists in their systems and in themselves and the trust of the Iranian regime in its ability to build nuclear weapons. The original intention was to cause physical damage to as many Iranian centrifuges as possible. But the American and Israeli attackers knew that the physical effect could be exploited to unleash a much more damaging psychological effect. “The intent was that the failures should make them feel they were stupid, which is what happened,” an American participant told The New York Times. The Americans and the Israelis hoped that once a few machines failed, the Iranian engineers would shut down more machines because they distrusted their own technology or indeed their own skills. At the headquarters of the International Atomic Energy Agency, in Vienna, rumors circulated that the Iranians had lost so much confidence in their own systems and instruments that the management of the Natanz facility took the extraordinary step of assigning engineers to sit in the plant and radio back what they saw to confirm the instrument readings. “They overreacted,” one of the attackers revealed to David Sanger of The New York Times, “and that delayed them even more.” The Iranians also began to assign blame internally, pointing fingers at one another and even firing some personnel. DIGITAL UNDERGROUND Damaging though it may have been, Stuxnet, along with the cyber-scuffles in Estonia and Georgia, represents not a new form of warfare but something more akin to other, less lethal forms of aggression: sabotage and espionage. Unlike acts of war, these political crimes, which are often committed by nonstate actors, need not be violent to work. And although saboteurs and spies do act politically, they often seek to avoid attribution, unlike those who launch acts of war. For those reasons, the cyber-era has been a boon for political crime. Consider sabotage. Before the computer age, saboteurs had trouble calibrating and controlling the effects of their actions. Sabotage had to target physical property and relied on physical violence, which often proves unpredictable. During postal and railway strikes in France in 1909 and 1910, for instance, saboteurs cut signal wires and tore down telegraph posts. Destroying property risked running afoul of public opinion, and the tactic ultimately divided the workers. The strikes themselves, as a form of sabotage, also ran the risk of leading to unpredictable violence: indeed, labor demonstrations often intensified into riots, making it easier for opponents to portray the strikers as uncompromising radicals. It is much easier for saboteurs to avoid counterproductive side effects in the age of computer-assisted attacks, which can contain violence and generally avoid it altogether. Cyberattacks can maliciously affect software and business processes without interfering with physical industrial processes, remaining nonviolent but sometimes still causing greater damage than a traditional assault. A 2012 attack against the computer network of the oil company Saudi Aramco illustrates this potential. The attack physically harmed neither hardware nor humans. Yet by allegedly erasing the hard disks of some 30,000 computers, the attackers likely did much more monetary damage to Saudi Aramco than they could have through an act of traditional sabotage against machinery in one of the company’s plants. The oil giant reportedly had to hire six specialized computer security firms to help with its forensic investigation and post-attack cleanup. Despite such potential, it is also important to remember the inherent limitations of computer-assisted political crime and to note that human agents remain critical in the age of digital violence. Even Stuxnet, the most successful example of cyber-sabotage, demonstrates this fact. For the United States and Israel, the “holy grail,” in the words of one of the attack’s architects, was getting a piece of malicious software into the control system at Natanz. The Americans and Israelis needed fine-grained data from inside the Iranian plant to develop their weaponized code. The problem was that the control system was protected by an air gap: it was not connected to the Internet or even internal networks. As a result, the attackers had to deliver the malicious code via a removable hard drive such as a USB flash drive -- delivered by a human hand. To make this happen, U.S. intelligence operatives first obtained a list of the people who were visiting the targeted plant to work on its computer equipment and who could carry the payload there. “We had to find an unwitting person on the Iranian side of the house who could jump the gap,” one planner later told Sanger. The list of possible carriers included engineers from the German company Siemens, who were helping their Iranian colleagues maintain the control system -- work that required the Siemens engineers to bring portable computers into the plant. Precisely how the U.S.-Israeli team managed to exploit this vulnerability remains unknown. Suffice it to say that although “Siemens had no idea they were a carrier,” in the words of one U.S. official quoted by Sanger, “it turns out there is always an idiot around who doesn’t think much about the thumb drive in their hand.” SAFETY IN ONES AND ZEROS If cyberattacks reduce the amount of violence inherent in conflict, and if they often take the form of sabotage or espionage, then many officials and commentators who have been warning about the dawn of cyberwar have been ringing false alarms. Digital violence does have implications for ethics and for national security strategy, however. Weaponized code, or cyberattacks more generally, can achieve goals that used to require conventional force. The most sophisticated cyberattacks are highly targeted, and cyberweapons are unlikely to cause collateral damage in the same way conventional weapons do. Therefore, in many situations, the use of computers would be ethically preferable to the use of conventional weapons: a cyberattack might be less violent, less traumatizing, and more limited.

