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#### The aff invests in a failed modernity that atomizes oneself from the world. Their political project is not neutral nor unique but is part and parcel of a larger lineage of hyperindividualism that maintains the broader conditions of violent crisis. Divesting commitments from one another is not an option and perpetuates an

It is unselfconscious privilege that allows us to fantasize—counterfactually—that we each survive alone.**[[1]](#footnote-1)**

#### When in fact

In order to survive, we need help, and help is always the service of another, with or without intent.[[2]](#footnote-2)

#### We are on the cusp of civilizational collapse – the only question of this debate is will we go down with it or will we escape and carve out a new future.

Lövbrand et al 6-11 (Eva Lövbrand, Senior Lecturer in the Department of Thematic Studies at Linkoping University, Malin Möbjork, Senior Researcher and Director of the Stockholm International Peace Research Institute’s Climate Change and Risk Programme, Rickard Söder, Research Assistant at the Stockholm International Peace Research Institute, “The Antropocene and the geo-political imagination: Re-writing Earth as political space,” June 11, 2020, Earth System Governance)

The endangered world is a discourse that draws energy from Earth system science and its proposition that humanity at the end of the 20th Century has become an Earth shaping agent that now rivals some of the great forces of nature (Brondizio et al., 2016; Steffen et al., 2011). The Anthropocene here marks a shift from the stable Holocene era within which human civilizations have developed and thrived. As outlined by Steffen et al. (2011), the ‘great acceleration’ in human population, economic exchange, technological development, material consumption and international mobility following the end of World War II has left an unprecedented imprint on the global environment and fundamentally altered humanity's relationship to Earth. By degrading the planet's ecological systems and eroding its capacity to absorb our wastes, humanity has dangerously disrupted the Earth system and pushed the planet into a more hostile state from which we cannot easily return (Pereira and Freitas, 2017; Steffen et al., 2011). The endangered world presents a global scene where new environmental threats and dangers are causing socio-economic turbulence and gradually altering the geopolitical map. In the Arctic, for instance, Young (2012) finds that the interacting forces of climate change and globalization are transforming environments at unprecedented rates and opening up the region to outside forces. Non-linear shifts in sea ice and thawing permafrost have unleashed mounting interest in the region's natural resources and invited Great Powers to enhance their commercial shipping, fossil fuel extraction and industrial fishing (Young, 2012). Similarly, Willcox (2016) outlines how climate change is posing a grave external threat to the self-determination of atoll island peoples in the Pacific region. As sea level rises and storms increase in frequency, states such as Tuvalu, Kiribati, and the Maldives are facing loss of habitable territory and relocation of entire populations (Willcox, 2016). In other parts of the world climate change is triggering vectorborne diseases, freshwater shortage, crop failure and food scarcity (Floyd, 2015). While these threats are most pressing in already fragile regions, they are multi-scalar, interconnected, and transboundary in nature and may therefore cause human insecurity and political instability in areas distant from their origin (Hommel and Murphy, 2013; DeFries et al., 2012; Pereira, 2015). The endangered world is a discourse that challenges the modern spatialization of the world into a system of states with unquestionable political boundaries and mutually hostile armed camps (Agnew, 1998). As outlined by Pereira and Freitas (2017), many of the human-produced dangers of climate change have no parallel in history and work in complex, uncertain and unpredictable ways. The dangers are often diffuse, indirect and transnational and hereby make the world more interconnected and interdependent than ever imagined by IR. While this discourse recognizes that climate change may endanger the territories and populations of particular states, it is the global biosphere that is the primary referent object of security. The entire life-support system of the planet is under threat and the role of global politics is to regain control for the sake of human wellbeing and security (Floyd, 2015). As noted by Steffen at al. (2011, p. 749) the planetary nature of the challenge is unique and demands a global-scale response that transcends national boundaries and cultural divides. In order to avoid that large parts of the human population and modern society as a whole will collapse, humanity has to rise to the challenge and become a responsible steward of our own life-support system (Steffen et al., 2011). Geographical imbalances in human suffering and vulnerability form part of this new story for global politics (Biermann et al., 2016; Da Costa Ferreira and Barbi, 2016; O'Brien, 2011). However, in the endangered world it is the aggregated human effect on the Earth system that is the primary object of concern. The endangered world draws energy from a long line of liberal institutionalist thinking to foster responsible Earth system stewardship. In order to gain control over the unfolding sustainability crisis and effectively govern the Anthropocene, this discourse insists that the world needs strong global institutions that can balance competing national interests and facilitate coordinated policy responses (Da Costa Ferreira and Barbi, 2016; Young, 2012). Hence, the liberal democratic order organized around the United Nations and its various treaty-regimes remains central to the vision of global politics advanced here. However, given the complex and dispersed nature of 21st century challenges, international policy responses need to rest upon multi-level governance approaches that respond to the varied role of people and places in causation and effect of global environmental changes (Biermann et al., 2016; Steffen et al., 2011). In order to build links across local, national and global scales, effective governance in the Anthropocene also hinges on integrated scientific assessments of critical Earth system processes and scenario planning that anticipates the systemic risks and security implications of ecosystem change (Hommel and Murphy, 2013; Steffen et al., 2011). As outlined by Dumaine and Mintzer (2015). In the Anthropocene traditional security thinking makes little analytical sense in a world bound together by complex, non-linear and closely coupled environmental risks security analysts must move beyond the assumption that the main purpose of defense is to secure the nation against external, state-based, mainly military threats. In order to respond to the dangers of a radically transformed global environment, states need to cultivate a shared view about common threats and improve collective capacities for early warning, rapid response, and disaster mitigation (Dumaine and Mintzer, 2015). 2.2. The entangled world: securing peaceful co-existence In parallel to the science-driven and liberal institutionalist imagination informing the endangered world, the Anthropocene has also given energy to a post-humanist IR discourse that confronts the grand narratives of modernity and the forms of global politics they give rise to. Similar to the endangered world, this E. Lovbrand et al. / Earth System Governance 4 (2020) 100051 € 3 parallel discourse describes the Anthropocene as a complex and unpredictable era when human and natural processes have become deeply intertwined. However, the Anthropocene is here not approached as a problem that can be reversed, resolved or governed (Johnson and Morehouse, 2014). As outlined by Harrington (2016, p. 481) it instead reflects a new reality where humans, nonhumans, things, and materials co-exist in complex relations of life and non-life. In this entangled universe, the Cartesian separation between nature and culture has broken down and the world as conceived by modernity has ended. Dualistic understandings of the active, progressive and morally countable human (subject) and the passive and static externality of nature (object) are replaced by much more contingent, fragile and unpredictable networks of relations (Fagan, 2017). In a world marked by melting ice caps, thawing permafrost, acidified oceans, accelerating deforestation, degraded agricultural lands and dramatic species loss, human activity and nature are so enmeshed that they are existentially indistinguishable. A complex but singular “social nature” is now the new planetary real, claim Burke et al. (2016, p. 510). The entangled world is a discourse that draws upon the Anthropocene to destabilize and radically rethink the conceptual frameworks that underpin contemporary global politics. It confronts a state-centric world obsessed with bargaining, power and interests with the monumental risks, threats, and physical effects of a transformed global environment (Burke et al., 2016; Harrington, 2016). In a time when industrialized and profit-driven human societies are dangerously enmeshed with the biosphere, national security based on keeping ‘the Other’ out is failing the reality of the planet and portraying the wrong world picture. The magnitude and reach of contemporary environmental risks mean that “the Other is always already inside, so bound up with us in a common process that it no longer makes sense to speak of inside and outside” (Burke et al., 2016, p. 502). The dawning of the age of the human hereby challenges modern understandings of security at the most fundamental level. In the entangled world, the idea that we can secure humanity against external threats is precisely the problem that needs to be overcome (Chandler, 2018, p. 10). In the words of Hamilton (2017b, p. 586, italics in original), “(i)f humans are nature, and the Anthropocene demands the securing of humanity (and all life) from the unpredictable planetary conditions “we” are “making”, then the aim of security ultimately becomes that of securing oneself from oneself “. The entangled world is as much a philosophical event as an environmental one that challenges modern conceptions of who we are as humans and how we relate to the world around us. Humans are conceived simultaneously as central and all-powerful, and fragmented and insignificant (Fagan, 2017). By reaching into deep geological time, the human-induced ecological crisis offers a new cosmological origin and ending story that alters today's basic presuppositions of what the Earth and the ‘human condition’ are (Hamilton, 2018, p. 391). “Even in the study of deep time and geological shifts, we cannot escape ourselves” (Harrington, 2016, p. 479). Faced with humanity's overwhelming Earth-shaping powers we appear adrift, claim Johnson and Morehouse (2014, p. 442), “alienated not only from a world that refuses to submit to long-held conceptual frameworks, but also alienated from ourselves in relation to this strange and allegedly destructive thing called ‘humanity’“. The entangled world hereby forces IR into an uncomfortable place where many of the discipline's organizing categories break down: the logics of inclusion and exclusion; the idea of agency and a unified human subject; and the imagination of an intelligible world as a whole (Fagan, 2017, p. 294). In face of the ontological shift brought about by the Anthropocene, IR is called upon to rethink the narrow anthropocentric, state-led, economistic boundaries that solidify the bygone age of the Holocene (Harrington, 2016, p. 480). The entangled world presents a global scene of complex interconnections and interdependencies that cut across conventional geographical and temporal scales and species boundaries. Security cannot be achieved by resolute actions grounded in expression of power targeting ‘external’ threats, but only by re-embedding modern humanity in the multi-species world that we now are remaking. As argued by Burke et al. (2016, p. 502) we cannot survive without accepting the cosmopolitan and enmeshed nature of this world. In a world of entangled relations security comes from being more connected, not less (ibid). Against this backdrop McClanahan and Brisman (2015) find proposals from the US security establishment to wage war on climate change deeply problematic. Militaristic assertions that we can win the fight against climate change reproduce the modern understanding of nature as exterior that we so desperately need to transcend. What the world needs is instead a new global political project that makes peace with Earth and hereby secures mutual co-existence (Burke et al., 2016; McClanahan and Brisman, 2015). Such a project is by necessity post-human, claim Cudworth and Hobden (2013). In order to move beyond human centrism and domination we must recognize that social and political life always is bound up with non-human beings and things. In the Anthropocene the environment is not ‘out there’, but always ‘with’ and ‘in here’ (Cudworth and Hobden, 2013, p. 654). To end human-caused extinctions, prevent dangerous climate change, save the oceans, support vulnerable multi-species populations, and restore social justice, the entangled world therefore demands a ‘worldly politics’ that brings our multi-species interrelations to the foreground of global affairs (Burke et al., 2016).

