**Space Debris DA**

**Uniqueness: Space debri is a current and concerning issue**

**There’s 8,000 Tons of Debris In Our Atmosphere**

**Weiner 3/21** Weiner, Chloee. "New Effort To Clean Up Space Junk Reaches Orbit." NPR.org, 21 Mar. 2021, https://www.npr.org/2021/03/21/979815691/new-effort-to-clean-up-space-junk-prepares-to-launch. Accessed 25 Jul. 2021.

A demonstration mission to test an idea to clean up space debris launched Monday morning local time from the Baikonur Cosmodrome in Kazakhstan. Known as ELSA-d, the mission will exhibit technology that could help capture space junk, the millions of pieces of orbital debris that float above Earth. **The** more than **8,000 metric tons of debris threaten** the **loss of** services we rely on for Earth-bound life, including **weather forecasting, telecommunications and GPS systems**. The spacecraft works by attempting to attach itself to dead satellites and pushing them toward Earth to burn up in the atmosphere. ELSA-d, which stands for End-of-Life Services by Astroscale, will be carried out by a "servicer satellite" and a "client satellite" that launched together, according to Astroscale, the Japan-based company behind the mission. Using a magnetic docking technology, the servicer will release and try to "rendezvous" with the client, which will act as a mock piece of space junk. The mission, which will be run from the U.K., will carry out this catch and release process repeatedly over the course of six months. The goal is to prove the servicer satellite's ability to track down and dock with its target in varying levels of complexity. The spacecraft is not designed to capture dead satellites already in orbit, but rather future satellites that would be launched with compatible docking plates on them. The Astroscale team performs pre-launch tests at the Baikonur Cosmodrome in February 2021. Space junk has been a growing problem for years as human-made objects such as old satellites and spacecraft parts build up in low Earth orbit until they decay, deorbit, explode or collide with other objects, fragmenting into smaller pieces of waste. In 2019, for example, India blew apart one of its satellites orbiting Earth, creating hundreds of pieces of debris that threatened to collide with the International Space Station. **According to** a recent report by **NASA**, at least **26,000** of the millions of **pieces of space junk are the size of a softball**. Orbiting along at 17,500 mph, they could "destroy a satellite on impact." More than 500,000 pieces are a "mission-ending threat" because of their ability to impact protective systems, fuel tanks and spacecraft cabins. And the most common debris, more than 100 million pieces, is the size of a grain of salt and could puncture a spacesuit, "amplifying the risk of catastrophic collisions to spacecraft and crew," the report said. According to NASA, cleaning up space — and addressing the risks associated with debris — depend on preventing the accumulation of more waste and actively removing it. The development of other cleanup technologies has been underway for years. In 2016, Japan's space agency sent a 700-meter tether into space to try to slow down and redirect space junk.

**NASA tracking more dangerous space debris than ever before**

**NASA 15**, 4-13-2015, "Space Debris and Human Spacecraft," NASA, <https://www.nasa.gov/mission_pages/station/news/orbital_debris.html> SK

**More than 27,000 pieces of orbital debris**, or “space junk,” **are tracked by** the Department of Defense’s global Space Surveillance Network **(SSN**) sensors. **Much more debris -- too small to be tracked, but large enough to threaten human spaceflight and robotic missions** -- exists in the near-Earth space environment.  Since both the debris and spacecraft are traveling at extremely high speeds (approximately 15,700 mph in low Earth orbit), **an impact of** even **a tiny piece of** orbital **debris with a spacecraft could create big problems**.  The rising population of **space debris increases the potential danger to all space vehicles**, including to the International Space Station and other spacecraft with humans aboard, **such as SpaceX’s Crew** Dragon.  NASA takes the threat of collisions with space debris seriously and has a long-standing set of guidelines on how to deal with each potential collision threat to the space station. These guidelines, part of a larger body of decision-making aids known as flight rules, specify when the expected proximity of a piece of debris increases the probability of a collision enough that evasive action or other precautions to ensure the safety of the crew are needed.

**Space debris collisions have significant impacts and are hard to avoid**

<https://www.esa.int/Safety_Security/Space_Debris/Hypervelocity_impacts_and_protecting_spacecraft>