#### Unsustainability claims are suspect because our brains are wired for techno-pessimism – digital synchronicity can fix racism embedded in cybernetics thru human ingenuity and make the world materially better

Reinhart 18 (Will Rinehart is Director of Technology and Innovation Policy at the American Action Forum, where he specializes in telecommunication, Internet, and data policy, with a focus on emerging technologies and innovation. Rinehart previously worked at TechFreedom, where he was a Research Fellow. He was also previously the Director of Operations at the International Center for Law & Economics. In Defense of Techno-optimism. 10-10-2018. <https://techliberation.com/2018/10/10/in-defense-of-techno-optimism/> //shree)

Many are understandably pessimistic about platforms and technology. This year has been a tough one, from Cambridge Analytica and Russian trolls to the implementation of GDPR and data breaches galore. Those who think about the world, about the problems that we see every day, and about their own place in it, will quickly realize the immense frailty of humankind. Fear and worry makes sense. We are flawed, each one of us. And technology only seems to exacerbate those problems. But life is getting better. Poverty continues nose-diving; adult literacy is at an all-time high; people around the world are living longer, living in democracies, and are better educated than at any other time in history. Meanwhile, the digital revolution has resulted in a glut of informational abundance, helping to correct the informational asymmetries that have long plagued humankind. The problem we now face is not how to address informational constraints, but how to provide the means for people to sort through and make sense of this abundant trove of data. These macro trends don’t make headlines. Psychologists know that people love to read negative articles. Our brains are wired for pessimism. In the shadow of a year of bad news, it helpful to remember that Facebook and Google and Reddit and Twitter also support humane conversations. Most people aren’t going online to talk about politics and if you are, then you are rare. These sites are places where families and friends can connect. They offer a space of solace – like when chronic pain sufferers find others on Facebook, or when widows vent, rage, laugh and cry without judgement through the Hot Young Widows Club. Let’s also not forget that Reddit, while sometimes a place of rage and spite, is also where a weight lifter with cerebral palsy can become a hero and where those with addiction can find healing. And in the hardest to reach places in Canada, in Iqaluit, people say that “Amazon Prime has done more toward elevating the standard of living of my family than any territorial or federal program. Full stop. Period” Three-fourths of Americans say major technology companies’ products and services have been more good than bad for them personally. But when it comes to the whole of society, they are more skeptical about technology bringing benefits. Here is how I read that disparity: Most of us think that we have benefited from technology, but we worry about where it is taking the human collective. That is an understandable worry, but one that shouldn’t hobble us to inaction. Nor is technology making us stupid. Indeed, quite the opposite is happening. Technology use in those aged 50 and above seems to have caused them to be cognitively younger than their parents to the tune of 4 to 8 years. While the use of Google does seem to reduce our ability to recall information, studies find that it has boosted other kinds of memory, like retrieving information. Why remember a fact when you can remember where it is located? Concerned how audiobooks might be affecting people, Beth Rogowsky, an associate professor of education, compared them to physical reading and was surprised to find “no significant differences in comprehension between reading, listening, or reading and listening simultaneously.” Cyberbullying and excessive use might make parents worry, but NIH supported work found that “Heavy use of the Internet and video gaming may be more a symptom of mental health problems than a cause. Moderate use of the Internet, especially for acquiring information, is most supportive of healthy development.” Don’t worry. The kids are going to be alright. And yes, there is a lot we still need to fix. There is cruelty, racism, sexism, and poverty of all kinds embedded in our technological systems. But the best way to handle these issues is through the application of human ingenuity. Human ingenuity begets technology in all of its varieties. When Scott Alexander over at Star Slate Codex recently looked at 52 startups being groomed by startup incubator Y Combinator, he rightly pointed out that many of them were working for the betterment of all: Thirteen of them had an altruistic or international development focus, including Neema, an app to help poor people without access to banks gain financial services; Kangpe, online health services for people in Africa without access to doctors; Credy, a peer-to-peer lending service in India; Clear Genetics, an automated genetic counseling tool for at-risk parents; and Dost Education, helping to teach literacy skills in India via a $1/month course. Twelve of them seemed like really exciting cutting-edge technology, including CBAS, which describes itself as “human bionics plug-and-play”; Solugen, which has a way to manufacture hydrogen peroxide from plant sugars; AON3D, which makes 3D printers for industrial uses; Indee, a new genetic engineering system; Alem Health, applying AI to radiology, and of course the obligatory drone delivery startup. Eighteen of them seemed like boring meat-and-potatoes companies aimed at businesses that need enterprise data solution software application package analytics targeting management something something something “the cloud”. As for the other companies, they were the kind of niche products that Silicon Valley has come to be criticized for supporting. Perhaps the Valley deserves some criticism, but perhaps it deserves more credit than it’s been receiving as-of-late. Contemporary tech criticism displays a kind of anti-nostalgia. Instead of being reverent for the past, anxiety for the future abounds. In these visions, the future is imagined as a strange, foreign land, beset with problems. And yet, to quote that old adage, tomorrow is the visitor that is always coming but never arrives. The future never arrives because we are assembling it today. We need to work diligently together to piece together a better world. But if we constantly live in fear of what comes next, that future won’t be built. Optimism needn’t be pollyannaish. It only needs to be hopeful of a better world.