#### The quantitative and qualitative data in the field of IR is not produced neutrally but through articulating specific, pre-determined goals regarding the international order and finding evidence to justify those theorizations. Presumed objectivity naturalizes colonial management and brackets out the possibility of social life for those targeted for abuse

Agathangelou and Ling 04 (Anna M. Agathangelou and L. H. M. Ling, University of Houston-Clear Lake and Global Change Institute and New School University, “The House of IR: From Family Power Politics to the Poisies of Worldism,” 2004, International Studies Review)

Cosmo Man distracts attention from the academy’s collusion with power. He publicly welcomes ‘‘multicultural,’’ ‘‘international’’ education while privately deters tenure and promotion for faculty, especially those of color and women, who challenge capitalist-patriarchy’s version of Self and Other. Cosmo Man, thus, reenacts in the academy those desires and abuses that shadow the colonial household. As Steve Smith (2004) has noted, mainstream IR conveniently relieves us of any ethical qualms regarding the larger world. We are not responsible, mainstream theorists shrug, because our concepts are ‘‘value-free,’’ ‘‘rational,’’ and ‘‘objective.’’ We teach/advise/publish what anyone would in our place. Smith resoundingly rejects this stance as disingenuous at best. We forward a second critique: claims of neutrality smoke-screen alignments with power structurally, institutionally, and personally. The House and its accomplices hide their class politics by castigating revolutionary knowledge as ‘‘occult’’ (Kelsh 1998). One consequence is the (re)production of insecurity for the world’s majority through the securing of capital and its social relations across borders for a privileged minority. Take, for examples, the absence of any role for non-Western cultures, histories, or ideologies in Gramscian IPE’s conception of a ‘‘global’’ hegemony (cf. Ling 1996; Ling with Bell 1996), Marxist IPE’s decision not to acknowledge reproduction as production (cf. Agathangelou 2004b), and postmodernism’s disservice to local resistance by assuming that power contaminates everything and everywhere (cf. Agathangelou and Ling 1997). Each demonstrates, respectively, an implicit valorization of one configuration of race/culture (white/Western), gender (patriarchal), sexuality (heterosexual), and class (bourgeois). When this configuration encounters crisis or threat, the discipline generates rationalizations to assure global capital of its right to privatize and militarize social life. Put differently, the house gives white, bourgeois patriarchy the tools to rebuild itself. Yet institutions of higher learning increasingly clamor for multicultural, international education. Note, for instance, Harvard University’s recent curriculum change, the first in thirty years, to reflect this orientation. ‘‘If you’re going to come to Harvard College,’’ announced William C. Kirby, Dean of Faculty Arts and Sciences, ‘‘it would be very good to have a passport.’’19 Externally, the academy needs to satisfy globalization’s demand for a more cosmopolitan, educated elite. Internally, the academy also needs to globalize to: (1) retain an increasingly multiethnic student body, especially those who can pay high tuition fees during times of constricting budget cuts (see McPherson and Schapiro 1999), (2) uphold its liberal reputation as a ‘‘marketplace of ideas,’’ and (3) keep apace with managerial, financial, and technical trends arising in various parts of the world. These apparent contradictions allow the academy and its elites to use the intellectual labor of Others while denying them due credit or acknowledgement for it (Agathangelou and Ling 2002). This appropriation is not for cultural stakes only. It provides an intellectual justification for an unequal access to and distribution of wealth (Agathangelou 2004a). Not surprisingly, white males dominate our discipline. Males comprise 66 percent of the total faculty in the United States, with whites in the overwhelming majority (American Association of University Professors 1998). Male full professors outnumber female full professors by nearly 5 to 1 whereas at the rank of assistant professor the proportion of males to females is relatively equal (American Association of University Professors 1998). Put differently, nearly half (46 percent) of all assistant professors are women, but they become only 21 percent of all full professors (Bellas 2002). Data on postgraduate enrollment in US academies bear out this initial scenario. A relatively even spread of men and women not only enter the classroom but also graduate with higher degrees. In the social sciences, women accounted for 57 percent of all graduate enrollment in 1997 (Brandes et al. 2001:325). As a general category, women received 49 percent of doctorates in the social sciences in 1993, with a steady increase for women of color.20 The National Center for Education Statistics (NCES) (1997) expects this trend to continue until the end of the century. Yet all male faculty enjoy an average 10 percent advantage in salary at both public and private institutions (Bellas 2002) whereas nearly half of all faculty appointments made at institutions of higher learning fall in the adjunct or other part-time categoryFwith women as the majority recipients (American Association of University Professors 1993).21 These data do not break down according to racial categories. Nonetheless, anecdotal evidence suggests that the racial and gender disproportion found in the academy’s ‘‘formal sector’’ would spill over to its ‘‘informal’’ one. Cosmo Man triumphs in the academy.22 Like his counterpart in the global economy, Cosmo Man takes on ‘‘science, technology, [and] business’’ with an ‘‘entrepreneurial frontier masculinity,’’ ready to conquer new markets, new products, and new consumers (Hooper 2000:67). Indeed, Cosmo Man exemplifies white, heteropatriarchal renditions of globalization. One renowned white-male theorist writes that globalization means the freedom, choice, and authority to straddle the world with ‘‘competence’’ and ‘‘mastery,’’ not ‘‘surrender[ing]’’ to or ‘‘negotiat[ing]’’ with other cultures but imbued with a sense of ‘‘personal autonomy’’ that allows ‘‘exit’’ at will (Hannerz 1990:239). The academy rewards such intellectual compliance. The Grawemeyer Award for Ideas Improving World Order, for instance, consistently confers its cash prize of $200,000 to those who happen to be white, male, from Western institutions, and offer intellectual paeans to the House of IR.23 Administrative decisions support Cosmo Man. Tenure and promotion disputes, in particular, expose his colonial and imperialistic practices in the academy. One Asian American female professor has observed that [i]f we act like the [passive] Singapore Girl, in the case of some professors, then they feel ‘‘she is [unequal to me].’’ If we don’t act like the Singapore Girl, then [our] accomplishments must have derived from ‘‘a relationship with the chair’’ [or some other senior male]. (quoted in Cho 1997:209) In either case, she concludes, an Asian American womanFor any woman of colorFhas difficulty obtaining recognition for her professional achievements. This is so, we add, because she must function in a context, like the House of IR, that is defined by the white colonial/imperial state intimately aligned with global capitalism. As Stoler (2002:45) notes, ‘‘sexual control was more than a convenient metaphor for colonial domination. It was a fundamental class and racial marker implicated in a wider set of relations of power.’’ Similarly, the academy preserves its privileges with racialized, sexualized colonial management. Knowledge Production: Deracination and Depoliticization With such institutional backing, the House of IR deracinates and depoliticizes knowledge even by those, like postmodern feminists, who claim the opposite. Such intellectual politics inflicts an epistemic violence that psychologizes systemic pathologies while mystifying the exploitation and violence they commit on Others through knowledge production. Some Others, in turn, consent to internalize their own structural oppression in exchange for admission into the House not as a ‘‘servant’’ or ‘‘ward’’ but ‘‘honored guest.’’ Even so, another desire complex arises in the House of IR. It publicly seeks to do good (‘‘spreading democracy’’) while privately yearning for adoration and respect from the Other that the Self will never find satiable (‘‘why do they hate us?’’). In a volume self-consciously titled, Global Voices: Dialogues in International Relations (Rosenau 1993), four IR scholars (two men, two women, all white, all Western) critically discuss the field. Each scholar deserves due credit, for his or her insights have contributed to our understanding and evaluation of the House of IR. Nonetheless, one chapter by a postmodern feminist disturbs (Sylvester 1993). She seeks validly to introduce race and difference into the dialogue on IR but masks her privilege with colonizing and monopolizing strategies. She writes in the name of a Zimbabwean woman rather than having an actual conversation with one. The chapter is written creatively in the form of a play with exchanges from various characters, two of whom are Westfem and Tsitsi. Westfem represents a Western feminist standpoint; Tsitsi, the Zimbabwean woman. Throughout the play, Tsitsi speaks only in terms of her own particularities whereas Westfem pronounces on theory, history, and politics in a universal tone. At one point, Westfem even lectures Tsitsi about Zimbabwean men to which the latter submissively agrees. The colonizing move in this dialogue is all-too obvious and familiar: Westfem speaks for all; Tsitsi only for herself, and not very well. In fact, Tsitsi admits as much: Westfem-self, I tell you, we women have been gagged by tradition and colonialism for so long that now it is difficult for us to insist on our own voices, ideologies, and statecrafts. (Sylvester 1993:30) Such epistemic, political, and personal violence pervades the House of IR. The US academic self-righteously presents the woman of color as a victim of ‘‘ThirdWorld’’ patriarchy in need of ‘‘First-World’’ feminist rescue without questioning either her right or place to do so. No wonder many women of color, inside and outside the West, react to ‘‘feminism’’ as another code word for ‘‘imperialism.’’ The House of IR benefits from such infighting. As noted earlier, those who live ‘‘upstairs’’ by theorizing about ‘‘high politics’’ take little account of those who labor ‘‘downstairs’’ with their data collecting for ‘‘low politics’’ until some crisis in world politics requires specific, local knowledge. At that point, ethnographic ‘‘servants’’ must produce the information necessary for house members to plug into their theorizing. They treat this information as data only, not subject to theorizing or capable of retheorizing existing frameworks. Note, for example, recent revelations of torture and sexual abuse by American soldiers against Iraqi detainees at Abu Ghraib prison. Mainstream attention has localized the relations between US soldiers and Iraqi prisoners. Media pundits, military leaders, and psychological experts explain away the abuse as a psychological distortion rather than an expression of a larger socioeconomic and political pathology: that is, abuse of US power to secure hegemony for global capitalist-patriarchy. No one asks, for example, why certain identities (‘‘minority,’’ ‘‘them,’’ ‘‘queer’’) are always the target of abuse, while others (‘‘majority,’’ ‘‘us,’’ ‘‘straight’’) perpetrate it? As Sherene Razack (2000, 2004) demonstrates in her analysis of similar abuses by and among Canadian peacekeepers in Somalia, our colonial legacy of race, gender, class, and culture spares no one not even those fighting for ‘‘peace,’’ ‘‘democracy,’’ and ‘‘justice.’’

