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#### The portrayal of space debris is rooted in a militarized approach to the future that culminates in the full-spectrum dominance of the globe.

Reno, Associate Prof. Anthropology @ Binghamton, 20

(Joshua Ozias, PhD from the University of Michigan: “The Wrong Stuff”, chapter 4 of Military Waste: The Unexpected Consequences of Permanent War Readiness Univ of California Press, Feb 4, 2020 Pg. 127-130)DR 19

**Space debris** can be dangerous to orbiting vessels and, as such, it represents an ever-growing hazard to human uses of Earth space. But these objects are hard to track and easy to mistake for something else, even for people who spend all of their time looking up at the night sky. Like space exploration itself, this is a difficult problem to solve, so it is not surprising that **only the most powerful and prominent space agencies imagine they are capable of finding space debris**, let alone clearing it from orbital environments. A core dimension of that power and prominence, moreover, is about having military ambitions that extend beyond the surface of the planet. And, **from the very beginnings**, doing so has meant enrolling amateur or civilian scientists in DoD plans for outer-space. Historically, **solving space-related challenges has meant getting funds and resources from wealthy and powerful nations**. **With the growth of** a permanent war economy, **such expenditure** is very often **tied** **to** imagined or real military applications. Consequently, the history of space exploration has been and continues to be shaped by tensions and networks between **civilian and military** scientific objectives. But these seemingly opposed **groups** also align and become indistinguishable, especially insofar as they embrace a fascination with developing the latest technology and an unrelenting faith in its ability to solve all problems. This is also known as techno-solutionism. Evgeny Morozov (2013) developed this idea related to utopian appraisals of the internet. His account draws heavily on **Hannah Arendt’s** *On Violence* (1970), a book which openly criticizes **US administrations** that thought they could solve global problems through technically ingenuous forms of death and destruction. Broadly defined, techno-solutionism is faith that technical fixes can solve any problem…even when they are targeting a realm like **outer space**, one that is already saturated with the leftovers of generations of technological problem-solving. According to Gökçe Günel (2019, 129), any technical adjustment is not only about “functionality, effectiveness, or use, but rather the ways in which its materially and conceptually indeterminate existence mobilizes potential towards a technically adjusted future.” In this sense, **technical fixes for space debris are more about extending the possibility of future technical intervention in orbital environments**, rather than, for instance, **encouraging ethical reflection** on whether people should create debris at all. Space debris is not just any problem, it is **one that originated** **with** and threatens **space science** and, as such, shows the limits of technical solution-making in general. If it is problematic to see space debris as a technical glitch, as noise in an otherwise perfectly rendered human design, that is because such a view can **mislead us** into thinking that all it takes is a little more ingenuity, a bit more mastery, to solve the problem entirely. But, following Virilio (2007), every new technical innovation and improvement brings a new disaster, an unprecedented act of contamination. If **space debris represents inevitable traces** that human artifacts and projects leave behind in the space beyond Earth, then, whatever the future may hold, this problem is unavoidable. If people want to continue to escape their earthly confines, space debris will have to be reckoned with. Space debris is a possibility that haunts all uses of space *tout court*, rather than an incidental by-product of space exploration and travel. A focus on technical mastery links the cause of space debris with its proposed cure. As a counterpoint, I discuss how amateur astronomers and ham radio operators have engaged with space debris in a different manner and with altogether different goals. Specifically, they tend to look for ways to become attuned with and enliven debris that has been abandoned. Militarizing Civilian Science The possibility of a semiautonomous civilian space agency had defined space exploration from the start, but by the 1970s and ‘80s, funding had dropped precipitously from the heyday of the Apollo missions. By that time, NASA had come under widespread criticism as the country entered recession and other big programs (such as the CIA) and national initiatives (the War on poverty, Civil Rights Legislation, the Vietnam War) were attacked by political representatives and activists across the political spectrum. The prominent images that NASA members used to promote the organization during the 1960s was that of pragmatism, that space efforts would yield scientific benefits. This failed to improve the prestige of the organization within the government, until the Reagan era, when there was a resurgence of nationalist and romanticist rhetoric from earlier in NASA’s history. With the Reagan administration there was an effort, first, to block international efforts to ban weapons use in outer space and, second, to invest new symbolic importance and new financial resources in the militarization of space. Since that time, **solving space debris has become a common pursuit** of space agencies all over the world, both the more militarized and the more civilian among them. By the early 1980s, **satellites were central infrastructure**, particularly for the United States. The militarization of space had already occurred, in other words, and **without extravagant laser weapons**. Consequently, among the most central issues of the time was the testing and development of antisatellite weaponry (ASAT). The use of experimental ASAT has been partly responsible for reorienting international attention to space debris, since ASAT is a spectacular technology, the goal of which is to transform working satellites into unusable waste. Since satellites were so vulnerable to attack, and space treaties did not allow for the defense of particular regions of space as sovereign territory, satellites could be destroyed simply by sending “space mines” to collide with them. This constitutes one clear reason why DARPA and the Air Force are so intent on tracking space debris—they want to know whether satellites colliding with unidentified objects represent coincidental hazards or deliberate attacks. Being able to tell the difference between space debris and an actively launched space mine would be like knowing whether an ocean vessel sank because of an iceberg or a submarine. Even if one cannot capture space debris, being able to detect and identify it might be **necessary to predict or avoid war**. The ambiguities of witnessing discussed in the previous section, not knowing what one is seeing, therefore take on perilous consequences. While Reagan’s “Star Wars” and Trump’s “Space Force” have been heavily discussed and derided, other administrations have had similar designs. Perhaps most enduring has been the Clinton-era concept of *full-spectrum dominance*, first outlined in the United States Space Command “Vision for 2020” released in 1997. This relationship between outer space and defense and security has been so central to US policy that prominent advocates for science, notably Neil deGrasse Tyson, have authored reports suggesting that **NASA could be restored to its former glory by becoming more like DARPA**, that is, the militaristic organization it was partly created ***not to become***. In many ways the DoD’s Defense Advanced Research Projects Agency (**DARPA) is the epitome of techno-solutionist practice**. Though the term *defense* was only added to the acronym later (it was termed ARPA until 1972), **the agency was always closely linked to military interests and problem-solving**. In management studies, the concept of problems that are “DARPA-hard” has become widespread, with websites baiting visitors to see whether their company’s challenges would come close to qualifying. According to Leifer and Steinert (2011, 159), there are four criteria for the agency to consider something DARPA-hard: 1. Technically challenging (beyond current limits); 2. Actionable (proof of concept or prototype); 3. Multidisciplinary (complex); and 4. Far-reaching (advances on a grand scale, radical). At the turn of the century, **DARPA** clearly **determined that solving orbital space debris met these criteria**. Space debris fragments **exceeded the capabilities of the Air Force’s Space Surveillance Network** (SSN), it would take work with specialists from various fields, and the achievement of a solution would be legitimately global in impact. The only thing missing was proof of concept. Their first attempt at a solution was to work with MIT aeronautics labs to develop a specialized telescope to detect faint objects. In 2011, DARPA unveiled a massive new telescope, the Space Surveillance Telescope (SST), specially developed with MIT labs to identify space debris. In contrast with what DARPA spokespersons described as the “soda straw approach” of existing telescopes, the SST would allow wide-angle shots of the night sky, made possible by a much larger aperture and an advanced visual processing system. **In at least one report** provided to NBC, moreover, cleaning up space debris was linked directly with military objectives.

but in an anti-nuclear technology of lasers, satellites, mirrors, and so on in the heavens.