### 1NC – Space Col Good

#### Space col possible within decades

Armstrong & Sandberg 13 [Stuart Armstrong and Anders Sandberg, \* James Martin Research Fellow, Future of Humanity Institute, Oxford University, \*\* PhD in computational neuroscience from Stockholm University, and is currently a Senior Research Fellow at the Future of Humanity Institute at the University of Oxford, “Eternity in six hours: Intergalactic spreading of intelligent life and sharpening the Fermi paradox,” 2013, *Acta Astronautica*, Vol. 89, pp. 1-13, https://doi.org/10.1016/j.actaastro.2013.04.002, EA]

We have shown that, given certain technological assumptions, intergalactic colonisation appears to be possible given known natural laws and the resources within a solar system. This process could be initiated on a surprisingly short timescale (decades)—well within timescales we know some human societies have planned and executed large projects. A star-spanning civilisation would find the energy and resources requirement to be so low that they could do this project as an aside to their usual projects. Thus if interstellar expansion can be attempted, then intergalactic expansion should also be feasible. Indeed, there is likely no inherent limitation on the scales of activities of technological civilisations beyond those imposed by the laws of nature and available resources [51].

#### Only private sector solves it

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

#### Space colonization solves otherwise inevitable extinction.

Zarkadakis 19 [George; December 26; Ph.D. in Artificial Intelligence; George Zardakis, “Abandoning the metropolis: space colonisation as the new imperative,” <https://georgezarkadakis.com/2019/12/26/abandoning-the-metropolis-space-colonisation-as-the-new-imperative/>]

Space colonization is not only the subject of fiction but of serious science too. The late physicist Stephen Hawking argued that unless colonies were established in space the human race would become extinct. There are several natural phenomena beyond our control that could spell our obliteration. Over a long enough period of time our planet is vulnerable to catastrophic meteorite strikes, or getting exposed to the deadly radiation of a nearby supernova explosion. As our Sun burns its fuel it will start to expand and, in a few million years, will scorch Earth. We can also self-destruct by waging nuclear war, or by tilting our planet’s climate towards a runaway greenhouse effect. Space colonization is therefore the ultimate insurance policy of long-term human survival[4].