#### Vote neg to affirm a pedagogy of mutual indebtedness. Academia and debate have set up a violent network of logistics that centralize discussion on securing the interests of empire before the interests of those subject to it. Mutual indebtedness reframes the linguistic economy of this space to question what assumptions and political boundaries regulate our relations, our alliance, and our resistance. As Bleiker puts it, voting neg acts as a generative moment that initiates

We who would see beyond seeing see only language, that burning field.1 Language is one of the most fundamental aspects of human life. It is omnipresent. It penetrates every aspect of transversal politics, from the local to the global. We speak, Heidegger stresses, when we are awake and when we are asleep, even when we do not utter a single word. We speak when we listen, read or silently pursue an occupation. We are always speaking because we cannot think without language, because ‘language is the house of Being’, the home within which we dwell.2 But languages are never neutral. They embody particular values and ideas. They are an integral part of transversal power relations and of global politics in general. Languages impose sets of assumptions on us, frame our thoughts so subtly that we are mostly unaware of the systems of exclusion that are being entrenched through this process. And yet, a language is not just a form of domination that engulfs the speaker in a web of discursive constraints, it is also a terrain of dissent, one that is not bound by the political logic of national boundaries. Language is itself a form of action – the place where possibilities for social change emerge, where values are slowly transformed, where individuals carve out thinking space and engage in everyday forms of resistance. In short, language epitomises the potential and limits of discursive forms of transversal dissent. This chapter provides the theoretical basis necessary to appreciate the far-reaching political and transversal potential that is entailed in everyday forms of dissent that engage the linguistic constitution of global politics. The subsequent, final chapter will then examine, through an additional reading of the events that led to the fall of the Berlin Wall, the practical potential of such dissident practices. To scrutinise the role of language in global politics is not simply to examine the clash of values between different national languages. Interactions between them, as for instance in translating activities at diplomatic summits, is of course a central aspect of international relations. But the political struggle over language also occurs in an array of other, far more subtle domains. Consider how a key event in global politics, such as the fall of the Berlin Wall, can be represented through different types of speech, each of which embodies a subjective but discursively objectified way of looking at the world. The turbulent events of 1989 can, for instance, be understood through the vocabulary of high politics, which revolves around great power relations and diplomatic negotiations; or through the vocabulary of strategic studies, which stresses military capacities, state repression and relations of coercive force; or through the vocabulary of international political economy, which places emphasis on market performances and their impact on political stability; or through the vocabulary of peace studies, which focuses on popular dissent and its ability to uproot systems of domination; or through the vocabulary of feminist theory, which illuminates the gendered dimensions of crumbling walls; or through the vocabulary of the common men and women in the street, which epitomises the daily frustrations of living in a suffocating society; or through any other vocabulary that expresses the subjective dimensions of interpreting events. In each case, though, the specific vocabulary that is used embodies and objectifies a particularly, discursively embedded world-view – one that is inherently political, even though it presents its view-points, often convincingly, as unbiased representations of the real. But all of these view-points, no matter how detached and impartial they seem, do more than merely interpret the events that led to the collapse of the Berlin Wall. In rendering it meaningful, they are not only describing and representing, they are actually intervening in the events.3 A sustained engagement with the philosophy of language is necessary to recognise the potential for transversal social change that is entailed in dissident practices that interfere with the linguistically entrenched objectification of global politics. This chapter is, of course, unable to survey this complex issue in an exhaustive way. The focus will rest with two authors, Nietzsche and Wittgenstein, who represent key elements of an approach that perceives language not as a way of representing the world, but as an activity, a way of life. An engagement with this approach serves to prepare the ground for a practical and more overtly political reading of language and its relation to transversal struggles. Language, then, is no longer seen as a mere medium of communication. It is also the very site where politics is carried out. Critiquing practices of global politics is thus a process that cannot be separated from critiquing the languages through which these practices have become normalised and objectified. To outline how such a rethinking of politics may engender human agency, this chapter focuses on dissident potentials that are entailed in the practice of writing, understood not in its narrow sense as a mere act of inscribing signs, but as everything which makes this act possible – in short, language itself.**[[3]](#footnote-3)**

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#### CP Text: All private entities must give a substantial proportion of any assets appropriated in outer space toward redistribution efforts

**The ASTEROIDS act has put us on a timer, only the counterplans distribution of wealth stops corporations and nations from universalizing laissez-faire.**

Nick **LEVINE** MPhil Candidate Philosophy of Science @ Cambridge **’15** https://www.jacobinmag.com/2015/03/space-industry-extraction-levine

The privatization of the Milky Way has begun.

Last summer, the bipartisan ASTEROIDS Act was introduced in Congress. The legislation’s aim is to grant US corporations property rights over any natural resources — like the platinum-group metals used in electronics — that they extract from asteroids.

The bill took advantage of an ambiguity in the United Nations’ 1967 Outer Space Treaty. That agreement forbade nations and private organizations from claiming territory on celestial bodies, but was unclear about whether the exploitation of their natural resources would be allowed, and if so, on what terms.

The legal framework governing the economic development of outer space will have enormous effects on the distribution of wealth and income in the Milky Way and beyond. We could fight for a galactic democracy, where the proceeds of the space economy are distributed widely. Or we could accept the trickle-down astronomics anticipated by the ASTEROIDS Act, which would allow for the concentration of vast amounts of economic and political power in the hands of a few corporations and the most technologically developed nations.

Given the pressing problems of inequality and climate change on Earth, the US left has been understandably uninterested in or largely dismissive of any space pursuits. For this reason, it remains unprepared to organize around extraterrestrial economic justice. The Left’s rejection of space has effectively ceded the celestial commons to the business interests who would literally universalize laissez-faire.

Organizing around extraterrestrial politics wasn’t always treated as an escapist distraction. In the 1970s, fighting for a celestial commons was a pillar of developing countries’ struggle to create a more equitable economic order.

Starting in the 1960s, a coalition of underdeveloped nations, many recently decolonized, asserted their strength in numbers in the United Nations by forming a caucus known as the Group of 77. In the early 1970s, this bloc announced its intention to establish a “new international economic order,” which found its expression in a series of UN treaties governing international regions, like sea beds and outer space, that they hoped would spread the economic benefits of the commons more equitably, with special attention to less developed nations.

For these countries — as well as for the nervous US business interests that opposed them — their plan to “socialize the moon,” as some put it at the time, was the first step toward a more egalitarian distribution of wealth and power in human society.