The **consequences of** meteoroid and **debris** impacts on spacecraft **can range from small surface pits** due to micrometer-size impactors and clear-hole penetrations for millimeter-size objects, **to mission-­critical damage for projectiles larger than 1 cm.** **Any impact of a 10 cm catalog object on a spacecraft or orbital stage will most likely entail a catastrophic disintegration of the target.** This destructive energy is a consequence of high impact velocities, which can reach 15 km/s for space debris and 72 km/s for meteoroids. Since **only larger space objects can be** cataloged and **tracked,** only these can be **{and} avoided** through active measures or by evasive maneuvers. Smaller, uncatalogued objects can only be defeated by passive protection techniques, as used with the International Space Station (ISS). The effects of hypervelocity impacts are a function of projectile and target material, impact velocity, incident angle and the mass and shape of the projectile. Beyond 4 km/s (depending on the materials), an impact will lead to a complete break­up and melting of the projectile. Typical impact velocities are around 14 km/s for space debris, and significantly higher for meteoroids. At low velocities, plastic deformation normally prevails. With increasing velocities the impactor will leave a crater on the target. Beyond 4 km/s (depending on the materials), an impact will lead to a complete break­up and melting of the projectile, and an ejection of crater material to a depth of typically 2–5 times the diameter of the projectile. In hypervelocity impacts, the projectile velocity exceeds the speed of sound within the target material. The resulting shockwave that propagates across the material is reflected by the surfaces of the target, and reverses its direction of travel. The superimposition of progressing and reflected waves can lead to local stress levels that exceed the material’s strength, thus causing cracks and/or the separation of spalls at significant velocities. With decreasing target thickness, the effects will range from cratering, via internal cracks, to spall detachment to, finally, clear-hole perforations. ESA’s space projects use damage assessment tools in combination with debris and meteoroid environment models to predict potential damage from hypervelocity impacts, and to define effective protection measures through shielding and design. Among many others, ESA experts have been involved in the development and testing of protective shields for the Columbus module of the Space Station.

**Link: Private entities are key to solving this**

**Space-Debris-Satellite Collisions Are Increasing and A Global Solution is Needed**

**Starr 20** Michelle Starr. "Earth's Space Debris Problem Is Getting Worse, And There's an Explosive Component." ScienceAlert, https://www.sciencealert.com/the-space-debris-problem-is-getting-worse-not-better. Accessed 25 Jul. 2021.

Before humans first started sending objects into Earth orbit, the pocket of space around our planet was clear and clean. But the launch of Sputnik 1 in October of 1957 changed everything. Since then, the space debris has been accumulating, with the amount of useless, defunct satellites vastly outnumbering the operational objects in our orbit. A new annual report from the European Space Agency (ESA) has found that while we have become aware of the problem and taken steps in recent years to mitigate it, those steps are currently not keeping up with the sheer scale of space junk. All spacefaring nations have contributed to the problem, which is significant: **as more** and more defunct **objects populate near-Earth space, the risk of collision rises - which**, as objects crash and shatter, **produces even more** space **debris.** The hazards have been prominent in the **last year**. We have not only watched as **two large dead satellites** very **nearly** **collided**, but **the I**nternational **S**pace **S**tation has **had to undertake emergency manoeuvres three times to avoid colliding with** space **debris**. But collisions are not even close to being the biggest problem, according to the ESA's report. In the last 10 years, collisions were responsible for just 0.83 percent of all fragmentation events. "The biggest contributor to the current space debris problem is explosions in orbit, caused by left-over energy - fuel and batteries - onboard spacecraft and rockets," said Holger Krag, head of the ESA's Space Safety Programme. "Despite measures being in place for years to prevent this, we see no decline in the number of such events. Trends towards end-of-mission disposal are improving, but at a slow pace." The causes of fragmentation events over the past decade. (ESA) The space junk problem was first raised in the 1960s, but it took a long time for mitigation measures to be identified and implemented. Now, spacefaring nations are much better at planning for what happens to satellites and rockets at the end of their missions. Reusable rockets are a big one, although the technology is still in its infancy. For decades, rocket boosters were just left to drift away once they'd delivered their payloads into low-Earth orbit. Some of those discarded boosters have been out there for decades. Other mitigation measures include designing and building spacecraft that can better withstand the harsh environment of space without disintegrating; releasing stored energy and fuel to make defunct spacecraft less likely to explode; and, once a spacecraft's mission is over, moving it to a safer orbit. This would mean either a "graveyard orbit" high above the low-Earth space used for operational spacecraft, or bringing it down into Earth's atmosphere to burn up on reentry as a neat disposal system. But even with these measures in place, 12 fragmentation events have taken place every year for the past two decades. That number is rising, with each fragmentation event potentially introducing thousands of pieces of small debris in Earth orbit. At orbital velocities, even the tiniest pieces of debris can disable an operational satellite. According to the ESA's statistical model, t**here are over 130 million pieces of** anthropogenic **space debris smaller than a millimetre**. The only way we can hope to do anything about the problem is by working together. The good news is that, in the past decade, there has been an increase in the number of spacefaring nations complying with international guidelines. Those that don't comply with orbit guidelines are growing increasingly likely to comply with space debris mitigation measures. But how we use space is changing. Satellite swarms, smallsats and "constellations" are becoming more common. SpaceX's StarLink alone has put hundreds of satellites in low-Earth orbit. So, the ESA says, it's more important than ever that everyone cooperates to keep our little corner of space as clean as we can. "The accelerating increase of satellites launched into low-Earth orbit is starkly visible in our latest report," said Tim Florer, Head of the ESA's Space Debris Office. "To continue benefiting from the science, technology and data that operating in space brings, it is vital that we achieve better compliance with existing space debris mitigation guidelines in spacecraft design and operations. It cannot be stressed enough - this is essential for the sustainable use of space." The ESA is actively working towards solutions. It has commissioned a project to attempt to collect space debris, with the proof-of-concept planned to launch in 2025. They're also trying to develop technology to automate collision avoidance manoeuvres, so that human controllers don't need to track and control every piece of equipment or decommissioned satellite in low-Earth space. And measures such as a Space Sustainability Rating can help nations developing space technologies by providing a baseline by which to adhere. "Space debris poses a problem for the near Earth environment on a global scale, to which all spacefaring nations have contributed and for which **only a globally supported solution can be the answer**," the ESA wrote in its report.