#### Catastrophe scenarios program us affectively to accept violence and dehumanization

Evans And Reid, PhD’s, 14

(Brad, International Studies @ Bristol, Julian, International Politics @ Lapland, Resilient Life: The art of Living Dangerously)

Anybody who has experienced immunization will appreciate the violence of the encounter. The whole process begins with the awareness of some vaguely looming threat which promises in the worst case an extremely violent ending. To pre-empt this happening, the subject is physically penetrated by the alien body with a controlled level of the lethal substance which, although producing violent sickness, is a fate less than death. Such violence unto oneself offers to counter violence with violence such that life may carry on living in spite of the dangers we are incapable of securing ourselves against. It is to give over to a form of self-harm albeit in a way that is actively desired and positively conceived. How else may we live otherwise? Resilience follows a similar logic. It encourages that we partake in the violence of the world to keep death at bay. For in the process of learning to live through the insecurity of the times, the subject is asked to incorporate the catastrophic intellectually, viscerally and affectively, thereby providing certain immunization against a more endangering fate. Indeed, since the ultimate litmus test is to bring to question the worst case scenario, the future cannot appear to us as anything other than completely monstrous. What, however, is actually slain as the future is wagered by the violence of the present may only become revealed with the passage of time. None of this operates outside of the realm of power politics. We only have to consider here (a) the moral judgements and political stakes associated with HIV as a pandemic that is more than simply biological, and (b) the development of viral analogies to explain more generally the problems ‘infecting’ societies from terror to criminality to evidence the point. Immunization is precisely about exposing oneself to something that is potentially lethal, thereby raising the threshold level for existence such that violence is normalized on account of our vulnerabilities to that which may be tempered but remains undefeatable. We are drawn here to Stellan Rye's (1913) silent horror movie The Student from Prague (Der Student von Prag) which has inspired a number of compelling literary and cinematic classics. In this tragic tale of poverty and violence, the impoverished student, Balduin, makes a bargain with the Devil as he exchanges the reﬂection of image for more immediate compensations. Upon eventually seeing himself, however, the student is avenged by an angry double that begins to wreak havoc as it seeks out revenge in light of its betrayal. Following an eventual violent confrontation the student has with his double, Balduin shatters the mirror that is central to the plot, and invariably destroys the fantasy of endangerment which also became the source of his afflicted curse. Inevitably, however, since the double was an essential element of this Faustian agreement, in killing the violent double, so the student kills himself. Otto Rank famously related this to the narcissistic self whose very sense of loneliness and alienation is caused by an anguish of a fear of death; even though it is precisely the violence of the pact which pushes the subject further towards the precipice. Whilst it is tempting to read this in familiar dialectical terms, there is a more sophisticated double move at work here, as the violence is already encoded within the initial act of demonic violation before the tragic encounter. For the double merely highlights the self-propelling tendency, from the fantasy of endangerment to the reality of the catastrophic. There is also a semantic interchange at work in Rye's Doppelganger as it stakes out the choice between a violated/violent life and eventual death. Since reason or logic prove utterly incapable of explaining the condition of Balduin's existence, let alone offering any promise of salvation from the oppressive situation to which he is fatefully bound, the double serves as an important metaphor for the narcissism of the times, as the subject wilfully accepts a violation and all the violence this entails in exchange for an illusion or fantasy of security which proves in the end to have been imbued with the catastrophic from the outset. Our understanding of the fundamental tenets of violence is invariably transformed such that we are forced to think about forms of violation/ intervention prior to any sense of dialectical enmity. Premetic Violence René Girard's thesis Violence and the Sacred offers a theory of violence that is exclusively bound to the desire to ‘overcome’ tragedy. To develop this theory, Girard speciﬁcally relates to the classic Greek play by Sophocles, Oedipus Rex, which he uses to illustrate the relationship between tragic dispossession and violence. It is through the tale of Oedipus and his return to reclaim the realm from which he was abandoned that we uncover a genesis of sacriﬁcial violence that is linked to some ‘past tragedy’.3\_9 Oedipus thus epitomizes the motif of the lost prince whose modes of contestation can be understood through competing claims to the ‘same object of desire: The story follows that when two uncompromising entities vie over the same object of desire, violence necessarily erupts. Through Girard's decoding of the Oedipus myth, what we therefore ﬁnd is any attempt to re-possess the object of desire necessarily requires the guilt of those currently in possession - a sacriﬁcial victim. Thus, to overcome tragedy one must come from the ‘outside’ - a violently destined return that can only be justiﬁed by making a claim to the original sin, or what Girard terms a return to the ‘original scene: However, as Sophocles tells it, such violence is more than simply a reclamation of that which has been taken. The violence of the already dispossessed desires to re-establish the authentic order which has been falsely appropriated - the paradise lost. Importantly, for Girard, such violence is not a relation of difference but is more deﬁned by the logic of mimesis: ‘At ﬁrst, each of the protagonists believes that he can quell the violence; at the end each succumbs to it. All are drawn unwittingly into a violent reciprocity - which they always think they are outside of, because they all initially came from outside and mistake this positional and temporary advantage for a permanent and fundamental superiority.40 Plunging into an opposition which ‘reduces the protagonists into a uniform condition of violence’, all claims to ‘difference’ are effectively ‘eclipsed’ by ‘a resurgence of reciprocity.41 It has been common to read Rye's doubling as a clear example of mimetic behaviour. This has found clear applications from Hegelian-inspired revolutionary accounts of dialectical reasoning, to Frantz Fanon's theory of (post)colonial brutality, onto the exceptional violence of Schmitt's sovereign decisionism. While accepting how this logic has played a structural role in the demar- cation of certain regimes of violence which came to hallmark distinct marks of separation, we need to depart from this logic if we are to make sense of the violence of the catastrophic imaginary. What, in other words, becomes of violence once we reconceptualize the idea of the original scene and its logics of exposure such that violence itself becomes virtually ordained? That is to say, what becomes of violence once it begins to precede any dialectical arrangement? Mimetic violence, we have noted, is obj ectiﬁable. Based upon establishing various forms of mystical foundations, it has a distinct materiality to it that permits clear lines of demarcation and embodiment. These work both spatially and temporally. The object for violence is locatable, while the time of its occurrence offers clear (if sometimes contested) conceptions as to its beginning and ending. It beneﬁts, then, from the guarantees of identiﬁcation and the ability to represent that which must be vanquished at a given moment ‘in timei The virtual nature of the violence endured by the resilient subject offers no such guarantees. Collapsing the space-time continuum of mimetic rivalry, it is merely projected into the future without the prospect of bounce-back. Internalized, however, into the very living conditions of the subject now permanently under siege, the violence is no less real. As any author of horror ﬁction will tell, the mind can be a terrifying place to inhabit. Once the source of endangerment becomes unknowable by deﬁnition, everything becomes the potential source of a violent encounter. Resilience challenges the logic of mimetic violence, therefore, in two fundamental ways. Firstly, it shows us that our only way of dealing with endangerment is to absorb its lethal tendencies. That which has the potential to destroy must become part ofsociety's make-up and its epistemic fabric. We too, in the process, become more lethally endowed as a result. Invariably, the more lethal we