It will be years before the industrialization of outer space is economically viable, if it ever is. But the legal framework that would shape that transition is being worked out now. The ASTEROIDS Act was submitted on behalf of those who would benefit most from a laissez-faire extraterrestrial system. If we leave the discussion about celestial property rights to the business interests that monopolize it now, any dream of economic democracy in outer space will go the way of jetpacks, flying cars, and the fifteen-hour workweek.

#### A focus on a usage of space is gives us the opportunity to tackle things like hunger, poverty, and water contamination.

Siegel ’17 Ethan Siegel, theoretical astrophysicist and science writer, who studies Big Bang theory. In the past he has been a professor at Lewis & Clark College, “Why Exploring Space And Investing In Research Is Non-Negotiable” Starts with a Bang Blog, Forbes.com

Around the country and around the world, there is no shortage of human suffering. Poverty, disease, violence, hurricanes, wildfire and more are constantly plaguing humanity, and even our best efforts thus far can't address all of everybody's needs. Many are looking for places to cut funding, ostensibly to divert more to humanitarian needs, and one of the first places that comes up in conversation is "extraneous" spending on unnecessary scientific research. What good is it to conduct microgravity experiments when children are starving? Why smash particles together or pursue the lowest possible temperatures when Puerto Rico is still without power? And why study the esoteric mating habits of endangered species when nuclear war threatens our planet? To put it more succinctly: With all the suffering in the world — starvation, disease, persecution, and natural disasters — why should we spend public money on an enterprise like fundamental scientific research? This is a line of thinking that's come up repeatedly throughout history. Yes, it's short-sighted, in that it fails to recognize that our greatest problems require long-term investment, and that society's greatest advances come about through hard work, research, development, and often are only realized years, decades, or generations after that investment is made. Investing in science is investing in the betterment of humanity. But that's not always an easy path to see, particularly when suffering is right in front of you. Back in early 1970, shortly after the first Apollo landing, a nun working in Zambia, Africa, Sister Mary Jucunda, wrote to NASA. She asked how they could justify spending billions on the Apollo program when children were starving to death. If one pictures these two images side-by-side, it hardly seems fair. The letter somehow made it to the desk of one of the top rocket scientists at NASA: Ernst Stuhlinger. At the time, Stuhlinger, one of the scientists brought to the United States as part of Operation Paperclip at the conclusion of World War II, was serving as the Associate Director of Science at NASA. Facing an accusation of inhumanity must have been particularly painful for someone who was still often accused of being a Nazi for his role in the German rocket program, but Stuhlinger was unshaken. He responded by writing the following letter, reprinted in its entirety, below. (It’s long, and it only contained one picture, but it’s arguably even more relevant today than it was in 1970.) Your letter was one of many which are reaching me every day, but it has touched me more deeply than all the others because it came so much from the depths of a searching mind and a compassionate heart. I will try to answer your question as best as I possibly can. First, however, I would like to express my great admiration for you, and for all your many brave sisters, because you are dedicating your lives to the noblest cause of man: help for his fellowmen who are in need. You asked in your letter how I could suggest the expenditures of billions of dollars for a voyage to Mars, at a time when many children on this earth are starving to death. I know that you do not expect an answer such as “Oh, I did not know that there are children dying from hunger, but from now on I will desist from any kind of space research until mankind has solved that problem!” In fact, I have known of famined children long before I knew that a voyage to the planet Mars is technically feasible. However, I believe, like many of my friends, that travelling to the Moon and eventually to Mars and to other planets is a venture which we should undertake now, and I even believe that this project, in the long run, will contribute more to the solution of these grave problems we are facing here on earth than many other potential projects of help which are debated and discussed year after year, and which are so extremely slow in yielding tangible results. Before trying to describe in more detail how our space program is contributing to the solution of our earthly problems, I would like to relate briefly a supposedly true story, which may help support the argument. About 400 years ago, there lived a count in a small town in Germany. He was one of the benign counts, and he gave a large part of his income to the poor in his town. This was much appreciated, because poverty was abundant during medieval times, and there were epidemics of the plague which ravaged the country frequently. One day, the count met a strange man. He had a workbench and little laboratory in his house, and he labored hard during the daytime so that he could afford a few hours every evening to work in his laboratory. He ground small lenses from pieces of glass; he mounted the lenses in tubes, and he used these gadgets to look at very small objects. The count was particularly fascinated by the tiny creatures that could be observed with the strong magnification, and which he had never seen before. He invited the man to move with his laboratory to the castle, to become a member of the count’s household, and to devote henceforth all his time to the development and perfection of his optical gadgets as a special employee of the count. The townspeople, however, became angry when they realized that the count was wasting his money, as they thought, on a stunt without purpose. “We are suffering from this plague” they said, “while he is paying that man for a useless hobby!” But the count remained firm. “I give you as much as I can afford,” he said, “but I will also support this man and his work, because I know that someday something will come out of it!” Indeed, something very good came out of this work, and also out of similar work done by others at other places: the microscope. It is well known that the microscope has contributed more than any other invention to the progress of medicine, and that the elimination of the plague and many other contagious diseases from most parts of the world is largely a result of studies which the microscope made possible. The count, by retaining some of his spending money for research and discovery, contributed far more to the relief of human suffering than he could have contributed by giving all he could possibly spare to his plague-ridden community. The situation which we are facing today is similar in many respects. The President of the United States is spending about 200 billion dollars in his yearly budget. This money goes to health, education, welfare, urban renewal, highways, transportation, foreign aid, defense, conservation, science, agriculture and many installations inside and outside the country. About 1.6 percent of this national budget was allocated to space exploration this year. The space program includes Project Apollo, and many other smaller projects in space physics, space astronomy, space biology, planetary projects, earth resources projects, and space engineering. To make this expenditure for the space program possible, the average American taxpayer with 10,000 dollars income per year is paying about 30 tax dollars for space. The rest of his income, 9,970 dollars, remains for his subsistence, his recreation, his savings, his other taxes, and all his other expenditures. You will probably ask now: “Why don’t you take 5 or 3 or 1 dollar out of the 30 space dollars which the average American taxpayer is paying, and send these dollars to the hungry children?” To answer this question, I have to explain briefly how the economy of this country works. The situation is very similar in other countries. The government consists of a number of departments (Interior, Justice, Health, Education and Welfare, Transportation, Defense, and others) and the bureaus (National Science Foundation, National Aeronautics and Space Administration, and others). All of them prepare their yearly budgets according to their assigned missions, and each of them must defend its budget against extremely severe screening by congressional committees, and against heavy pressure for economy from the Bureau of the Budget and the President. When the funds are finally appropriated by Congress, they can be spent only for the line items specified and approved in the budget. The budget of the National Aeronautics and Space Administration, naturally, can contain only items directly related to aeronautics and space. If this budget were not approved by Congress, the funds proposed for it would not be available for something else; they would simply not be levied from the taxpayer, unless one of the other budgets had obtained approval for a specific increase which would then absorb the funds not spent for space. You realize from this brief discourse that support for hungry children, or rather a support in addition to what the United States is already contributing to this very worthy cause in the form of foreign aid, can be obtained only if the appropriate department submits a budget line item for this purpose, and if this line item is then approved by Congress. You may ask now whether I personally would be in favor of such a move by our government. My answer is an emphatic yes. Indeed, I would not mind at all if my annual taxes were increased by a number of dollars for the purpose of feeding hungry children, wherever they may live. I know that all of my friends feel the same way. However, we could not bring such a program to life merely by desisting from making plans for voyages to Mars. On the contrary, I even believe that by working for the space program I can make some contribution to the relief and eventual solution of such grave problems as poverty and hunger on earth. Basic to the hunger problem are two functions: the production of food and the distribution of food. Food production by agriculture, cattle ranching, ocean fishing and other large-scale operations is efficient in some parts of the world, but drastically deficient in many others. For example, large areas of land could be utilized far better if efficient methods of watershed control, fertilizer use, weather forecasting, fertility assessment, plantation programming, field selection, planting habits, timing of cultivation, crop survey and harvest planning were applied. The best tool for the improvement of all these functions, undoubtedly, is the artificial earth satellite. Circling the globe at a high altitude, it can screen wide areas of land within a short time; it can observe and measure a large variety of factors indicating the status and condition of crops, soil, droughts, rainfall, snow cover, etc., and it can radio this information to ground stations for appropriate use. It has been estimated that even a modest system of earth satellites equipped with earth resources, sensors, working within a program for worldwide agricultural improvements, will increase the yearly crops by an equivalent of many billions of dollars. The distribution of the food to the needy is a completely different problem. The question is not so much one of shipping volume, it is one of international cooperation. The ruler of a small nation may feel very uneasy about the prospect of having large quantities of food shipped into his country by a large nation, simply because he fears that along with the food there may also be an import of influence and foreign power. Efficient relief from hunger, I am afraid, will not come before the boundaries between nations have become less divisive than they are today. I do not believe that space flight will accomplish this miracle over night. However, the space program is certainly among the most promising and powerful agents working in this direction. Let me only remind you of the recent near-tragedy of Apollo 13. When the time of the crucial reentry of the astronauts approached, the Soviet Union discontinued all Russian radio transmissions in the frequency bands used by the Apollo Project in order to avoid any possible interference, and Russian ships stationed themselves in the Pacific and the Atlantic Oceans in case an emergency rescue would become necessary. Had the astronaut capsule touched down near a Russian ship, the Russians would undoubtedly have expended as much care and effort in their rescue as if Russian cosmonauts had returned from a space trip. If Russian space travelers should ever be in a similar emergency situation, Americans would do the same without any doubt. Higher food production through survey and assessment from orbit, and better food distribution through improved international relations, are only two examples of how profoundly the space program will impact life on earth. I would like to quote two other examples: stimulation of technological development, and generation of scientific knowledge. The requirements for high precision and for extreme reliability which must be imposed upon the components of a moon-travelling spacecraft are entirely unprecedented in the history of engineering. The development of systems which meet these severe requirements has provided us a unique opportunity to find new material and methods, to invent better technical systems, to improve manufacturing procedures, to lengthen the lifetimes of instruments, and even to discover new laws of nature. All this newly acquired technical knowledge is also available for application to earth-bound technologies. Every year, about a thousand technical innovations generated in the space program find their ways into our earthly technology where they lead to better kitchen appliances and farm equipment, better sewing machines and radios, better ships and airplanes, better weather forecasting and storm warning, better communications, better medical instruments, better utensils and tools for everyday life. Presumably, you will ask now why we must develop first a life support system for our moon-travelling astronauts, before we can build a remote-reading sensor system for heart patients. The answer is simple: significant progress in the solutions of technical problems is frequently made not by a direct approach, but by first setting a goal of high challenge which offers a strong motivation for innovative work, which fires the imagination and spurs men to expend their best efforts, and which acts as a catalyst by including chains of other reactions. Spaceflight without any doubt is playing exactly this role. The voyage to Mars will certainly not be a direct source of food for the hungry. However, it will lead to so many new technologies and capabilities that the spin-offs from this project alone will be worth many times the cost of its implementation. Besides the need for new technologies, there is a continuing great need for new basic knowledge in the sciences if we wish to improve the conditions of human life on earth. We need more knowledge in physics and chemistry, in biology and physiology, and very particularly in medicine to cope with all these problems which threaten man’s life: hunger, disease, contamination of food and water, pollution of the environment. We need more young men and women who choose science as a career and we need better support for those scientists who have the talent and the determination to engage in fruitful research work. Challenging research objectives must be available, and sufficient support for research projects must be provided. Again, the space program with its wonderful opportunities to engage in truly magnificent research studies of moons and planets, of physics and astronomy, of biology and medicine is an almost ideal catalyst which induces the reaction between the motivation for scientific work, opportunities to observe exciting phenomena of nature, and material support needed to carry out the research effort. Among all the activities which are directed, controlled, and funded by the American government, the space program is certainly the most visible and probably the most debated activity, although it consumes only 1.6 percent of the total national budget, and 3 per mille [less than one-third of 1 percent] of the gross national product. As a stimulant and catalyst for the development of new technologies, and for research in the basic sciences, it is unparalleled by any other activity. In this respect, we may even say that the space program is taking over a function which for three or four thousand years has been the sad prerogative of wars. How much human suffering can be avoided if nations, instead of competing with their bomb-dropping fleets of airplanes and rockets, compete with their moon-travelling space ships! This competition is full of promise for brilliant victories, but it leaves no room for the bitter fate of the vanquished, which breeds nothing but revenge and new wars. Although our space program seems to lead us away from our earth and out toward the moon, the sun, the planets, and the stars, I believe that none of these celestial objects will find as much attention and study by space scientists as our earth. It will become a better earth, not only because of all the new technological and scientific knowledge which we will apply to the betterment of life, but also because we are developing a far deeper appreciation of our earth, of life, and of man. The photograph which I enclose with this letter shows a view of our earth as seen from Apollo 8 when it orbited the moon at Christmas, 1968. Of all the many wonderful results of the space program so far, this picture may be the most important one. It opened our eyes to the fact that our earth is a beautiful and most precious island in an unlimited void, and that there is no other place for us to live but the thin surface layer of our planet, bordered by the bleak nothingness of space. Never before did so many people recognize how limited our earth really is, and how perilous it would be to tamper with its ecological balance. Ever since this picture was first published, voices have become louder and louder warning of the grave problems that confront man in our times: pollution, hunger, poverty, urban living, food production, water control, overpopulation. It is certainly not by accident that we begin to see the tremendous tasks waiting for us at a time when the young space age has provided us the first good look at our own planet. Very fortunately though, the space age not only holds out a mirror in which we can see ourselves, it also provides us with the technologies, the challenge, the motivation, and even with the optimism to attack these tasks with confidence. What we learn in our space program, I believe, is fully supporting what Albert Schweitzer had in mind when he said: “I am looking at the future with concern, but with good hope.” My very best wishes will always be with you, and with your children. It's a very different story than the kind we normally tell one another. In our modern world, we're often looking for instant gratification, for a near-term reward or return, and for immediate improvement. But science isn't always like that. Nuclear power wasn't harnessed for decades after the idea was first proposed; the Higgs boson was only found after over 40 years had passed and billions of dollars were invested in its search; gravitational waves weren't found until a full century had passed from Einstein's theory to LIGO's discovery. Yet each of these achievements, along with countless others, have helped bring about the modern world, with billions of people enjoying a higher quality of life than ever before.