**International treaties have made little progress at solving the space debris problem, and contain several critical solvency deficiencies**

**Weinzierl**, Matthew. “Space, the final economic fronter.” The Journal of Economic Perspectives , Vol. 32, No. 2 (Spring 2018), pp. 173-192,**18.** https://www.jstor.org/stable/26409430?seq=1#metadata\_info\_tab\_contents

International agreements have made some progress on the issue of space debris by requiring that objects put into space in the future have automatic de-orbiting capabilities, but **the main provision of international treaties relevant to debris—the assignment of responsibility for debris to the party** or country **from which it was first launched—has fallen far short**. In fairness, **identifying the origin of pieces of debris is difficult, assigning responsibility** for an object having become debris (say, due to a collision with another object) **is often impossible**, and **enforcing countries’ obligations threatens their national security and economic interests in other assets**. The analogy to global climate change, where a decades-long effort to generate international coordination has gradually confronted these obstacles, is both useful and daunting. A more encouraging analogy is to international efforts to reverse the depletion of the ozone layer, where over the several decades multiple rounds of agreements have turned the tide. Advocates of action on space debris often point to the need for public awareness of the problem, a factor often credited with encouraging swift action on the ozone layer.

**Private-Public partnerships are necessary to solve the space debris problem**

**Weinzierl**, Matthew. “Space, the final economic fronter.” The Journal of Economic Perspectives , Vol. 32, No. 2 (Spring 2018), pp. 173-192,**18.** https://www.jstor.org/stable/26409430?seq=1#metadata\_info\_tab\_contents

The space debris problem is a classic example of negative externalities but in a setting in which the conventional remedies suggested by economic analysis and applied on Earth have limited traction. For example, Hanson (2016) suggests a standard Pigouvian price on debris, but also notes that a main obstacle is the lack of any space taxing authority. A Coasian (1960) solution in which affected parties negotiate to internalize externalities will be difficult in the case of space debris because this approach requires clearly delineated property rights, and no such rights exist in space. **A polycentric governance solution as in Ostrom** (2009), **in** **which public and private actors would collectively manage orbital debris** in a way **similar to how a range of actors manage large-scale irrigation projects and water** **rights in some emerging economies**, may be possible but faces an uphill battle. After all, the conditions under which Ostrom found this kind of cooperation most promising—including the ability to monitor and discipline actions—are missing in space (Weinzierl, Acocella, and Yamazaki 2016). In short, **without some centralized action, space debris could generate an outcome similar to the tragedy of the** **commons.**4

**Impact: Without private entities, space debri will accumulate, having negative impacts on the environment and human health**

**Space debri could have negative impacts on public welfare**

**Damjanov**, Katarina. “Of Defunct Satellites and Other Space Debris: Media Waste in the Orbital Commons.” Science, Technology, & Human Values, vol. 42, no. 1, Sage Publications, Inc., 20**17**, pp. 166–85, http://www.jstor.org/stable/26405576.

 By the twenty-first century, **orbital debris** was **identified as a substantial security risk for** mediatic practices and **services that depend upon the uninterrupted functioning of multibillion dollar satellite infrastructure**. Military-industrial complexes have been enlisted to counter its movements as a key focus of the Space Situational Awareness (SSA) agenda that stipulates global attentiveness to near-Earth objects. Specia lized centers such as National Aeronautics and Space Administration's (NASA) Orbital Debris Program Office and the European Space Agency's (ESA) Space Debris Office have been established to facilitate its remote, dirt-free management and national defense departments have initiated sim ilar programs such as the US Space Surveillance Network. In 2007, the United Nations General Assembly endorsed the comprehensive Space Deb ris Mitigation Guidelines (United Nations 2010), and in 2010, the United States of America's National Space Policy acknowledged orbital debris as a crucial link in the maintenance of global security. Consequently, the jur idical presence and prospects of these waste objects have become topics of extensive conjecture (see, e.g., Jakhu 2007; Weeden 2011), as are technical scenarios required for their potential removal (see, e.g., Anselmo and Par dini 2008; Bonnal, Ruault, and Desjean 2013). Graphic images of "orbital ruins" are widely circulated (Parks 2013), news headlines advise that there is an "urgent need to remove space debris" (Amos 2013), these objects are portrayed in blockbusters such as Wall-E (2008) and Gravity (2013), publicly tracked via applications such as Heavens Above (n.d.), and destroyed in video games such as Space Debris (2000). While **satellite infrastructure stoked** the **global courses of politics, economics, science, defense, media, and everyday life, their functioning is** now **profoundly affected by the waste** of the very technologies that made them possible. **Having captured the attention of its global "public," orbital debris is now cemented into governmental and epistemic registers and fabrics of cul tural imaginaries not just as a "matter of fact" but as a common "matter of concern"** (Latour 2004).