become, the more we end up embracing the biophysical conditions of our potential undoing as a principle form of human conditioning. The body accepts the lethality on account of preparedness. Secondly, there is an outward projection against that which could potentially threaten our existence. But this projection doesn't connect to any mimetic rival. We have no clear sense of what it is that so endangers in its particular guise, only a generalizable indication that something which is part of the integral whole will eventually bring about our ﬁnal demise. Deprived, then, of the potential to ‘at last stand’ upon a terrain whose forms of endangerment were known in advance, we continue to walk through a veritable mineﬁeld of potential disasters of a multi-dimensional nature, not knowing when the explosion will happen, with little comfort provided by the intellectual comforts of the past, and with no fence on the horizon beyond which relative security may be achieved and freedom from endangerment realized. The only solution, we are told, remains to expose oneself to all its disastrous permutations so that we may be better prepared against those already charged and yet to detonate, along with those yet to even be inserted into this catastrophic topography. But what does it mean to say that violence is now beyond representation? And what type of reality are we producing if we are calling into question the depths of ﬁeld that once gave qualitative and quantitative meaning to our relations to violence? For Paul Virilio, whose work we may connect to the premetic, this inaugurates ‘the futurism of the instant’ whose kairos shatters all metaphysical meaning: This spells disorientation in knowledge acquired over the course of millennia regarding the spatial environment and the cycle of seasons; an integral accident in knowledge of history as well as of the usual concrete geography that goes with it, the unity of place and time of a secular history. No doubt this is the fatal novelty of the historic tragedy befalling humanity and a progress that will no longer be exclusively technologistical and extra-planetary, but merely human, ‘all too human’. Masochism vis-a-vis an abhorred past that no longer passes muster is now symmetrically doubled with a masochism in relation to a future where, for want of fear, we will, this time, have space, all the space of a miniscule planet reduced to nothing, or as good as, by the progress of our discoveries.2 Nihilism Unbound Writing in the nineteenth century, Nietzsche argued that nothing was more deeply characteristic of the modern world than the power of nihilism.E Nietzsche's intervention here allowed us to move beyond the well-rehearsed attack upon Platonic reason or Christian faith, to focus instead upon ‘the radical repudiation of value, meaning and desirabilityiﬁ Nihilism, thus understood, referred to the triumph of reactive thinking. It was all about the negation of life as it appeared to be incapable of afﬁrming that which is properly and creatively different to human existence. Hence, for Nietzsche, nihilism was not simply reducible to some historical event in time, i.e. an exceptional moment in history which could be shamefully written into annals of human suffering. Nihilism was the recurring motor of history as the operation of power leads to a will to nothingness that strips life of any purposeful meaning. Crucially, as Nietzsche understood, this repudiation of the afﬁrmative realm of experience is something we create for ourselveaﬁ Nihilism, in other words, is to be understood through a sophisticated manipulation of desires such that the individual subject depreciates itself to such an extent that it actively participates in a custom of political self- annihilation. Central to Nietzsche's thinking on the perpetuation of nihilism is the notion of ressentiment. In his On the Genealogy of Morality, Nietzsche explains this in terms of the slave mentality. This produces a feeling of impotence which not only translates into vengefulness, but more problematic still, teaches the slave that the only way it can become free is to give over to the prevailing reason mastery has set in place. Sloterdijk equates this ressentiment with rage, the basis of all great theisms.4i Such a condition, as Nietzsche understood, was ‘paralysing’ insomuch as it annuls the possibility of thinking and acting otherwise, and it was ‘exhausting’ insomuch as life was forced to compromise with the very lethality that put its condition originally into question. Through a ‘spirit of revenge’ what is lacking is therefore produced in a double movement, for lack is not some original gesture, it derives out of the ressentiment to deny us the opportunity to bring something different into the world. This raises a number of pressing questions: Could it be that not only have we become slaves to our biological existence, but in claiming false mastery of the earth we have given to ourselves an illusionary sovereignty? For how can we have mastery if that which we claim to be able to dominate as the principle force makes us increasingly vulnerable with each passing moment? Have we not, then, become slaves to ourselves and slaves to the earth, and resentful of them as a result? Nihilism has never been alien to liberal biopolitics. It is arguably its most potent expression. Its early development can be traced to Kant's Copernican revolution of the mind. Placing life at the centre of its universe, Kant forced us to look for meaning beyond the realms of theological destiny. Whilst this moved us beyond the suffering and lament of the Christian subject which so irked Nietzsche, Kant's universal substitute proved to be no substitute at all. The universal was actually denied to us due to the limits of our reason and our imperfections as ﬁnite beings - imperfections that signiﬁcantly proved incapable of moving us beyond the reductionism of metaphysical idealism and its crude representations, towards a more afﬁrmative form of meta- physics that worked in practice. As Drucilla Cornell writes, ‘Martin Heidegger famously wrote that Kant takes us to the limit of the very notion of critique and ultimately raises, but does not fully address, the question of ‘who’ is this ﬁnite being that must think through the transcendental imaginationfﬂ In a remarkably potent yet tragic stroke, Kant wrote the death of the omnipotent God and the types of docile subjects it produced who were rendered immobile due to its vengeance and fury, while putting in its place a fallen subject that was fated to be forever incomplete because of the burdens of its own actions. While Kant's thinking paved the way for new eschatological forms of power to emerge that took leave of traditional sovereign moorings, the fallen subject was compelled to become resentful of its biological existence. Bios were to remain forever imperfect by design and fated to be judged accordingly. With life fated to live a biologically endowed existence, it is stripped of its capacity to have a meaningful existence beyond the limits of its bodily formations, while political strategies operate by governing through the problem of ﬁnitude, even though the ﬁnite inevitably became a philosophical problem too difﬁcult to comprehend. As a result, forced to endure a growing resentment of its unfolding drama, liberalism slowly became morally equipped to continually intervene upon the souls of the living simply by offering to prolong the subject's existence better than any other political rationality. Such was the realization of our ﬁnite entrapment in the bodily form that the ability to philosophically transgress the injunction between life and death became increasingly impossible. Indeed, as we shall point out later, while liberal societies have a particular relationship to the question of dying as our existence is continually put into question, such that with each passing second we learn to survive until we become truly meaningless in the end, the idea of death remains incommensurable to the liberal subject. No longer does the resilient subject solely project its resentfulness onto the souls of ‘Others’. It resents the living world, for it too is radically endangering. It is here that catastrophic imaginaries begin to truly thrive. The resilient subject is shaped and anxiously mobilized by the prospect of the coming catastrophe. It fears the transformation of the subject, just as it fears the transformation of the ecosystem that gives sustenance to life. Our rage as such, to borrow from Sloterdijk, has become truly limitless. As everything becomes the source of our endangerment, we internalize the ressentiment and proliferate our impotence with unrivalled intensity and absolute necessity. Hence this produces a form of nihilism which is ‘unbounded: For no longer do we simply resent the teleological unfolding of history as we phase shift from masters to slaves to masters; there is no mastery to speak of and as a result all our lament ﬁlters into a politics of ressentiment as we are left to simply govern through our continually unfolding state of unending emergency. (111-17)