#### Private corporations are uniquely key to efficiently get us in space.

**Futurism 17,** Private Companies, Not Governments, Are Shaping the Future of Space Exploration, https://futurism.com/private-companies-not-governments-are-shaping-the-future-of-space-exploration, June 12, 2017//ccavl

Sixty years ago, the Soviet Union launched the first artificial satellite into orbit. The event served as the starting pistol in what would come to be known as [the Space Race](http://www.history.com/topics/space-race), a competition between the U.S.S.R. and the United States for spaceflight supremacy.

In the decades that followed, the first human reached space, a man walked on the Moon, and the first space stations were built. The U.S.S.R. and the U.S. were soon joined by other world powers in exploring the final frontier, and by the time the Soviet Union was dissolved in 1991, the contentious Space Race was something of a distant memory.

In recent years, however, a new Space Race has taken shape—[Space Race 2.0](https://futurism.com/spacex-blue-origin-whos-winning-space-race-2-0/). Rather than powerful nations guided by presidents and premiers, however, the competitors in this race are [tech startups](https://www.cbinsights.com/blog/space-tech-startups-market-map/) and private businesses spearheaded by billionaire entrepreneurs. And while the current atmosphere is far less contentious than that of the first Space Race (save the [odd tweet or two](http://money.cnn.com/2015/12/22/news/companies/jeff-bezos-elon-musk-twitter-feud/)), the competition is just as fierce.

SpaceX, Blue Origin, Bigelow Airspace, Virgin Galactic, Boeing, Lockheed Martin… Not only has the number of private companies engaged in space exploration grown remarkably in recent years, these companies are quickly besting their government-sponsored competitors.

“We’re starting to see advances made by private entities that are more significant than any advances in the last three years that were made by the government,” Chris Lewicki, CEO and President of [Planetary Resources](http://www.planetaryresources.com/), tells Futurism.

Amazon CEO Jeff Bezos’s Blue Origin and Tesla CEO Elon Musk’s SpaceX are arguably the two companies that are setting the pace. In November 2015, the former completed the first successful vertical rocket landing after sending their New Shepard 100 kilometers (62 miles) into the air. SpaceX landed its own rocket a month later, only they did so with a craft twice as heavy as Blue Origin’s and traveled all the way into space first.

A month after that, in January 2016, Bezos’s company became the first entity to [re-launch and re-land a previously used rocket](https://futurism.com/21697/). SpaceX followed suit in 2017. “The government was never able to [build reusable rockets], but now, two private companies within the space of the same year have done that,” points out Lewicki.

Not only are private companies already surpassing their government counterparts, several are poised to widen their lead in the coming months and years.

If all goes according to plan, when SpaceX’s Falcon Heavy launches in September, it’ll take the title of the world’s most powerful rocket away from [NASA’s Saturn V](https://www.nasa.gov/centers/johnson/rocketpark/saturn_v.html). Virgin Galactic is [already selling tickets](https://futurism.com/virgin-galactic-will-soon-launching-tourists-space-new-spaceshiptwo/) for what it expects to be the first private spaceflights, which will take place aboard the sleek VSS Unity. SpaceX plans to send space tourists to the Moon in 2018, and then in 2024, the company hopes to launch a system that will [take people all the way to Mars](https://futurism.com/elon-musk-spacex-is-almost-ready-to-update-the-world-on-its-plan-to-get-humans-to-mars/)…roughly 5-15 years before NASA expects to do the same.

Private companies may be in the lead, but the finish line for this Space Race isn’t exactly clear. The first iteration was arguably “won” when Neil Armstrong took his first steps on the Moon, so does this sequel end when we establish the first Moon base? When a human walks on Mars? When we leave the solar system?