**Space junk spreads unsymmetrical dimethylhydrazine**

[**Most space junk is located in** what is known as **low Earth orbit**](https://www.nationalgeographic.co.uk/space/2019/04/space-junk-huge-problem-and-its-only-getting-bigger) – the zone within approximately 2,011 km of the planet’s surface, and **in which many satellites,** such as the **ISS** and NASA’s Earth Observing Fleet System, **operate**. Effects of space debris can be significant; allowing space junk to accumulate, and henceforth increase the risk of further collisions similar to that of Iridium 33 and Cosmos 2251, poses a great risk to the possibility of future space exploration.

The >4700 launches that have been conducted across the globe since Sputnik 1 in 1957 [have resulted in a steep upward trend in material mass in Earth orbit](https://ntrs.nasa.gov/archive/nasa/casi.ntrs.nasa.gov/20160012733.pdf), which has exceeded 700 metric tons and shows no signs of relenting. According to computer simulations focusing on the next 200 years, over this time [debris larger than approximately 20 cm across will multiply 1.5 times](https://www.nationalgeographic.co.uk/space/2019/04/space-junk-huge-problem-and-its-only-getting-bigger). Debris between 10 inches and 20 cm is set to multiply 3.2 times, and debris smaller than 10 cm will increase by a factor of 13 to 20. **The risk this poses to satellites such as the ISS,** [which as of 2016 has had to perform 25 debris collision avoidance manoeuvres since 1999,](https://ntrs.nasa.gov/archive/nasa/casi.ntrs.nasa.gov/20160012733.pdf) **is considerable**.

The problem is not confined to the risk posed to space exploration. A proportion of the space junk in low Earth orbit [will gradually lose altitude and burn up in Earth’s atmosphere](https://www.nationalgeographic.co.uk/space/2019/04/space-junk-huge-problem-and-its-only-getting-bigger); **larger debris**, however, **can** occasionally **impact with Earth and have detrimental effects on the environment**. For example, debris from Russian Proton rockets, launched from the Baikonur cosmodrome in Kazakhstan, [litters the Altai region of eastern Siberia](https://www.bbc.co.uk/news/world-europe-19127713). **This includes debris from old fuel tanks containing highly toxic fuel residue, unsymmetrical dimethylhydrazine** (UDMH), a carcinogen **which is harmful to plants and animals**. While **efforts are made to contain fallout** from launches within a specified area, [**it is extremely difficult to achieve completely**](https://ui.adsabs.harvard.edu/abs/2013EGUGA..15.4537A/abstract)**.**

**UDMH has serious and lasting effects on human health**

**Byers,** M., & Byers, C. (20**17**). Toxic splash: Russian rocket stages dropped in Arctic waters raise health, environmental and legal concerns. Polar Record, 53(6), 580-591. doi:10.1017/S0032247417000547

The report also explains the effects of UDMH on human health: Heptyl is dangerous in all methods of transmission to people: through the digestive system, respiratory organs, skin and lymphatic system. Clinically, **if poisoned by UDMH, the following occurs:** increased excitement, **breath disturbance, convulsions, functional changes in the central nervous system, kidney and liver failure and peripheral blood composition changes**. Once in an organism, **UDMH gets quickly absorbed and distributes evenly in the** tissues and **organs**; it is secreted through the kidneys and lungs, possibly with milk (UNDP, [2004](https://www.cambridge.org/core/journals/polar-record/article/toxic-splash-russian-rocket-stages-dropped-in-arctic-waters-raise-health-environmental-and-legal-concerns/EAC6047606BDFFE6F8361F91EF02D14B#ref074), p. 87). The UNDP report is based on medical studies involving 48,000 people, including 16,500 children, in areas where two Proton rockets crashed in 1999. The **children had a ‘high frequency of pathology in physical development**’ (UNDP, [2004](https://www.cambridge.org/core/journals/polar-record/article/toxic-splash-russian-rocket-stages-dropped-in-arctic-waters-raise-health-environmental-and-legal-concerns/EAC6047606BDFFE6F8361F91EF02D14B#ref074), p. 88). **Eighty-three percent of infants suffered from rickets, with anaemia, weakened immune systems and high rates of urinary tract and thyroid disease present across all age groups.** Only 26.5% of the adults could ‘be characterized as healthy **people**, the rest **had** various types o**f pathological illnesses**’ (UNDP, [2004](https://www.cambridge.org/core/journals/polar-record/article/toxic-splash-russian-rocket-stages-dropped-in-arctic-waters-raise-health-environmental-and-legal-concerns/EAC6047606BDFFE6F8361F91EF02D14B#ref074), p. 89), **with high levels of cardiovascular illnesses, skin and breast cancer, throat, stomach and lung disease.** All these health problems were linked to a decrease in the birth rate in the affected areas. In 2005, Nature reported on an unpublished study from the State Research Centre of Virology and Biotechnology in Novosibirsk, Russia (Giles, [Reference Giles 2005](https://www.cambridge.org/core/journals/polar-record/article/toxic-splash-russian-rocket-stages-dropped-in-arctic-waters-raise-health-environmental-and-legal-concerns/EAC6047606BDFFE6F8361F91EF02D14B#ref030)). The study compared children living in areas of southern Russia polluted with UDMH from launches in Baikonur with children living in nearby unpolluted areas. **The children in polluted areas were more than twice as likely to have diseases such as endocrine and blood disorders**. Also in 2005, the Russian news agency RIA Novosti reported:

**UDMH has a half life of 2,200 years**

**Byers,** M., & Byers, C. (20**17**). Toxic splash: Russian rocket stages dropped in Arctic waters raise health, environmental and legal concerns. Polar Record, 53(6), 580-591. doi:10.1017/S0032247417000547

A follow-up study, published the next year, examined 18 ‘transformation products’ that are formed directly from UDMH when it is released into the environment or through subsequent processes (Carlsen, Kenessov, & Batyrbekova, [Reference Carlsen, Kenessov and Batyrbekova 2008](https://www.cambridge.org/core/journals/polar-record/article/toxic-splash-russian-rocket-stages-dropped-in-arctic-waters-raise-health-environmental-and-legal-concerns/EAC6047606BDFFE6F8361F91EF02D14B#ref013)). It reported that: Substances with an intact **hydrazine** structure or hydrazones display a toxicity that indicate that transformation products of these types may **contribute to the overall environmental toxicity of residual rocket fuel** **and** its transformation products as these compounds display toxicities comparable or even higher than the toxicity of the primary pollutant (Carlsen et al., [Reference Carlsen, Kenessov and Batyrbekova 2008](https://www.cambridge.org/core/journals/polar-record/article/toxic-splash-russian-rocket-stages-dropped-in-arctic-waters-raise-health-environmental-and-legal-concerns/EAC6047606BDFFE6F8361F91EF02D14B#ref013), p. 19).Specifically, these substances are tetramethylhydrazine, acetaldehyde dimethylhydrazone, formaldehyde dimethylhydrazone, trimethylhydrazine and 1-formyl 2,2-dimethylhydrazine. Moreover, some of these substances **persist longer in the environment** than UDMH; for example, 1-formyl 2,**2-dimethylhydrazine has a half-life of 2,220 years in lakes** (Carlsen et al.,  [Reference Carlsen, Kenessov and Batyrbekova 2008](https://www.cambridge.org/core/journals/polar-record/article/toxic-splash-russian-rocket-stages-dropped-in-arctic-waters-raise-health-environmental-and-legal-concerns/EAC6047606BDFFE6F8361F91EF02D14B#ref013)). It is therefore possible that **UDMH released into the air or water**, or landing on sea ice, **could** be **transform**ed **into chemical derivatives posing risks to human health and the environment** that are not only serious but longer lasting than those posed by UDMH alone.Health effects from launches at Plesetsk have also been studied. Fedorov ( [Reference Fedorov 1999](https://www.cambridge.org/core/journals/polar-record/article/toxic-splash-russian-rocket-stages-dropped-in-arctic-waters-raise-health-environmental-and-legal-concerns/EAC6047606BDFFE6F8361F91EF02D14B#ref028), p. 159) conveyed some findings from the 1995 annual report of the Russia State Ecological Committee, including maximum concentrations of UDMH of 47 mg/kg (466 units of the Russian hygienic standard) in vegetation and 268 mg/kg (2,684 units of the Russian hygienic standard) in soils in the Koida region, and 24 mg/l of UDMH (1,200 units of the Russian hygienic standard) in subsoil waters of Narjan Mar. Fedorov ( [Reference Fedorov 1999](https://www.cambridge.org/core/journals/polar-record/article/toxic-splash-russian-rocket-stages-dropped-in-arctic-waters-raise-health-environmental-and-legal-concerns/EAC6047606BDFFE6F8361F91EF02D14B#ref028), p. 159) also reproduced the conclusions from the 1996 annual report of the Russia State Ecological Committee, including that ‘intensive atmospheric transport of pollutants’ can occur for several hours after a rocket stage returns to Earth and human populations should be evacuated from these areas during launches ‘because of toxicity of propellant and the danger of human exposure’.