#### Threat imagery impoverishes scholarship and policy making- their claims can't be evaluated outside of the project of security that created them. Self Fulfilling prophecy outweighs aff predictions offense

Gregory D Foster, J. Carolton Ward Distinguished Prof. National Defense University, West Point Grad 69, PhD from GWU, Interrogating the Future: The Question of Long-Term Threats, Alternatives 19 1995

Where, then, does this leave us—in an elevated state of awakening or in a depressed state of confusion and resentment? It is, admittedly, burdensome and intimidating to face a deluge of questions without being afforded the intellectual crutch of an authoritative answer or two. That is the price we pay, though, for having allowed our minds to be crippled by Cold War dogma. Possessed of truth, we ignored, we denied, we disdained anyone or anything that contradicted our certainty. We did not question, we did not seek answers other than the ones we already had. To do so would have been superfluous, and clearly suspect. Now we must undergo corrective surgery. Whatever answers might emerge from the questions posed here, three fundamental issues deserve our attention. The first concerns the very language—the terminology—we use in public discourse. In his rather well-known 1946 essay, "Politics and the English Language," George Orwell drew the link between the debasement of language and the decline of civilization. He was convinced that both conditions were taking place in tandem at the time he wrote. By the same token, he believed the problem could be reversed. By ridding oneself of the many bad habits of English usage we have adopted, one can think more clearly, he said, and thereby take the first step toward political regeneration.74 The use of the word "threat" certainly seems to fit here. Although it is not a new word, the Cold War gave it heightened visibility, broadened and obscured its meaning, and made it part of the lingua franca of contemporary international politics. What should be all too obvious is the adversarial image the term conveys and the Manichean world view it engenders. Threattalk becomes threatthink. The resultant paranoia and intolerance invariably blind us to emerging developments and conditions that truly threaten our well-being but fall outside the bounds of our distorted perception. This brings us to a second fundamental issue: the effect our image of threat has on reality. The late Kenneth Boulding made the astute observation that there is a reciprocal, escalatory dynamic associated with threat imagery. For example, Country A, feeling itself threatened (however and for whatever reasons) by Country B, increases its armaments to reduce its insecurity. This makes B feel threatened, and so B increases its armaments to bolster its security. This makes A feel even more threatened, so A again increases its armaments. This growing threat "forces" B to further increase its armaments. And so on until either war breaks out or some other change (such as internal economic collapse) reverses the process.75 This is how threatthink becomes threat. If there is a single, documentable truth to be derived from an assessment of threat-based thinking, it is that the perception of threat— at least where that threat has a human component—almost invariably becomes a self-fulfilling prophecy. For this reason alone—the fact that we have shown ourselves perversely capable of creating unwanted inevitability—we must face up to a third fundamental issue: the more general failure of our overall approach to envisioning the future. Most of us justifiably consider ourselves unqualified to divine the future. We therefore typically defer to experts and authorities—futurists and assorted government technocrats presumably possessed of special powers or information the rest of us do not have—who end up thereby dictating not only our future but our present as well. These are the individuals who tell us not only that there are threats, but what they are and how we must deal with them. What we refuse to recognize is that the future these purported visionaries are able to see is invariably nothing more imaginative than a simple projection of what already is happening. It also is an assured way for them to solidify and perpetuate their own power over us. The future they see, because the rest of us accept it on authority as all but inevitable, closes out any perceived need to pursue other potentially fruitful possibilities; it provides an excuse for ignoring present needs that, if fulfilled, might well produce a markedly different future; it ensures nothing more enlightened or progressive than creeping incrementalism and evolutionary drift; it creates false expectations about what can and will be; and when it fails to materialize—as it so often does because of the unexpected-it produces feelings of helplessness, not among the purveyors of the deception, but among those of us who have so carelessly relinquished our fate to them.76 Threats are in the future. Threat assessment is about the future. Vision is of the future. The Cold War clouded our vision and crippled our ability to determine, objectively, whether there are threats that should concern us, what they are, why they are important, and how we should deal with them. Our future will depend in large measure on our willingness to overcome our Cold War myopia and to demonstrate a newfound degree of individual and collective vision. Whether vision is a gift or an acquired skill, we will have to seek out the visionaries in our midst who can either lead the rest of us less gifted out of our self-imposed darkness or at least stand as models on which we can pattern ourselves. And how will we know vision when we see it? We need not doubt that its presence will be so unlike anything we are used to, we will know. But if we are searching for a standard against which to judge, we could do no better than to recall the surpassing insight Abraham Lincoln demonstrated on at least one occasion at the height of the US Civil War. At an official reception, the president referred to Southerners rather as erring human beings than as foes to be exterminated. An elderly lady, a fiery patriot, rebuked him for speaking kindly of his enemies when he ought to be thinking of destroying them. "Why, madam," said Lincoln, "do I not destroy my enemies when I make them my friends?',77 (86-88)