Truthfully, the likelihood of humanity ever calling it a day on space exploration is slim to none. The universe is huge, with [galaxy estimates in the trillions](https://www.theatlantic.com/science/archive/2016/10/so-many-galaxies/504185/), so the goalpost will continue moving back (to bring another sport into the analogy). Rather than focusing on competing in what is ultimately an unwinnable race, private and government-backed space agencies can actually benefit from collaboration thanks to their inherent differences.

“The way that SpaceX, Planetary Resources, or Virgin Galactic approaches space exploration is going to be very different from NASA or the Air Force,” explains Lewicki. Private companies aren’t beholden to the same slow processes that often stall government projects, and they can secure or reallocate funding much more swiftly if need be. However, unlike agencies like NASA, they do have shareholders to keep happy and a need to constantly pursue profitability.

The two sectors, therefore, have a tremendous opportunity to help one another. Private companies can generate revenue through government contracts —for example, [NASA has contracted Boeing](https://futurism.com/a-breakthrough-for-boeings-starliner/) to transport astronauts to the International Space Station (ISS), and SpaceX just closed a deal with the U.S. Air Force to [launch its secretive space drone](https://futurism.com/spacex-secures-u-s-air-force-contract-for-the-worlds-most-mysterious-space-drone/). This leaves the government agencies free to pursue the kind of forward-thinking, longer-term research that might not immediately generate revenue, but that can be later streamlined and improved upon in the private sector.

Ultimately, Space Race 2.0 has no losers. The breakthroughs happening in space exploration benefit us all, and truly, a little friendly competition never hurt anyone (unless you count the egos bruised by those tweets).

### Asteroid Strike

#### Asteroid hits are aperiodic, but certain – traditional probability scales drastically under-state risk. Treat our impact as if it could happen tomorrow

**Brownfield 4** (Roger, Gaishiled Project, “A Million Miles a Day”, Presentation at the Planetary Defense Conference: Protecting Earth From Asteroids, February 26th, [http://www.aiaa.org/content.cfm?pageid=406&gTable= Paper&g](http://www.airpower.maxwell.af.mil/airchronicles/cc/france2.html?pageid=406&gTable=%20Paper&g) ID=17092)

Once upon a time there was a Big Bang... Cause/Effect - Cause/Effect -Cause/Effect and fifteen billion years later we have this chunk of cosmos weighing in at a couple trillion tons, screaming around our solar system, somewhere, hair on fire at a million miles a day, on course to the subjective center of the universe. Left to its own fate -- on impact -- this Rock would release the kinetic energy equivalent of one Hiroshima bomb for every man, woman and child on the planet. Game Over... No Joy... Restart Darwin's clock… again. No happy ever after. There is simply no empirical logic or rational argument that this could not be the next asteroid to strike Earth or that the next impact event could not happen *tomorrow*. And as things stand we can only imagine a handful of dubious undeveloped and untested possibilities to defend ourselves with. There is nothing we have actually prepared to do in response to this event. From an empirical analysis of the dynamics and geometry of our solar system we have come to understand that the prospect of an Earth/asteroid collision is a primal and ongoing process: a solar systemic status quo that is unlikely to change in the lifetime of our species. And that the distribution of these impact events is completely aperiodic and random both their occasion and magnitude. From abstracted averaged relative frequency estimates we can project that over the course of the next 500 million years in the life of Earth we will be struck by approximately 100,000 asteroids that will warrant our consideration. Most will be relatively small, 100 to 1,000 meters in diameter, millions of tons: only major city to nation killers. 1,000 or so will be over 1,000 meters, billions of tons and large enough to do catastrophic and potentially irrecoverable damage to the entire planet: call them global civilization killers. Of those, 10 will be over 10,000 meters, trillions of tons and on impact massive enough to bring our species to extinction. All these asteroids are out there, orbiting the sun... now. Nothing more needs to happen for them to go on to eventually strike Earth. As individual and discrete impact events they are all, already, events in progress. By any definition this is an existential threat. Fortunately, our current technological potential has evolved to a point that if we choose to do so we can deflect all these impact events. Given a correspondingly evolved political will, we can effectively manage this threat to the survival of our species. But since these events are aperiodic and random we can not simply trust that any enlightened political consensus will someday develop spontaneously before we are faced with responding to this reality. If we would expect to deflect the next impact event a deliberate, rational punctuated equilibrium of our sociopolitical will is required now. The averaged relative frequency analysis described above or any derived random-chance statistical probabilistic assessment, in itself, would be strategically meaningless and irrelevant (just how many extinction level events can we afford?). However, they can be indirectly constructive in illuminating the existential and perpetual nature of the threat. Given that the most critically relevant strategic increment can be narrowly defined as the next “evergreen” 100 years, it would follow that the strategic expression of the existent risk of asteroid impact in its most likely rational postulate would be for one and only one large asteroid to be on course to strike Earth in the next 100 years... If we do eventually choose to respond to this threat, clearly there is no way we can address the dynamics or geometry of the Solar System so there is no systemic objective we can respond to here. We can not address 'The Threat of Asteroid Impact' as such. We can only respond to this threat as these objects present themselves as discrete impending impactors: one Rock at a time. This leaves us the only aspect of this threat we *can* respond to - a rationally manifest first-order and evergreen tactical definition of this threat Which unfortunately, as a product of random-chance, includes the prospect for our extinction. Asteroid impact is a randomly occurring existential condition. Therefore the next large asteroid impact event is inevitable and expectable, and that inevitable expectability begins... now. The Probability is Low: As a risk assessment: “The probability for large asteroid impact in the next century is low”... is irrelevant. Say the daily random-chance probability for large asteroid impact is one in a billion. And because in any given increment of time the chance that an impact will not happen is far greater than it will, the chance that it will happen can be characterized as low. However, if we look out the window and see a large asteroid 10 seconds away from impact the daily random-chance probability for large asteroid impact will still be one in a billion... and we must therefore still characterize the chance of impact as low... When the characterization of the probability can be seen to be tested to be in contradiction with the manifest empirical fact of the assessed event it then must also then be seen to be empirically false. Worse: true only in the abstract and as such, misleading. If we are going to *respond* to these events, when it counts the most, this method of assessment will not be relevant. If information can be seen to be irrelevant ex post it must also be seen to be irrelevant ex ante. This assessment is meaningless. Consider the current threat of the asteroid Apophis. With its discovery we abandon the average relative frequency derived annual random-chance probability for a rational conditional-empiric probabilistic threat assessment derived from observing its speed, vector and position relative to Earth. The collective result is expressed in probabilistic terms due only to our inability to meter these characteristics accurately enough to be precise to the point of potential impact. As Apophis approaches this point the observations and resulting metrics become increasingly accurate and the conditional-empiric probability will process to resolve into a certainty of either zero or one. Whereas the random-chance probability is unaffected by whether Apophis strikes Earth or not. These two probabilistic perceptions are inherently incompatible and unique, discrete and nonconstructive to each other. The only thing these two methodologies have in common is a nomenclature: probability/likelihood/chance, which has unfortunately served only to obfuscate their semantic value making one seem rational and relevant when it can never be so. However, merely because they are non rational does not make averaged relative frequency derived random-chance probabilities worthless. They do have some psychological merit and enable some intuitive 'old lady' wisdom. When we consider the occasion of some unpredictable event that may cause us harm and there is nothing tangible we can do to deflect or forestall or stop it from happening, we still want to know just how much we should worry about it. We need to quantify chance not only in in case we can prepare or safeguard or insure against potentially recoverable consequences after the fact, but to also meter how much hope we should invest against the occasion of such events. Hope mitigates fear. And when there is nothing else we can do about it only then is it wise to mitigate fear... “The probability for large asteroid impact in the next century is low” does serve that purpose. It is a metric for hope. Fifty years ago, before we began to master space and tangibly responding this threat of asteroid impact became a real course of action, hope was all we could do. Today we can do much more. Today we can hold our hope for when the time comes to successfully deflect. And then, after we have done everything we can possibly do to deflect it, there will still be of room for hope... and good luck. Until then, when anyone says that the probability for large asteroid impact or Extinction by NEO is low they are offering nothing more than a metric for hope -- not rational information constructive to metering a response or making a decision to do so or not. Here, the probability is in service to illusion... slight-of-mind... and is nothing more than comfort-food-for-thought. We still need such probabilistic comfort-food-for-thought for things like Rogue Black Holes and Gamma Bursts where we are still imaginably defenseless. But if we expect to punctuate the political equilibrium and develop the capability to effectively respond to the existential threat of asteroid impact, we must allow a rational and warranted fear of extinction by asteroid impact to drive a rational and warranted response to this threat forward. Forward into the hands and minds of those who have the aptitude and training and experience in *using* fear to handle fearful things. Fear focuses the mind... Fear reminds us that there are dire negative consequences if we fail. If we are going to concern ourselves with mounting a response and deflecting these objects and no longer tolerate and suffer this threat, would it not be far more relevant to know in which century the probability for large asteroid impact was *high* and far more effective to orient our thinking from when it *will not* to when it *will* occur? But this probabilistic perspective can not even pretend to approach providing us with that kind of information. As such, it can never be strategically relevant: contribute to the conduct of implementing a response. The same can be said when such abstract reasoning is used to forward the notion that the next asteroid to strike Earth will likely be small... This leads us to little more than a hope based Planetary Defense. If we are ever to respond to this threat well then we must begin thinking about this threat better. Large Asteroid Impacts Are Random Events. Expect the next one to occur at any time. Strategically speaking, this means being at DefCon 3: lock-cocked and ready to rock, prepared to defend the planet and mankind from the worst case scenario, 24/7/52... forever. Doing anything less by design, would be like planning to bring a knife to a gunfight. If we expect our technological abilities to develop and continue to shape our nascent and still politically tacit will to respond to this threat: if we are to build an effective Planetary Defense, we must abandon the debilitating sophistry of “The probability for large asteroid impact in the next century is low” in favor of rational random inevitable expectation... and its attendant fear.