#### Independently brings immeasurable expected value

Baum 16 – Executive Director of the Global Catastrophic Risk Institute [Seth D. Baum, “The Ethics of Outer Space: A Consequentialist Perspective,” 2016, Springer, pp. 115-116, EA]

Space colonization is notable because it may be able to bring utterly immense increases in intrinsic value. Early colonies might start small, given that other planets and moons have inhospitable environments. However, it may be possible to build large indoor colonies or create more hospitable outdoor environments (i.e., terraforming). Even just on other planets and moons in the Solar System, space colonies could multiply the total area available for human habitation. And there are many more planets around other stars, as ongoing research on exoplanets is now learning. One recent study estimates 22 % of Sun-like stars have Earth-like exoplanets (Petigura et al. 2013), implying billions to tens of billions of potentially habitable planets across the galaxy.

Opportunities at any given star may also be quite a bit greater than those available only on planets. Earth only receives about one two-billionth of the Sun’s radiation. To collect all the Sun’s radiation, humanity would need a Dyson swarm (named after Dyson 1960), which is a series of structures that surrounds a star, collecting its radiation to power a civilization. A Dyson swarm around the Sun could potentially enable a civilization a billion times larger than is possible on Earth. Likewise, Dyson swarms around one billion stars would bring humanity approximately 1018 (one billion–billion) times more energy per unit time.

Space colonies could also increase the amount of time available for human civilization. Earth will remain habitable for a few billion more years (O’Malley-James et al. 2014). Stars will continue shining for about 1014 more years (Adams 2008). That gives us an additional 105 times more energy, for a total of 1023 times more energy than is available on Earth. After the stars fade, other energy sources may be available. And even if our current universe eventually becomes uninhabitable, it may be possible to move to other universes (Kaku 2005). The physics here is speculative, but it cannot be ruled out, and hence there is a nonzero chance of a literally infinite opportunity for space colonization (Baum 2010a).

Whether the opportunity is infinite or merely, say, 1023 times larger than what can be done on Earth, the opportunity is clearly immense. As long as space colonization is an improvement (Sect. 8.3.1), then it would seem that the consequentialist should prioritize space colonization. The sooner space colonization begins, the more of its immense opportunity can be gained. Indeed, Ćirković (2002) estimates 5 × 1046 human lifetimes are lost for every century in which space colonization is delayed.

There can also be large value for space colonization under ecocentric intrinsic value. It is sometimes argued that Earth would be better off without humans. For example, the Voluntary Human Extinction Movement states that “Phasing out the human race by voluntarily ceasing to breed will allow Earth’s biosphere to return to good health” (http://vhemt.org, accessed 25 October 2015). However, this makes sense only if extraterrestrial locations are not intrinsically valued. Otherwise, exterminating humanity ruins the opportunity for humans to bring flourishing ecosystems into outer space. Terraforming other planets or bringing ecosystems into Dyson swarms could bring immense amounts of ecosystem flourishing.

#### Only profit motive solves debris.

Nelson & Block 18 [Peter Lothian Nelson and Walter E. Block, \*\* Harold E. Wirth Endowed Chair and Professor of Economics, College of Business, Loyola University New Orleans, “Space Capitalism: How Humans will Colonize Planets, Moons, and Asteroids,” 2018, Springer, pp. 108, EA]

Space debris is a major challenge to space exploration (Goldsmith 2015). The higher the speed (see Chap. 1 on the need for hyper speeds), the worse will be the issue of impact avoidance or damage in the event of impact. It is through the unregulated free market that solutions to intractable problems are found. Explorers will be well motivated to develop methods for detection of both minuscule and massive invisible objects and quick reaction mechanisms for avoidance of things large and small.