#### Representations must precede policy discussion. Thus, the role of the ballot should be to assume the position of a critical intellectual- debate is primarily an academic activity. The signal sent intellectually outweighs any specific policy proposal

Neta Crawford ,PhD MA MIT, BA Brown, Prof. of poli sci at boston univ. Argument and Change in World Politics, 2002 p. 19-21

Coherent arguments are unlikely to take place unless and until actors, at least on some level, agree on what they are arguing about. The at least temporary resolution of meta-arguments- regarding the nature of the good (the content of prescriptive norms); what is out there, the way we know the world, how we decide between competing beliefs (ontology and epistemology); and the nature of the situation at hand( the proper frame or representation)- must occur before specific arguments that could lead to decision and action may take place. Meta-arguments over epistemology and ontology, relatively rare, occur in instances where there is a fundamental clash between belief systems and not simply a debate within a belief system. Such arguments over the nature of the world and how we come to know it are particularly rare in politics though they are more frequent in religion and science. Meta-arguments over the “good” are contests over what it is good and right to do, and even how we know the good and the right. They are about the nature of the good, specifically, defining the qualities of “good” so that we know good when we see it and do it. Ethical arguments are about how to do good in a particular situation. More common are meta-arguments over representations or frames- about how we out to understand a particular situation. Sometimes actors agree on how they see a situation. More often there are different possible interpretations. Thomas Homer-Dixon and Roger karapin suggest, “Argument and debate occur when people try to gain acceptance for their interpretation of the world”. For example, “is the war defensive or aggressive?”. Defining and controlling representations and images, or the frame, affects whether one thinks there is an issue at stake and whether a particular argument applies to the case. An actor fighting a defensive war is within international law; an aggressor may legitimately be subject to sanctions. Framing and reframing involve mimesis or putting forward representations of what is going on. In mimetic meta-arguments, actors who are struggling to characterize or frame the situation accomplish their ends by drawing vivid pictures of the “reality” through exaggeration, analogy, or differentiation. Representations of a situation do not re-produce accurately so much as they creatively re-present situations in a way that makes sense. “mimesis is a metaphoric or ‘iconic argumentation of the real.’ Imitating not the effectivity of events but their logical structure and meaning.” Certain features are emphasized and others de-emphasized or completely ignored as their situation is recharacterized or reframed. Representation thus becomes a “constraint on reasoning in that it limits understanding to a specific organization of conceptual knowledge.” The dominant representation delimits which arguments will be considered legitimate, framing how actors see possibities. As Roxanne Doty argues, “the possibility of practices presupposes the ability of an agent to imagine certain courses of action. Certain background meanings, kinds of social actors and relationships, must already be in place.” If, as Donald Sylvan and Stuart Thorson argue, “politics involves the selective privileging of representations, “it may not matter whether one representation or another is true or not. Emphasizing whether frames articulate accurate or inaccurate perceptions misses the rhetorical import of representation- how frames affect what is seen or not seen, and subsequent choices. Meta-arguments over representation are thus crucial elements of political argument because an actor’s arguments about what to do will be more persuasive if their characterization or framing of the situation holds sway. But, as Rodger Payne suggests, “No frame is an omnipotent persuasive tool that can be decisively wielded by norm entrepreneurs without serious political wrangling.” Hence framing is a meta-argument.

#### The alternative is to reject the AFF’s security representations as a critical intellectual labor that makes imagination of a more peaceful future possible. Neocleous 08

(Neocleous 8 — Prof of Government @ Brunel University; London (Mark, Critique of Security, pg. 184-5)

Anyone well versed in history or with experience of university life will know about the shameful ways in which large numbers of academics have elevated venality into the cardinal academic virtue, complying with the demands of those in power and the wishes of those with money: witness the political scientists, historians, anthropologists, geographers, cartographers, sociologists, linguists and many others who reworked their disciplines according to the principles and myths, and the principle myths, of fascism.' 'Academic life under fascism', notes Christopher Hutton, 'is a dismal ... episode in an unedifying story of relations between the modem academic and the state, and between academics and power both within and outside the university. But this part of the history of fascism is merely the worst moment in the wider and equally unedifying story of relations between academics and the state more generally, merely one way m which intellectuals have kowtowed to the principles and myths, and the principle myths, concerning security and the state. Spouting the jargon of security and enthralled by the trappings of power, their intellectual labour consists of nothing less than attempts to write hand-books for the princes of the new security state. The death of countless numbers in a more 'efficient' bombing of a city, the stationing of troops halfway around the World in order to bring to an end any attempt at collective self-determination, the use of military machines against civilians, the training of police forces in counter-insurgency practices, but more than anything the key concepts and categories used to explain and justify these things - all defended, supported and even ‘improved” by security intellectuals for whom, ultimately, intelIecua1 labour boils down to little more than the question of the most efficient manner. In which to achieve the security demanded by the state and bourgeois order. In rationalizing the political and corporate logic of security, the security intellectual conceals the utter irrationality of the system as a whole. The security intellectual then is nothing less than the security ideologue, peddling the fetish of our time. The only way out of such a dilemma, to escape the fetish, is perhaps to eschew the logic of security altogether - to reject it as so ideologically loaded in favour of the state that any real political thought other than the authoritarian and reactionary should be pressed to give it up, That is clearly something that can not be achieved within the limits of bourgeois thought and thus could never even begin to be imagined by the security intellectual. It is also something that the constant iteration of the refrain ‘this is an insecure world’ and reiteration of one fear, anxiety and insecurity after another will also make it hard to do, but it is something that the critique of security suggests we may have to consider if we want a political way out of the impasse of security. This impasse exists because security has now become so all-encompassing that it marginalizes all else, most notably the constructive conflicts, debates and discussions that animate political life. The constant prioritizing of a mythical security as a political end - as the political end - constitutes a rejection of politics in any meaningful sense of the term. That is, as a mode of action in which differences can be articulated, in which the conflicts and struggles that arise from such differences can be fought for and negotiated, in which people might come to believe that another world is possible - that they might transform the world and in turn be transformed. Security politics simply removes this; worse, it removes it while purportedly addressing it. In so doing it suppresses all issues of power and turns political questions into debates about the most efficient way to achieve ‘security’, despite the fact that we are never quite told - never could be told – what might count as having achieved it. Security politics is, in this sense, an anti-politics,” dominating political discourse in much the same manner as the security state tries to dominate human beings, reinforcing security fetishism and the monopolistic character of security on the political imagination. We therefore need to get beyond security politics, not add yet more ‘sectors to it in a way that simply expands the scope of the state, and legitimizes state intervention in yet more and more areas of our lives. Simon Dalby reports a personal communication with Michael Williams, co-editor of the important text Critical Security Studies, in which the latter asks: if you take away security, what do you put in the hole that’s left behind? But I’m inclined to agree with Dalby: maybe there is no hole. The mistake has been to think that there is a hole and that this hole needs to be filled with a new vision or revision of security in which it is re-mapped or civilised or gendered or humanised or expanded or whatever. All of these ultimately remain within the statist political imaginary, and consequently end up re-affirming the state as the terrain of modem politics, the grounds of security. The real task is not to fill the supposed hole with yet another vision of security, but to fight for an alternative political language which takes us beyond the narrow horizon of bourgeois security and which therefore does not constantly throw us into the arms of the state. That’s the point of critical politics: to develop a new political language more adequate to the kind of society we want. Thus while much of what I have said here has been of a negative order, part of the tradition of critical theory is that the negative may be as significant as the positive in setting thought on new paths. For if security really is the supreme concept of bourgeois society and the fundamental thematic of liberalism, then to keep harping on about insecurity and to keep demanding ‘more security’ (while meekly hoping that this increased security doesn’t damage our liberty) is to blind ourselves to the possibility of building real alternatives to the authoritarian tendencies in contemporary politics. To situate ourselves against security politics would allow us to circumvent the debilitating effect achieved through the constant securitizing of social and political issues, debilitating in the sense that ‘security’ helps consolidate the power of the existing forms of social domination and justifies the short-circuiting of even the most democratic forms. It would also allow us to forge another kind of politics centered on a different conception of the good. We need a new way of thinking and talking about social being and politics that moves us beyond security. This would perhaps be emancipatory in the true sense of the word. What this might mean, precisely, must be open to debate. But it certainly requires recognizing that security is an illusion that has forgotten it is an illusion; it requires recognising that security is not the same as solidarity; it requires accepting that insecurity is part of the human condition, and thus giving up the search for the certainty of security and instead learning to tolerate the uncertainties, ambiguities and ‘insecurities’ that come with being human; it requires accepting that securitizing an issue does not mean dealing with it politically, but bracketing it out and handing it to the state; it requires us to be brave enough to return the gift.