# Cap K

#### The feigned distancing of capitalist governments from the political systems they create and use military power to enforce entrenches the working class with Cruel Optismism

Berlant, Lauren. 2006. “Cruel Optimism”

When we talk about an object of desire, we are really talking about a cluster of promises we want someone or something to make to us and make possible for us. This cluster of promises could be embedded in a person, a thing, an institution, a text, a norm, a bunch of cells, smells, a good idea—whatever To phrase “the object of desire” as a cluster of promises is to allow us to encounter what is incoherent or enigmatic in our attachments, not as confirmation of our irrationality, but as an explanation for our sense of our endurance in the object, insofar as proximity to the object means proximity to the cluster of things that the object promises, some of which may be clear to us while others not so much. In other words, all attachments are optimistic. That does not mean that they all feel optimistic: one might dread, for example, returning to a scene of hunger or longing or the slapstick reiteration of a lover or parent’s typical misrecognition. But the surrender to the return to the scene where the object hovers in its potentialities is the operation of optimism as an affective form (see Ghent).

#### NASA’s space colonization programs also fuel space militarization

Anderson 16 (Jake, “NASA’s Propaganda Campaign Wants You to Embrace the Militarization of Space” 4/11/16 http://theantimedia.org/nasa-propaganda-militarization-space/”)///CW