#### Only asteroids cause extinction. Both small hits and *near misses* cause war

Gold, Chapman, and Durda 1, [Robert E. Gold Space Engineering and Technology Branch Johns Hopkins University Applied Physics Laboratory, Clark R. Chapman and Daniel D. Durda Office of Space Studies Southwest Research Institute, THE COMET/ASTEROID IMPACT HAZARD: A SYSTEMS APPROACH, www.boundarycondition.com/NEOwp\_Chapman-Durda-Gold.pdf]

Impacts that are even smaller and more frequent impacts than those shown in Table 1 – like the 15 Megaton impact in Tunguska, Siberia, in 1908 – may have major consequences near ground zero. But other natural disasters, like earthquakes and floods, having the same damage potential (e.g. human fatalities), happen at least a hundred times more frequently than small impacts. Perhaps the most serious consequences of impacts similar to and smaller than Tunguska, which happen on timescales comparable to or shorter than a human lifetime, are unpredictable reactions by observers. A bolide ten times brighter than the Sun occurred in the Yukon in January 2000, yielding some meteorites. Such an event in an unstable location in the world could be misinterpreted as an enemy attack and precipitate war. Another possibility is that a small impact could generate political ramifications and fallout from the public, knowledgeable to some extent that NEA searches and mitigation efforts are underway, and angered at those who were ‘supposed’ to be on guard for such events (W. J. Cooke 2000, personal communication).

There has been essentially no modelling at all of the possible economic and social consequences of the kinds of environmental damage listed in Table 1. Clearly, in cases of impactors >1 km in diameter, we enter a realm never previously encountered by modern civilization. Even the great World Wars of the twentieth century left many nations relatively undamaged, and they were thus able to serve as nuclei for recovery. An unexpected impact by a 2 km asteroid might well destroy agriculture in both hemispheres and around the world, leading to mass starvation from which no nation would be immune. Impacts may also precipitate catastrophic failures of modern communications and power infrastructures. Possible mass psychological reactions to such a devastating catastrophe, while portrayed in science fiction novels and movies, have also not been researched in an impact hazard context. Even a near-miss by a dusty comet could have serious ramifications, without even impacting: loss of many satellites in the geosynchronous constellation due to dust impacts and associated plasma arcing could severely disrupt global communications and associated economic and security infrastructures (P. Brown 2000, private communication)

#### Small hits go nuclear

Baum 10, [Seth Baum is Executive Director of the Global Catastrophic Risk Institute, Is Humanity Doomed? Insights from Astrobiology]

The earliest scenario is the impact event: collision between an asteroid or comet and Earth. Such collisions are relatively commonplace, but with impactors too small to prevent human civilization from being sustained. It is possible for small impactors to cause outsized damage if they land in the wrong place. For example, a 2002 asteroid exploded over the Mediterranean; had it landed a few hours earlier, it would have exploded over Kashmir. A Kashmir impact plausibly could have initiated a nuclear exchange between India, Pakistan, and possibly others [18]. Larger, less-common asteroids could land anywhere on the planet and still cause major damage. Such asteroids are a major threat to human sustainability [19]. Indeed, a large asteroid is believed to have caused at least one major extinction event, the Cretaceous-Tertiary. Several major space agencies, including those of Russia and the United States, have active programs to monitor the skies for threatening asteroids. Recently the Russian agency has proposed—to some controversy—deflecting an asteroid that has a small but non-zero chance of hitting Earth in 2029 [20]. Regardless of what the merits of this proposal might be, it is clear that an active asteroid deflection program could play an important role in sustaining life and civilization on Earth.

#### Comet diseases cause extinction

**Joseph** and Wickramasinghe **10** (Rhawn Joseph is an American neuropsychologist and writer, Chandra Wickramasinghe, Director of the Buckingham Centre for Astrobiology, University of Buckingham “Comets and Contagion: Evolution, Plague, and Diseases From Space”, Journal of Cosmology 2010, Vol 7, 1750-1770, January, https://www.researchgate.net/publication/326160954\_Comets\_and\_Contagion\_Evolution\_Plague\_and\_Diseases\_From\_Space)

For much of history comets have been associated with death and disease. There is increasing evidence that life on Earth originated in comets and other stellar debris. If passing comets have continued to deposit viruses and microorganisms on this planet, this may explain why ancient astronomers and civilizations attributed the periodic outbreak of plague to these stellar objects. Moreover, the subsequent evolution and extinction of life may have been directly impacted by the continued arrival of bacteria, archae, viruses, and their genes from space. On this picture the evolution of higher plants and animals, including humans, would be impacted by the insertion of genes from space, as well as recurrent episodes of pandemic disease. Near-culling pandemics and extinction episodes have in fact been preceded by or followed by inserts of viral genes into survivors who have transmitted these viral elements to their progeny, thereby impacting future evolution. Although ancient fears and reverence of comets may be coincidental with the outbreaks of pandemics, they may also have a factual basis.

#### Private entities like the B612 Foundation are key to stop asteroids with telescopes such as Sentinel.

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With the dangers of rogue asteroids made clear by the surprise explosion of a meteor over Russia in February, a non-profit organization is ramping up its effort to search for potentially hazardous space rocks near Earth.

The B612 Foundation was started in 2002 by former NASA astronauts Ed Lu and Rusty Schweickart with colleagues. The organization aims to launch a space telescope called Sentinel in 2017 to catalog near-Earth asteroids, including those that may pose a danger to Earth.

To date, about 90 percent of near-Earth asteroids large enough to destroy the entire planet (about 1 kilometer, or 0.6 miles wide) have been discovered, but far fewer of the smaller, city-killing size (roughly 140 meters, or 460 feet, in diameter) have been found. [[Photos: The Sentinel Space Telescope](https://www.space.com/16341-sentinel-space-telescope-asteroid-mission-pictures.html)]

"We are essentially flying blind in a cosmic shooting gallery," Scott Hubbard, B612 program architect, told reporters on Tuesday (April 9) at the 29th annual [National Space Symposium](https://www.space.com/20590-national-space-symposium-2013-photos.html) in Colorado Springs, Colo.

This reality was starkly illustrated on Feb. 15, when a 55-foot-wide (17 meters) meteor exploded over Chelyabinsk, Russia, just hours before an asteroid almost three times its size called 2012 DA14 flew uncomfortably close to Earth.

Sentinel's goal is to detect about 90 percent of this city-killing class of asteroids over a period of 6.5 years.

The $450 million mission is to be privately funded, though the foundation has partnered with NASA to share its data and use the agency's Deep Space Network of satellites to facilitate communications between Sentinel and the ground. NASA and lawmakers have said they enthusiastically support the mission and the B612 Foundation's efforts.

"We must better recognize what the private sector can do to aid our efforts to protect the world," Rep. Lamar Smith, R-Texas, chairman of the House Committee on Science, Space and Technology, said during a Congressional hearing on the asteroid issue Wednesday (April 10).

Illustration of relative size for DA14 and Chelyabinsk Meteor compared to a footbal field. (Image credit: Michael Carroll)

B612 is also looking to partner with other private organizations, such as the solar system exploration non-profit organization The Planetary Society.

"We are hoping in the future to partner with B612, and we will find the asteroid that could have our name on it," said Bill Nye, the CEO of The Planetary Society. "We will — this sounds extraordinary — we will save humankind. It sounds like science fiction, but it's real."

B612's presentation at the National Space Symposium came one day before the group's CEO, former astronaut Ed Lu, spoke before the House Science, Space, and Technology Committee Wednesday (April 10) on the importance of [searching for potentially dangerous asteroids](https://www.space.com/20619-asteroid-threat-earth-congress.html) before they hit Earth.

Sentinel will fly in a Venus-like orbit around the sun, closer in than Earth. The observatory use an infrared telescope to search for space rocks as they near the sun, absorbing some of its light and re-radiating it as heat.

"If we build sophisticated night-vision goggles, we can see it," said John Troeltzsch, program manager for the Sentinel mission at Ball Aerospace, which has been contracted to build the spacecraft.

Ball was the primary contractor for NASA's infrared Spitzer Space Telescope, as well as the agency's planet-hunting Kepler spacecraft, which, like Sentinel, required a large camera and the ability to point precisely at a given spot in the sky.

"We have a lot of experience with very cold things observing very faint signals," Troeltzsch said. "If you take what we learned on Spitzer and what we learned on Kepler, you can derive Sentinel."