**Interpretation: The 1AC is an object of research. The role of the neg should be to disprove the various meanings of that object.**

**1] Plan focus restricts the debate to a ten second statement and leaves the rest of the aff unquestioned. They should be responsible for the way their knowledge is constructed and used because that produces the best model for activism and ethics in the context of the topic which is a unique education net benefit to our interpretation**

**2] Debate doesn't pass policies but it does alter the way we think about the world and about systems of power – turns their policy research standards because it's a question of how their research is oriented and whether it's for an ethical purpose – only our model of engagement accesses that education**

**3] Begs the question – if we win their justifications are repugnant that necessarily implicates the conclusion which means defense of their research model is a prior question to weighing the material consequences of the aff – also solves plan focus because the links necessarily implicate aff solvency**

### 1NC – AT: Debris Advantage

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

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

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

#### Time frame – Kessler effect 200 years away.

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

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

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

#### Status quo solves – mitigation and remediation compliance growing.

Colombo et. al 18—Camilla Colombo, PhD, visiting academic in Spacecraft Engineering within Engineering and Physical Sciences at the University of Southampton; Francesca Letizia, PhD, Space Debris Engineer at ESA Space Debris Office; Mirko Trisolini, PhD, Postdoctoral researcher at the Politecnico di Milano Department of Aerospace Engineering; Hugh Lewis, PhD, Professor within Engineering and Physical Sciences at the University of Southampton (“Space Debris: Risk Mitigation,” from Frontiers of Space Risk: Natural Cosmic Hazards & Societal Challenges, Chapter 5, p 128-136)

5.4 MITIGATION MEASURES The space debris problem is nowadays internationally recognized, therefore mitigation measures are being taken and guidelines discussed. These can be divided into two classes: The avoidance or protection measures and the active and passive debris removal measures. The avoidance or protection measures include the design of satellites to withstand impacts by small debris, or the selection of safe procedures for operational spacecraft such as orbits with less debris, specific attitude configurations, or implementing active avoidance maneuvers to avoid collisions. On the other hand, measures for debris removal currently consist in limiting the creation of new debris (by prevention of in-orbit explosions and ensuring spacecraft subsystems reliability), to free some orbital implementing end-of-life disposal maneuvers protected regions, or to reenter in the atmosphere. Active debris removal is also being considered as a mean to stabilize the growth of space debris by removing from orbit some selected noncompliant objects. The e.Deorbit mission will target an ESA-owned derelict satellite in low orbit, capture it with a net or robotic arm technology, and reenter with a controlled atmospheric reentry (Biesbroek et al. 2014). Acknowledging the fact that the projected growth in the number of satellites orbiting the Earth will increase in the future, space agencies and international organizations have been discussing and building a set of guidelines to ensure the sustainability of future space activities. The InterAgency Debris Coordination Committee (IADC) was founded in 1993 by ESA (Europe), NASA (the United States), the Japan Aerospace Exploration Agency (JAXA, Japan), and the Roscosmos Russian Federation. As of January 2017, the IADC also includes the Italian Space Agency (ASI, Italy), the Centre National d'Études Spatiales (CNES, France), the China National Space Administration (CNSA, China), the Canadian Space Agency (CSA, Canada), the German Aerospace Centre (DLR, Germany), the Korea Aerospace Research Institute (KARI, South Korea), the Indian Space Research Organisation (ISRO, India), the National Space Agency of Ukraine (NSAU, Ukraine), and the UK Space Agency (UKSA, United Kingdom). This international cooperation decided a set of space debris mitigation measures (Inter-Agency Space Debris Coordination Commitee, 2002), which includes: 1. Limitation of debris released during normal operations. 2. Minimization of the potential for on-orbit breakups (resulting from stored energy after the completion of mission operations, or during the operational phases of the mission and by avoiding intentional destruction and other harmful activities). 3. Post Mission Disposal in particular in geosynchronous regions and for objects passing through the LEO region. 4. Prevention of on-orbit collisions. The IADC guidelines were presented to the United Nations Committee on the Peaceful Uses of Outer Space (UN COPUOS) and contributed to the creation of the Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space to be considered for the mission planning, design, manufacture and operational phases of spacecraft and launch vehicle orbital stages” (United Nations Office for Outer Space Affairs 2010): 1. Limit debris released during normal operations. 2. Minimize the potential for breakups during operational phases. 3. Limit the probability of accidental collision in orbit. 4. Avoid intentional destruction and other harmful activities. 5. Minimize potential for post-mission breakups resulting from stored energy 6. Limit the long-term presence of spacecraft and launch vehicle orbital stages in the low Earth orbit region after the end of their mission. 7. Limit the long-term interference of spacecraft and launch vehicle orbital stages with the geosynchronous region after the end of their mission. 5.4.1 Mitigation Guidelines for Post Mission Disposal In this section we focus on the third of the measures dictated by the IADC, namely Post Mission Disposal. A “25-year rule” was defined to limit the presence of satellites in the LEO region to no more than 25 years after their decommissioning. The 25-year limit was selected to ensure that a reasonable reduction in lifetime could be achieved without greatly affecting satellite resources. After 25 years a satellite has to be removed from the LEO protected region by placing it in a graveyard orbit or by disposing of it through atmospheric reentry. According to the IADC Space Debris Mitigation Guidelines (Inter-Agency Space Debris Coordination Commitee 2002) if "a spacecraft or orbital stage is to be disposed of by re-entry into the atmosphere, debris that survives to reach the surface of the Earth should not pose an undue risk to people or property.” The low Earth orbit protected region (LEO region) is the spherical shell region that extends from the Earth's surface up to an altitude of 2000 km. The geosynchronous protected region (GEO region) is a segment of a spherical shell with a lower and upper altitude boundary of 200 km below and above the geostationary altitude of 35,786 km, and which is constrained by a latitude sector extending between plus and minus 15 degrees from south to north (Inter-Agency Space Debris Coordination Committee 2002; United Nations Office for Outer Space Affairs 2010). At altitudes below 600 kilometers, spacecraft with a conventional area-to-mass ratio (i.e., conventional satellites have a value of area-tomass ratio around 0.012 m?/kg) will reenter within a few years due to atmospheric drag. Intervention to remove and prevent further creation of debris above that altitude should therefore be the primary focus of passive mitigation measures. As described in the document on the “Requirements on Space Debris Mitigation for ESA Projects” (ESA 2008) and the "ESA Space Debris Mitigation Compliance Verification Guidelines” (ESA 2015), end-of-life measures can be distinguished in: (1) Disposal, (2) passivation, and (3) reentry. Required measures for disposal currently cover spacecraft in LEO and GEO through a series of Operational Requirements (OR) (ESA 2008): "OR-01. Space systems operating in the LEO protected region shall be disposed of by reentry into the Earth's atmosphere within 25 years after the end of the operational phase." "OR-02. Space systems operating in the GEO protected region shall be disposed of by permanently removing them from the GEO protected region.” The GEO disposal orbit should be almost circular (i.e., eccentricity less of equal to 0.005) and with a minimum perigee altitude above the geostationary altitude, which is given as a function of the solar radiation pressure coefficient of the space system at the beginning of its life and its cross-sectional area. This is done to take into account the eccentricity oscillation due to the effects of solar radiation pressure and to ensure that such oscillation would not make the orbit interfere with the GEO protected regions. "OR-03. Where practicable and economically feasible, space systems outside the LEO and GEO protected regions shall implement means of end-of-life orbit disposal to avoid long-term interference with operational orbit regions, such as the Galileo orbit." OR-04. Launcher stages shall also perform end-of-life disposal maneuvers by targeting "direct reentry as part of the launcher sequence.” Alternatively, they should be injected into a LEO orbit with a maximum reentry time of 25 years. As other space systems, they should be removed from LEO and GEO protecting region and orbit that interfere with other operational orbits such as the one of the Galileo orbit. OR-05. Passivation of the system (spacecraft or launcher stage) has to be completed within 2 months of the end of mission. End-of-life measures for reentry include: OR-06. "For space systems that are disposed of by reentry," an "analysis has to be performed to determine the characteristics of fragments surviving to ground impact, and assess the total casualty risk to the population on ground assuming an uncontrolled reentry.” OR-07. Such a casualty risk has to be lower than 10-4 if an uncontrolled reentry is targeted; otherwise if the casualty risk is higher than the threshold of 10-4, "a controlled reentry must be performed such that the impact footprint can be ensured over an ocean area, with sufficient clearance of landmasses and traffic routes." The rate of compliance of missions to the end-of-life mitigation guidelines was analyzed by the ESA Space Debris Office in 2017). Between 2006 and 2015, the rate of compliance of LEO missions (including naturally compliant missions and satellites performing end-of-life maneuvers) was 53.3% for the payloads (corresponding to 60.3% of the payload mass), reaching end of life in the LEO protected region (Frey and Lemmens 2017). The compliant objects, with a lifetime after decommissioning of less than 25 years, include naturally compliant objects due to their initial altitude well inside the Earth's atmosphere (this constitutes the biggest part of the compliant share), compliant objects after a deorbit maneuver, or spacecraft having performed a maneuver leading to a direct reentry. In terms of mass, this share is constantly sloping downward. Between 2007 and 2016, 71.6% of the rocket bodies reaching end of life in the LEO protected region was compliant, and this fraction has remained virtually unchanged for 8 years in a row despite an increase in end-of-life maneuver activity. 5.4.2 Passive End-of-Life Disposal In order to meet the mitigation guidelines LEO satellites at the end of their life would use the remaining propellant to perform either a perigeelowering maneuver (to decrease the orbit perigee well inside the Earth's atmosphere to guarantee a reentry within 25 years) or a direct reentry. Spacecraft in GEO are instead currently re-orbited to quasi circular orbits outside the GEO protected ring, with a perigee line aligned with the SunEarth direction (where possible) in order to bind the long-term oscillations in the eccentricity caused by solar radiation pressure. Recently, ESA funded projects on the design of disposal trajectories for medium Earth orbits (MEO) (Alessi et al. 2014; Rossi et al. 2015), highly elliptical orbits (HEO), and libration Earth orbits (LPO) (Armellin et al. 2014; Colombo et al. 2014; Colombo et al. 2015). These have demonstrated the possibility of exploiting natural orbit perturbations for designing passive mitigation strategies for debris disposal. Disposal strategies enhancing the effects of orbit perturbations have been further analyzed in LEO (Alessi et al. 2017), in MEO (Rosengren et al. 2015; Alessi et al. 2016; Armellin and San-Juan; Daquin et al. 2016; Gkolias et al. 2016), in GEO (Colombo and Gkolias 2017), and in HEO (Colombo et al. 2014; Armellin et al. 2015). Indeed, it was shown that, rather than performing an expensive maneuver to lower the perigee, the optimal maneuver should be given in a way to change the disposal orbit to another neighborhood orbit where the effect of orbit perturbations causes the orbit perigee to enter into the atmosphere. Indeed, the effects of luni-solar perturbation causes long-term oscillation on the eccentricity, which can be exploited so that the spacecraft's trajectory over a long period (from 5 to 70 years, depending on the initial orbit) could lead to natural reentry. This effect can be enhanced by solar radiation pressure, especially if considering a spacecraft equipped with large solar panels or a deployable reflective surface (Lücking et al. 2012, 2013). Moreover, resonances with the Earth's nonuniform potential can enhance the eccentricity growth effects. 5.4.2.1 An Example of End-of-Life Deorbiting Exploiting Luni-Solar Perturbations One of the most beautiful demonstrations of how natural dynamics can be enhanced is given by the INTEGRAL mission designed by ESA, the United States, Russia, the Czech Republic, and Poland. The INTErnational Gamma-Ray Astrophysics Laboratory, launched in 2002, gathered some of the most energetic radiation from space (Eismont et al. 2003). A reentry of this spacecraft with a pure impulsive maneuver would have not been possible due to the limited amount of propellant left onboard. In an ESA-funded study, the end-of-life disposal of INTEGRAL mission--expected to end in 2016-was designed with a time window for disposal between January 1, 2013 and January 1, 2029. Reentry solutions with a delta-velocity requirement below 40-50 m/s were found (Colombo et al. 2014). The main perturbations acting on the dynamics of the reentry were luni-solar perturbations, which affect the evolution of eccentricity, inclination, and anomaly of the perigee measured with respect to the Earth-Moon plane. It was shown that depending on the set of initial elements, which depends on the date the reentry maneuver is performed, the proposed maneuver would then aim at further increasing or decreasing the eccentricity. In particular, if we focus on the natural evolution of the eccentricity under luni-solar perturbation and Earth's oblateness, when the nominal eccentricity is low, the optimal reentry maneuver further decrease the eccentricity value; as a consequence, the following long-term propagation will reach a higher eccentricity, corresponding to a reentry. In this case, the maneuver is more efficient (i.e., lower delta velocity is required) (Colombo et al. 2014). Once the initial disposal maneuver is performed, the spacecraft evolves under natural perturbations and the reentry can then be semicontrolled. The high inclination of HEOs represents an advantage as the final reentry phase can target regions at higher latitudes on the Earth's surface thereby reducing the ground hazard. In the case of HEOs, reentry is caused by luni-solar perturbation (not air drag), therefore the orbit reenter with quite a high eccentricity (high apogee and low perigee) and does not circularize. Due to the oscillations in eccentricity, the next optimal window for injecting the spacecraft into a reentry trajectory is between 2013 and the first half of 2018 for a final reentry in 2028. After that, the required maneuver would increase until reaching a next window for performing the maneuver between the second half of 2021 and the first half of 2026, for a reentry in 2028. These analytical studies were used for high fidelity parametric analyses performed by the ESA (Merz et al. 2015) to investigate the effect of a maneuver at apogee to change the perigee altitude. The final maneuver sequence was given at the beginning of 2015 and split into three major burns plus a touch-up for final fine-tuning. The spacecraft is now on its course to reentry in 2028 (see Figure 5.11).