([ANTIMEDIA](http://theantimedia.org/)) We’ve seen quite a bit of NASA in the news recently. The [latest photos of Pluto](https://twitter.com/NASASolarSystem/status/718167843007627265/photo/1?ref_src=twsrc%5Etfw) rattled up considerable excitement — and why not? The celestial body was dead not too long ago, heartlessly stripped of its 9th planet status. Now it’s back with a vengeance. NASA made headlines again on Friday, when it announced a watershed [mission to Europa](http://www.jpl.nasa.gov/missions/europa-mission/), the icy moon of Jupiter that many scientists believe could harbor life in the oceans under its glacial surface. Last year, coinciding with the cinematically poignant, if not propagandistic film, The Martian, NASA’s Jet Propulsion Laboratory (JPL) unveiled its “[Visions of the Future](http://www.jpl.nasa.gov/visions-of-the-future/)” project, a set of 14 posters meant to instill a new generation of Americans with a renewed interest in traveling to other planets and moons in the solar system and beyond. The posters, made by the design company Invisible Creature, are fascinating. They depict a future in which advanced space travel has allowed humans to freely hop around the solar system; it is intrasolar space tourism of the highest order. The project saw NASA officials, scientists, engineers, public relations experts, and artists collaborating to imagine what the future of humanity could entail. One particularly beautiful poster features humans in advanced hot air balloons touring Jupiter. The description reads: “The Jovian cloudscape boasts the most spectacular light show in the solar system, with northern and southern lights to dazzle even the most jaded space traveler. Jupiter’s auroras are hundreds of times more powerful than Earth’s, and they form a glowing ring around each pole that’s bigger than our home planet.” <="" ins="" data-adsbygoogle-status="done" style="margin: 0px 0px 0px -40px; padding: 0px; border: 0px; outline: 0px; font-size: 16px; vertical-align: baseline; text-decoration: none; width: 320px; height: 100px; display: block; text-align: center; background: transparent;"> [Other posters](http://www.jpl.nasa.gov/visions-of-the-future/) include an illustrative future history of Mars exploration; a journey through the clouds of Venus; a boat ride on Titan’s rivers and lakes of liquid ethane and methane; an undersea exhibit of the life forms under the ice of Europa; exoplanets with red vegetation; a dark orphan planet flying through the galaxy without a sun (“where the nightlife never ends”), and many more. The posters are undeniably inspired and sure to delight space buffs, science fiction fans, and children alike. More than a few people have noticed the strangely propagandistic feel of the posters. One writer even compared them aesthetically to the [Atomic Age posters](http://dangerousminds.net/comments/wish_you_were_vaporized) from the 20th century. [One of the artists](http://mashable.com/2016/02/11/nasa-jpl-visions-of-the-future/#zsBqdbODh8q3) responsible for creating the posters admitted the influence. “We were inspired by vintage travel posters, WPA-type posters from the 1930s and then all the way up to mid-century modern— 1940s, 1950s, 1960s,” he said. There is certainly no denying that while these posters have an altruistic goal of getting a new generation interested in space travel, they are also greasing the wheels for new NASA budget proposals and the new age of the [space-industrial complex](http://www.spaceref.com/news/viewnews.html?id=1342). The agency, which many mistakenly believe has been on essential furlough since the moon landings, has actually been prolific in recent years, with unmanned missions to Jupiter, Pluto, and Mars. Currently, [NASA is running](http://mentalfloss.com/article/60532/15-ongoing-space-missions-you-should-know-about) very exciting, groundbreaking projects, including [JUNO](https://www.missionjuno.swri.edu/), [DAWN](http://dawn.jpl.nasa.gov/), and the New Horizons [mission to Pluto](https://www.nasa.gov/mission_pages/newhorizons/main/index.html), which garnered over [10 million visits](http://gizmodo.com/how-nasa-won-the-internet-1719318683) to the NASA government homepage. That said, there have been considerable budget cuts in the last decades, with [more to come](http://www.universetoday.com/127309/nasa-2017-budget/). Since 1966, [NASA’s budget](http://www.theguardian.com/news/datablog/2010/feb/01/nasa-budgets-us-spending-space-travel) has fallen from 4.41 percent of the federal budget to just 0.5 percent. Despite the recent fantastic recent discoveries and NASA’s robust social media presence, there has been the perception that the agency’s missions have become “boring.” Rocket launches barely even make the news these days, and, until this decade, the only space endeavors that truly got people talking were images from Mars and speculation about life there. Many believed space travel was dead. That is the perception NASA wants to overcome. Movies like The Martian —which [NASA influenced heavily](http://www.popsci.com/why-nasa-helped-ridley-scott-create-martian-film-and-what-means-future-sci-fi-space-movies) — and the “Visions of the Future” space tourism posters can be seen as ambitious moves to get the public excited about space exploration again. An excited public is a powerful leveraging tool for requesting more funds. Some have noted that efforts by NASA to infiltrate popular culture are nothing new. The agency launched an entire series of novels called “[NASA-Inspired Works of Fiction](https://www.nasa.gov/press/goddard/2014/february/nasa-hosts-launch-of-nasa-inspired-book-series/#.VwqiR5NVhHw),” for which they conscripted science fiction authors to produce novels amenable to the new eclectic age of federally sponsored space travel. One of these novels, William Forstchen’s 2014 science fiction novel, “Pillar to the Sky,” for example, argues that bureaucratic slashes to the NASA budget are one of the biggest threats to humanity. For the record, this is a textbook example of a [psychological operation (psyop)](https://flowofwisdom.files.wordpress.com/2013/07/mindwar-mindwar_co_authored_by_michael-aquino.pdf) — or a planned operation by the government meant to manipulate public opinion. Specifically, this would be classified as a “white psyop,” which is an official statement or act associated with a government source. To put it bluntly, it’s the nicest form of propaganda, as contrasted with grey and black psyops, which use varying gradations of subterfuge and covert operations. There are [thousands of psyops](http://www.zerohedge.com/news/2014-06-16/psyops-todays-wars-are-won-military-messages) being conducted around the world, some acknowledged, some top secret with classified government budgets. The release of both the “Visions of the Future” series and The Martiancoincided with NASA’s request of [$19 billion](http://www.wired.co.uk/news/archive/2016-02/10/nasa-posters-2017-budget?utm_content=bufferbe38e&amp;utm_medium=social&amp;utm_source=twitter.com&amp;utm_campaign=buffer) to fund a manned mission to Mars. The request comes at a time when NASA is increasingly partnering with private companies to bolster the United States space apparatus. Earlier this year, the [agency issued massive contracts](https://www.rt.com/usa/329013-nasa-spacex-orbital-supplies-iss/) to three companies— SpaceX, Orbital ATK, and Sierra Nevada Corporation — that will complete six cargo resupply missions for International Space Station (ISS) by 2024. SpaceX, of course, is run by Tesla Motors CEO Elon Musk, who has openly said he wants the company to help enable the [colonization of Mars](http://arstechnica.com/science/2016/01/elon-musk-to-unveil-mars-plans-this-year-wants-to-go-to-space-by-2020/). Last year, the company released its own [Mars propaganda](http://gizmodo.com/spacex-just-dropped-these-amazing-retro-mars-travel-pos-1704855680) posters. Over the weekend, the company made headlines by successfully launching and delivering the [first inflatable room](http://www.nbcnews.com/news/world/spacex-delivers-world-s-1st-inflatable-room-astronauts-n553711) for astronauts. [Orbital ATK](http://www.parabolicarc.com/2016/03/19/orbital-atk-expands-operations-arizona/) is an American aerospace manufacturer and defense industry company that produces tactical missiles, defense electronics, and medium and large-caliber ammunition. Sierra Nevada Corporation is an electronic systems provider and systems integrator specializing in microsatellites, telemedicine, and commercial orbital transportation services. In addition to the NASA contract, the United States Army contracted them to manufacture Mobile Tower Systems (MOTS) and help fund Gorgon Stare, a remotely controlled, aircraft-based Wide-Area Persistent Surveillance (WAPS) system. [Since 2006](http://www.militaryindustrialcomplex.com/totals.asp?thisContractor=Sierra%20Nevada%20Corporation), the United States military has awarded the company 65 contracts, totaling nearly $3 trillion. That NASA’s functions are interwoven with the military-industrial complex should come as no surprise. Since its inception, the Pentagon has controlled the agency through an [oversight committee](http://www.nasa.gov/50th/50th_magazine/coldWarCoOp.html), with the open goal of utilizing the space between Earth and the moon for [strategic military operations](http://www.rense.com/general74/path.htm). Space is widely considered to be the next frontier of warfare. The militarization of space in the coming decades will see tactical satellites capable of [launching nukes](http://motherboard.vice.com/read/russia-is-concerned-about-americas-far-off-space-weapons), disarming weapons, and collecting vast amounts of surveillance data. [Noam Chomsky](http://motherboard.vice.com/read/russia-is-concerned-about-americas-far-off-space-weapons) calls it one of the biggest threats facing humanity. How does this connect back to the “Visions of the Future” posters? To be fair, there’s absolutely nothing wrong with getting excited about space. We live in an incomprehensibly large universe with billions of galaxies, each one containing billions, and even trillions of stars. Our species has finally stepped off its front porch and is looking to venture out into the cosmos. While some might question whether the human species is safe — both to ourselves and others — leaving its home, we must colonize other planets in order to ensure the long-term survival of the species. We’re set to render our home planet uninhabitable, but that doesn’t mean splinter groups of humans might not someday live sustainably on a colony world (think big, folks!). Though we are likely centuries away from traveling to the nearest star, Alpha Centauri, there is a very real chance we will explore other planets in the solar system in the coming decades. As we rekindle our excitement about space, let’s keep in mind that NASA’s space technology will also allow us to wage wars and engage in planetary surveillance. With great promise comes great peril. As with artificial intelligence, biotechnology and countless other burgeoning fields with revolutionary potential, we must proceed with [great caution](http://motherboard.vice.com/read/russia-is-concerned-about-americas-far-off-space-weapons). With space, especially, we must carefully consider the people to whom we’ve entrusted our explorations — or the human race could end up like George Clooney’s character in Gravity, metaphorically speaking.