So far, B612 has raised about $2 million for the mission over the past eight months. It hopes to continue to raise $30 million to 40 million per year to keep the project on track.

# Case

#### No war.

Bowen 18 [Bleddyn Bowen, Lecturer in International Relations at the University of Leicester. The Art of Space Deterrence. February 20, 2018. https://www.europeanleadershipnetwork.org/commentary/the-art-of-space-deterrence/]

Space is often an afterthought or a miscellaneous ancillary in the grand strategic views of top-level decision-makers. A president may not care that one satellite may be lost or go dark; it may cause panic and Twitter-based hysteria for the space community, of course. But the terrestrial context and consequences, as well as the political stakes and symbolism of any exchange of hostilities in space matters more. The political and media dimension can magnify or minimise the perceived consequences of losing specific satellites out of all proportion to their actual strategic effect.

#### Mutually Assured Destruction means Nuclear War is impossible because neither side wants to destroy themselves.

Clack 08 – Josh Clark"What's Mutual Assured Destruction?" 3 June 2008. HowStuffWorks.com. ,https://people.howstuffworks.com/mutual-assured-destruction.htm, // ccacy

As a result, the nuclear strategy doctrine of Mutual Assured Destruction (MAD) emerged in the mid-1960s. This doctrine was based upon the size of the countries' respective nuclear arsenals and their unwillingness to destroy civilization. MAD was unique at the time. Never before had two warring nations held the potential to erase humanity with the entry of a few computer codes and the turn of matching keys. Ironically, it was this powerful potential that guaranteed the world's safety: Nuclear capability was a deterrent against nuclear war. Because the U.S. and the USSR both had enough nuclear [missiles](https://science.howstuffworks.com/missile.htm) to clear each other from the [map](https://science.howstuffworks.com/environmental/earth/geophysics/map.htm), neither side could strike first. A first strike guaranteed a retaliatory counterstrike from the other side. So launching an attack would be tantamount to suicide -- the first striking nation could be certain that its people would be annihilated, too. The doctrine of MAD guided both sides toward deterrence of nuclear war. It could never be allowed to break out between the two nations. And it virtually guaranteed no conventional war would, either. Eventually, conventional tactics -- like non-nuclear missiles, [tanks](https://science.howstuffworks.com/m1-tank.htm) and troops -- would run out, and the inevitable conclusion of a nuclear strike would be reached. Since that end was deemed unacceptable by the Soviets and Americans, there was no chance of an engagement that could lead to this conclusion. But MAD didn’t exactly create an atmosphere in which Soviet premiers and American presidents felt like they could shake hands and call the whole thing off. The nations had very little trust in each other -- and with good reason. Each side was steadily building its nuclear arsenal to remain an equal party in the MAD doctrine. A détente, or uneasy truce, developed between the U.S. and USSR. They were like two gunslinging foes, adrift alone in a life boat, each armed and unwilling to sleep.

#### Heg is a positive feedback loop where Russia/China ramping up means US also ramps up in response and it just keeps going, eventually it will collapse.

#### Heg is propaganda that disguises global conquest as great power peace

Nguyen 14 – Cultural Foundations of Education, Syracuse University (Nicole, “Education as Warfare?: Mapping Securitised Education Interventions as War on Terror Strategy,” Geopolitics 00:1-31, accessed 2-16-14 //Bosley)

Such school reform projects follow calls from the US state to improve STEM education. The U.S. Commission on National Security / 21st Century outlines, for instance that “to ensure the vitality of all its core institutions, the United States must make it a priority of national policy to improve the quality of primary and secondary education, particularly in mathematics and the sciences. Moreover, in an era when private research and development efforts far outstrip those of government, the United States must create more advanced and effective forms of public / private partnerships to promote public beneﬁt from scientiﬁc-technological innovation.” 128 In this way, homeland security programmes and schools typify how securitised neoliberal logic, fuelled by corporate dollars, is infused into school reform, curriculum, and everyday (normalised) neoliberal and securitised school subjectivities. While the Obama administration ended the war in Iraq, promised troop reduction in Afghanistan, and increased its use of drones, much of my time in the homeland security high school revolved around talk of the growing “pipeline initiative” to continue to grow the programme throughout the state and to extend it through all grade levels in order to meet the nation’s growing security needs. In a meeting with school administrators and representatives of the defence corporations, students from local elementary, middle, and high schools as well as current college students presented how the homeland security programme was useful to them, how the corporations might get more young people interested in working in the industry, and what they found exciting in the programme. The school also holds several recruiting events at the elementary schools, simulated cyber-security battle labs, and homeland security fairs to spur local interest. The mushrooming number of regional and national initiatives aimed at further institutionalising homeland security education in US public schools indicates that this form of securitised education has drastically shifted public schooling in the United States even as the war on terror strategy continues to morph under the Obama administration. The continued portrayed need to secure US borders, cyber space, and the homeland authorised this emphasis on homeland security in US public schools. The fears of the dangerous brown Other and of ungoverned school space dramatically altered the architecture of school discipline at Wellington. These changes highlight how this fear and anxiety can be used to mobilise school reforms intending to fortify US public schools and control brown bodies, and borrow from the scripts used to make sense of US interventions in Iraq. Further, the US state portrays a lack of skilled workers as a national security risk, demanding US public schools reform their schools in order to meet the needs of the security industry. As the reverberations of September 11 and the long war continue to structure US public schools, children educated in these schools learn to interpret the world and their place in it through a lens of homeland security and war. In this way, US public schools become yet another site of war on terror strategy. Taken together, these militarised and securitised US public school reforms instituting homeland security studies programmes, tactical US engagements with madrassas, and the emphasis on girls’ education as empowerment highlight the critical role education plays in supporting and furthering war on terror strategy both materially and discursively. Though disparately located, these sites of education are connected by larger social processes invested in the reproduction of difference and inequality, the advancement of capitalist imperialism, and the furthering of US warfare through the circulation of speciﬁc geographic imaginaries of ‘here’ and ‘there’ and ‘us’ and ‘them.’ DISRUPTIONS Through this analysis, we can see how the US constructs and mobilises convenient scripts and imaginative geographies in order to perpetuate hegemony, justify war, and humanise US military intervention while refuelling a sense of imminent danger and fear across the US homeland. We see this in looking speciﬁcally at three distinct sites of education: Framed by Orientalist understandings of brown women as oppressed by brown men, girls’ education initiatives mobilised by the United States work to humanise and justify war under the guise of advancing human rights and feminism. The representation of madrassas as incubators of terrorism authorises the implementation of US-style education programmes and military intervention. Lastly, US public schools organise their schools to abate the threat posed by brown bodies and the spaces they occupy, and to prepare young people to defend the homeland either militarily or through their work in the security industry. Gregory proposes that “for us to cease turning on the treadmill of the colonial present – it will be necessary to explore other spatializations and other topologies, and to turn our imaginative geographies into geographical imaginations that can enlarge and enhance our sense of the world and enable us to situate ourselves within it with care, concern, and humility.” 129 As the US continues to invent and invest in new forms of education to service the war industry, the challenge posed by critical geopolitics is to work to disrupt the geographies that enable these education and military practices. Throughout this work, we have seen how the ‘architecture of enmity’ animated through various Orientalist and patriarchal discourses shapes and justiﬁes US engagements with education to buttress war on terror efforts and to revivify the US’s standing as the world’s moral compass. Informed by a longer colonial genealogy long before September 11 noted by various inﬂection points during the Cold War, this analysis recognises that these operative hegemonic discourses and ideologies appear and reappear across time and space – their traces always and everywhere superimposed – and enable seemingly unconnected practices to work together to maintain and extend patriarchal and colonial dominance. 130 Plotting the ideological and discursive routes that link various sites that make up the topography of imperial, securitised education can help us map and, in turn, challenge the contours of US interventions with education. A re-scripting of the Middle East as well as of the United States’ role in putatively promoting global security while risking the human security of millions of brown bodies across the globe acts as one step toward dismantling the prevailing geopolitical imagination(s) that operates on and through brown bodies in dangerous and violent ways. By exposing the patriarchal and imperial investments of dominant geopolitical scripts, this analysis has worked to provide some entry points for reframing the conversation around in/security and education in ways that might de-centre and destabilise US hegemonic imaginings and, in turn, privilege Other ways of knowing.

1. Tsing, Anna, *The Mushroom at the End of the World*, Professor of anthropology at the University of Santa Cruz and recipient of the Huxley Memorial Medal of the Royal Anthropological Institute, Princeton University Press, 2015 [↑](#footnote-ref-1)
2. Tsing, Anna, *The Mushroom at the End of the World*, Professor of anthropology at the University of Santa Cruz and recipient of the Huxley Memorial Medal of the Royal Anthropological Institute, Princeton University Press, 2015 [↑](#footnote-ref-2)
3. Roland Bleiker, Senior Lecturer and Coordinator of the Peace and Conflict Studies Program at the University of Queensland, “Popular Dissent, Human Agency and Global Politics,” 2000, Cambridge Studies in International Relations [↑](#footnote-ref-3)