### Turns

#### Capitalism makes the world go round —

#### 1. War: Cap solves war on a massive scale – it creates lock-in mechanisms that bind countries together and economically dampens conflict – robust studies

Dafoe & Kelsey, Political Science and International Economics, ’14 (Allan & Nina; assistant professor in political science at Yale & research associate in international economics at Berkeley; Journal of Peace Research, “Observing the capitalist peace: Examining market-mediated signaling and other mechanisms,” <http://jpr.sagepub.com.proxy.lib.umich.edu/content/51/5/619.full>)

1. Interdependence, 2. Resolve through economic costs, 3. Third parties intervene, 4. Want to avoid costs b/c $$$

Countries with liberal political and economic systems rarely use military force against each other. This anomalous peace has been most prominently attributed to the ‘democratic peace’ – the apparent tendency for democratic countries to avoid militarized conflict with each other (Maoz & Russett, 1993; Ray, 1995; Dafoe, Oneal & Russett, 2013).More recently, however, scholars have proposed that the liberal peace could be partly (Russett & Oneal, 2001) or primarily (Gartzke, 2007; but see Dafoe, 2011) attributed to liberal economic factors, such as commercial and financial interdependence. In particular, Erik Gartzke, Quan Li & Charles Boehmer (2001), henceforth referred to as GLB, have demonstrated that measures of capital openness have a substantial and statistically significant association with peaceful dyadic relations. Gartzke (2007) confirms that this association is robust to a large variety of model specifications. To explain this correlation, GLB propose that countries with open capital markets are more able to credibly signal their resolve through the bearing of greater economic costs prior to the outbreak of militarized conflict. This explanation is novel and plausible, and resonates with the rationalist view of asymmetric information as a cause of conflict (Fearon, 1995). Moreover, it implies clear testable predictions on evidential domains different from those examined by GLB. In this article we exploit this opportunity by constructing a confirmatory test of GLB’s theory of market-mediated signaling. We first develop an innovative quantitative case selection technique to identify crucial cases where the mechanism of market-mediated signaling should be most easily observed. Specifically, we employ quantitative data and the statistical models used to support the theory we are probing to create an impartial and transparentmeans of selecting cases in which the theory – as specified by the theory’s creators –makes its most confident predictions.We implement three different case selection rules to select cases that optimize on two criteria: (1) maximizing the inferential leverage of our cases, and (2) minimizing selection bias. We examine these cases for a necessary implication of market-mediated signaling: that key participants drew a connection between conflictual events and adverse market movements. Such an inference is a necessary step in the process by which market-mediated costs can signal resolve. For evidence of this we examine news media, government documents, memoirs, historical works, and other sources. We additionally examine other sources, such as market data, for evidence that economic costs were caused by escalatory events. Based on this analysis, we assess the evidence for GLB’s theory of market mediated costly signaling. Our article then considers a more complex heterogeneous effects version of market-mediated signaling in which unspecified scope conditions are required for the mechanism to operate. Our design has the feature of selecting cases in which scope conditions are most likely to be absent. This allows us to perform an exploratory analysis of these cases, looking for possible scope conditions. We also consider alternative potential mechanisms. Our cases are reviewed in more detail in the online appendix.1 To summarize our results, our confirmatory test finds that while market-mediated signaling may be operative in the most serious disputes, it was largely absent in the less serious disputes that characterize most of the sample of militarized interstate disputes (MIDs). This suggests either that other mechanisms account for the correlation between capital openness and peace, or that the scope conditions for market-mediated signaling are restrictive. Of the signals that we observed, strategicmarket-mediated signals were relatively more important than automatic market-mediated signals in the most serious conflicts. We identify a number of potential scope conditions, such as that (1) the conflict must be driven by bargaining failure arising from uncertainty and (2) the economic costs need to escalate gradually and need to be substantial, but less than the expected military costs of conflict. Finally, there were a number of other explanations that seemed present in the cases we examined and could account for the capitalist peace: capital openness is associated with greater anticipated economic costs of conflict; capital openness leads third parties to have a greater stake in the conflict and therefore be more willing to intervene; a dyadic acceptance of the status quo could promote both peace and capital openness; and countries seeking to institutionalize a regional peace might instrumentally harness the pacifying effects of liberal markets. The correlation: Open capital markets and peace The empirical puzzle at the core of this article is the significant and robust correlation noted by GLB between high levels of capital openness in both members of a dyad and the infrequent incidence of militarized interstate disputes (MIDs) and wars between the members of this dyad (Gartzke, Li & Boehmer, 2001). The index of capital openness (CAPOPEN) is intended to capture the ‘difficulty states face in seeking to impose restrictions on capital flows (the degree of lost policy autonomy due to globalization)’ (Gartzke & Li, 2003: 575). CAPOPEN is constructed from data drawn from the widely used IMF’s Annual Reports on Exchange Arrangements and Exchange Controls; it is a combination of eight binary variables that measure different types of government restrictions on capital and currency flow (Gartzke, Li & Boehmer, 2001: 407). The measure of CAPOPEN starts in 1966 and is defined for many countries (increasingly more over time). Most of the countries that do not have a measure of CAPOPEN are communist.2 GLB implement this variable in a dyadic framework by creating a new variable, CAPOPENL, which is the smaller of the two dyadic values of CAPOPEN. This operationalization is sometimes referred to as the ‘weak-link’ specification since the functional form is consonant with a model of war in which the ‘weakest link’ in a dyad determines the probability of war. CAPOPENL has a negative monotonic association with the incidence of MIDs, fatal MIDs, and wars (see Figure 1).3 The strength of the estimated empirical association between peace and CAPOPENL, using a modified version of the dataset and model from Gartzke (2007), is comparable to that between peace and, respectively, joint democracy, log of distance, or the GDP of a contiguous dyad (Gartzke, 2007: 179; Gartzke, Li & Boehmer, 2001: 412). In summary, CAPOPENL seems to be an important and robust correlate of peace. The question of why specifically this correlation exists, however, remains to be answered. The mechanism: Market-mediated signaling? Gartzke, Li & Boehmer (2001) argue that the classic liberal account for the pacific effect of economic interdependence – that interdependence increases the expected costs of war – is not consistent with the bargaining theory of war (see also Morrow, 1999). GLB argue that ‘conventional descriptions of interdependence see war as less likely because states face additional opportunity costs for fighting. The problem with such an account is that it ignores incentives to capitalize on an opponent’s reticence to fight’ (Gartzke, Li & Boehmer, 2001: 400.)4 Instead, GLB (see also Gartzke, 2003; Gartzke & Li, 2003) argue that financial interdependence could promote peace by facilitating the sending of costly signals. As the probability of militarized conflict increases, states incur a variety of automatic and strategically imposed economic costs as a consequence of escalation toward conflict. Those states that persist in a dispute despite these costs will reveal their willingness to tolerate them, and hence signal resolve. The greater the degree of economic interdependence, the more a resolved country could demonstrate its willingness to suffer costs ex ante to militarized conflict. Gartzke, Li & Boehmer’s mechanism implies a commonly perceived costly signal before militarized conflict breaks out or escalates: if market-mediated signaling is to account for the correlation between CAPOPENL and the absence of MIDs, then visible market-mediated costs should occur prior to or during periods of real or potential conflict (Gartzke, Li & Boehmer, 2001). Thus, the proposed mechanism should leave many visible footprints in the historical record. This theory predicts that these visible signals must arise in any escalating conflict, involving countries with high capital openness, in which this mechanism is operative Clarifying the signaling mechanism Gartzke, Li & Boehmer’s signaling mechanism is mostly conceptualized on an abstract, game-theoretic level (Gartzke, Li & Boehmer, 2001). In order to elucidate the types of observations that could inform this theory’s validity, we discuss with greater specificity the possible ways in which such signaling might occur. A conceptual classification of costly signals The term signaling connotes an intentional communicative act by one party directed towards another. Because the term signaling thus suggests a willful act, and a signal of resolve is only credible if it is costly, scholars have sometimes concluded that states involved in bargaining under incomplete information could advance their interests by imposing costs on themselves and thereby signaling their resolve (e.g. Lektzian & Sprecher, 2007). However, the game-theoretic concept of signaling refers more generally to any situation in which an actor’s behavior reveals information about her private information. In fact, states frequently adopt sanctions with low costs to themselves and high costs to their rivals because doing so is often a rational bargaining tactic on other grounds: they are trying to coerce their rival to concede the issue. Bargaining encounters of this type can be conceptualized as a type of war-of-attrition game in which each actor attempts to coerce the other through the imposition of escalating costs. Such encounters also provide the opportunity for signaling: when states resist the costs imposed by their rivals, they ‘signal’ their resolve. If at some point one party perceives the conflict to have become too costly and steps back, that party ‘signals’ a lack of resolve. Thus, this kind of signaling arises as a by-product of another’s coercive attempts. In other words, costly signals come in two forms: self-inflicted (information about a leader arising from a leader’s intentional or incidental infliction of costs on himself) or imposed (information about a leader that arises from a leader’s response to a rival’s imposition of costs). Additionally, costs may arise as an automatic byproduct of escalation towards military conflict or may be a tool of statecraft that is strategically employed during a conflict. The automatic mechanism stipulates that as the probability of conflict increases, various economic assets will lose value due to the risk of conflict and investor flight. However, the occurrence of these costs may also be intentional outcomes of specific escalatory decisions of the states, as in the case of deliberate sanctions; in this case they are strategic. Finally, at a practical level, we identify three different potential kinds of economic costs of militarized conflict that may be mediated by open capital markets: capital costs from political risk, monetary coercion, and business sanctions.

#### 2. Environment:

#### A. Uniqueness goes aff – the environment is getting better despite pessimism

Environmental Policy Alliance, ’15 (Environmental Policy Alliance; 2/11/15; EPA, citing Bob McKinnen, environmentalist; Environmental Policy Alliance, “THE ENVIRONMENT IS IMPROVING,” http://environmentalpolicyalliance.org/the-environment-is-improving/)

The crux of modern day environmentalism is that things are getting worse. Today we hear all kinds of hyperbolic claims that without action to eliminate the use of fossil fuels, we’re facing mass extinction. However, not only have environmentalists been wrong for decades, but the environment has improved significantly. Environmentalists’ Doomsday Prophecies If you think environmentalists are overzealous today when they (falsely) link fracking to serious health and environmental problems, take a look at their long track record of silly doomsday predictions. Back in 1970, in the lead up to the first Earth Day celebration, environmentalists made a host of ridiculous claims. Harvard Biologist George Wald claimed, “Civilization will end within 15 or 30 years unless immediate action is taken against problems facing mankind.” Life Magazine predicted, “In a decade, urban dwellers will have to wear gas masks to survive air pollution… by 1985 air pollution will have reduced the amount of sunlight reaching earth by one half.” Ecologist Kenneth Watt argued, “By the year 2000, if present trends continue, we will be using up crude oil at such a rate… that there won’t be any more crude oil. You’ll drive up to the pump and say, ‘Fill ‘er up, buddy,’ and he’ll say, ‘I am very sorry, there isn’t any.’” Civilization hasn’t ended, urban dwellers aren’t wearing gas masks, and gas stations are well-stocked. Despite little accuracy to their claims, environmentalists continued to make outlandish predictions. Environmentalist Bill McKibben (founder of 350.org) warned in the 1980s that “a few more decades of ungoverned fossil-fuel use and we burn up, to put it bluntly.” Amazingly, these environmentalists are holding strong to their false premonitions. Stanford University biologist Paul Ehrlich, one of the most outspoken doomsday prognosticators, said in the 1970s, “Population will inevitably and completely outstrip whatever small increases in food supplies we make. The death rate will increase until at least 100-200 million people per year will be starving to death during the next ten years.” While that obviously failed to come true, Ehrlich stated that “My language would be even more apocalyptic today” in 2015 than it was decades earlier. Environment Improving as Fossil Fuel Use Increases We’ve heard doomsday predictions about mankind and energy use for 45 years. Yet over this time period, we’ve increased our fossil fuel use while improving air quality at the same time. Data from the U.S. Environmental Protection Agency show air quality has improved dramatically since the 1970s. Measures of the six major pollutants: carbon monoxide, ozone, lead, nitrogen dioxide, sulfur dioxide, and particulate matter (PM2.5) have declined significantly over the past decades—even as the U.S. population and its fossil fuel use has increased. We’ve also reduced our emissions intensity—that’s the ratio of carbon dioxide to economic output, usually expressed as emissions per dollar of gross domestic product. As data from the Energy Information Administration show, the carbon intensity of the U.S. economy has been decreasing steadily since the late 1940s.

#### B. Capitalism allows us to innovate and solve environmental crises

Shireman, Eco Activist & Author, ’15 (Bill; 2/19/15; Eco Activist, author, and CEO at Future 500; The Guardian, “Envisioning a future with less doom and gloom: opportunities for the next generation of optimists,” http://www.theguardian.com/sustainable-business/2015/feb/19/realistic-optimists-post-carbon-economy-nature-environment-business)

When it comes to stories about the fate of the earth, headlines are usually dominated by tales of gloom and doom. And there’s certainly a great deal to be depressed about: global temperatures hit their highest levels ever last year, oceans are growing so warm and acidic that fisheries could be lost, and food and water systems are in decline. A big reason for focusing on the negative is that bad news tends to drive action. According to research by my organization, sustainable business nonprofit Future 500, negative messages typically yield two and a half times as much fundraising and five times as much media attention as positive ones. But as effective as the doom-and-gloom storyline is, there’s another important environmental narrative that’s waiting to be told. Following the work of environmental pioneers like William McDonough, Paul Hawken, Amory Lovins and other eco-designers, it’s clear that there’s an audience – and a desperate need – for a new generation of realistic optimists to help us envision a genuinely prosperous post-carbon economy. There is much to be optimistic about. In its 2013 report The 3% Solution, wildlife nonprofit World Wildlife Fund says that the key challenge facing developed countries is the need to reduce carbon emissions by roughly 3% a year. The McKinsey Global Institute says that’s not only doable, but it’s exactly what the economy needs to grow sustainably and overcome its economic deficits. Specifically, it says, the US needs to squeeze a third more value out of the energy it uses in the next decade, and improve that efficiency by 3% a year or more thereafter, to avoid painful economic and environmental consequences. The quest for that 3% solution may prove challenging, but it will also open up a wide range of business opportunities. Here are some of the biggest potential opportunities and the companies trying to tap them: Creating living farms, oceans and forests The industrial agriculture system treats land like a machine. It’s based on the assumption that, if farmers feed the earth the right fuel and keep out contaminants, the engine will run smoothly and generate massive agricultural output. That can be true, but nature offers a much more productive and sustainable model: life. Farms, forests and oceans have the capacity to create more value than they consume, something that machines can’t do. What’s more, they’re inherently sustainable. One step that large-scale agriculture could take towards adopting the nature-based model would be to shift to carbon-reducing agriculture. Fertile soil is a complex system with millions of carbon-sequestering microorganisms per square inch. Tilling, a common agricultural practice, burns fuel, releases poisonous exhaust gasses and strips the soil. The standard solution – pumping in pesticides, herbicides and nitrogen – only adds to the problem by contaminating groundwater and polluting oceans with runoff. Studies have shown that more natural soil amendments, like compost, manure and charcoal products, like those produced by the Biochar Company, can reduce atmospheric carbon and keep soils highly productive. In terms of water usage, treatment alternatives developed by companies like Algae Systems purify water at low cost, while generating carbon-negative fuels and fertilizers that are chemically identical to petroleum-based products. On the retail end, Whole Foods is driving mainstream consumer demand for approaches like these. At the same time, organic, slow and local food movements are also continuing to gain momentum. For further-reaching substantive change, however, major food companies and manufacturers will need to get involved in order to make any broader systemic changes mainstream. The sustainable seafood movement could offer a useful model for businesses and activists looking to change the agriculture system. Increasingly, careful fisheries management and the support of retailers like Walmart and Safeway are making sustainable seafood more commonplace. At the same time, groups like Environmental Defense Fund are continuing to push the needle forward. Admittedly, the aquaculture battle is still raging and oceans are still in crisis. Carbon emissions are making them warmer, more acidic and less productive, and resource competition is driving fishing well beyond sustainable yields. So how can a living agriculture approach further benefit the seas? One way is to end the race for fish through “catch shares,” a market based system that sets aside a secure share of fish for individual fishermen, communities or fishing associations. Forestry is another industry that could potentially offer a useful agricultural model. On the market end, brands like Nestle and Staples are helping to shift the market towards more sustainable forest practices. In this case, too, the problem is far from over, and activist groups are continuing to ramp up pressure on customers of companies like April and a host of other palm oil and paper producers. The “zero deforestation” effort, championed by Greenpeace and others, has driven attention and engagement to a critical international issue. Prosperity, not consumption, by design Another business opportunity lies in the shift from excessive consumption to impressive design. Traditional business models are moored in consumption. The industrial economy, for example, propelled consumption by accelerating the speed of extraction. Natural systems, on the other hand, develop value through efficient, smart design. AT&T, Advanced Micro Devices and Cisco are already putting this lesson to work, bringing productivity leaps to the non-digital economy. The internet of things is connecting computing devices and the Internet in factories, farms, buildings and homes. To put this in context, while industrial companies find it difficult to achieve 25% productivity gains, AMD expects a 2,500% gain in energy productivity for its computer processors by 2020. New technologies are also following nature’s lead when it comes to design. Rather than following the traditional model of extracting complex raw materials from the earth, AMD is producing microchips and solar cells that take plentiful raw materials like silica and inscribe on them a value-creating design, building value up. That’s why – as Future 500 has documented – innovations in microchips, telecommunications, and the Internet often yield productivity gains of 1000% or more. If producers and consumers can use these innovations wisely – admittedly, a big “if” – it will be possible for the economy to harness nature’s value-creating strategy. The sharing economy is another step forward. When digital technologies come into contact with consumptive industrial-era practices, the result can be positively disruptive. How many fewer hotels, rental cars, and taxis do we need, now that AirBNB, Zipcar and Uber enable consumers to share what they already have? Putting a price on carbon The third strategy also applies a core principle of nature: feedback and adaptation. While Congress delays on overarching federal climate policy, hundreds of companies are acting on their own, supporting an internal carbon price that drives down energy costs and carbon emissions simultaneously. Carbon taxes in British Columbia and Sweden, for example, outperform regulations and emission trading systems combined. Critics argue that a carbon tax can’t happen broadly, but environmental groups have more carbon-pricing allies than they think. Even oil company ExxonMobil, a major carbon producer, is a genuine supporter – a fact that many simply can’t comprehend. But Exxon Mobil’s data tells it that, in the long term, it’s smart policy to insure that carbon pays its way. Adopting a carbon tax shift is one systemic way to put a price on an atmospherically dangerous byproduct. And while the quest for that 3% solution will be difficult, it will open up a wide range of opportunities as well. So let’s begin to think outside the standard gloom-and-doom mentality to make systemic, positive environmental changes that benefit multiple interests. When we do, we might very well discover that the technological, corporate, and political support needed to save the planet is well within our reach.

#### 3. Space:

#### A. Neoliberalism key to space colonization – commercial exchanges promote development

Shakouri, 13 has an LL.M. in international law and is based in Tehran (Babak Shakouri “Space settlements on the Moon and elsewhere will create new legal issues” 4/1/13 <http://www.thespacereview.com/article/2269/1>) //NG

Once human settlements on nearby celestial bodies are established, their commercial exchanges with Earth will become an issue. Space migrants who choose to leave Earth and settle in an uncomfortable concrete or metal base on the Moon or Mars must have very strong incentives to step forth for such breathtaking adventure. There seems to be no greater reward than the lucrative economic opportunities found in a settlement on an alien surface full of potential resources.¶ The positive economic exchange rate with the Earth may assure the continuation and even expansion of space settlements on celestial bodies. Otherwise, settlers either will depend on equipment and reinforcements from Earth or go bankrupt. This may shed light on the importance of adopting suitable legal regime for human space settlements that, on one hand, fuels the needed investments for establishment of space settlements and, on the other hand, helps the efforts of inhabitants those settlements flourish economically and leads ultimately to their self-sufficiency.¶ There is sufficient evidence to suggest that the legal framework of a free market economic system incredibly suits the requirements of human settlements in space, since freedom of business and market innovation, together with recognition of private property, are the key elements in making the humans the first known spacefaring intelligent species.¶ Finally, the matter of the administrative legal regime of space settlements is another noteworthy issue to be considered. This matter, which is mainly categorized within the realm of administrative law, has attracted less attention in comparison with other legal aspects of outer space activities, but in no way should its importance and impact on future space settlement be disregarded.