#### Governmental colonization of space causes resource wars and space weapons development

Gagnon 09 [Bruce K. Gagnon is the coordinator of the Global Network Against Weapons & Nuclear Power in Space and a contributor to Foreign Policy In Focus, “Arms Race in Space”, March 19, http://www.fpif.org/fpiftxt/5971]///CW

NASA was created as a civilian agency with a mission to do peaceful space exploration. But the growing influence of the military industrial complex has rubbed out the line between civilian and military programs.  When George W. Bush appointed former Secretary of the Navy Sean O'Keefe to head NASA in late 2001, the new space agency director announced that all NASA missions in the future would be "dual use." This meant that every NASA space launch would be both military and civilian at the same time. The military would ride the NASA Trojan horse and accelerate space weapons development without the public's knowledge. NASA would expand space nuclear power systems to help create new designs for weapons propulsion. Permanent, nuclear-powered bases on the moon and Mars would give the United States a leg up in the race for control of those planetary bodies. The international competition for resource extraction in space (helium-3 on the moon) is now full on.  NASA's job is to do the research and development, and then be ready to turn everything over to private corporate interests once the technology has been sorted out. The taxpayers will fund the technology investment program. The military will create the space weapons systems to ensure free corporate access to the space highways of the future. The aerospace industry is already making record profits from the ever-escalating cost of space technology systems. Virtually every system now under development is well over budget. Just one illustration is NASA's International Space Station. Originally slated to cost the taxpayers $10 billion, the project has now grown to $100 billion and is not yet finished.

#### Rather than functioning as a leash on rampant capitalistic expansion in space, governmental regulation fuels the neoliberal empire

Holen, Thomas B, and Shammas, Victor L. One giant leap for capitalistkind: private enterprise in outer space.Palgrave Communications.1/29/19. <https://www.nature.com/articles/s41599-019-0218-9> .DA=1/25/22.-SVJK)

But the entrepreneurial libertarianism of capitalistkind is undermined by the reliance of the entire NewSpace complex on extensive support from the state, ‘a public-private financing model underpinning long-shot start-ups' that in the case of Musk’s three main companies (SpaceX, SolarCity Corp., and Tesla) has been underpinned by $4.9 billion dollars in government subsidies (Hirsch, 2015). In the nascent field of space tourism, Cohen (2017) argues that what began as an almost entirely private venture quickly ground to a halt in the face of insurmountable technical and financial obstacles, only solved by piggybacking on large state-run projects, such as selling trips to the International Space Station, against the objections of NASA scientists. The business model of NewSpace depends on the taxpayer’s dollar while making pretensions to individual selfreliance. The vast majority of present-day clients of private aerospace corporations are government clients, usually military in origin. Furthermore, the bulk of rocket launches in the United States take place on government property, usually operated by the US Air Force or NASA.13 This inward tension between state dependency and capitalist autonomy is itself a product of neoliberalism’s contradictory demand for a minimal, “slim” state, while simultaneously (and in fact) relying on a state reengineered and retooled for the purposes of capital accumulation (Wacquant, 2012). As Lazzarato writes, ‘To be able to be “laissez-faire”, it is necessary to intervene a great deal' (2017, p. 7). Space libertarianism is libertarian in name only: behind every NewSpace venture looms a thick web of government spending programs, regulatory agencies, public infrastructure, and universities bolstered by research grants from the state. SpaceX would not exist were it not for state-sponsored contracts of satellite launches. Similarly, in 2018, the US Defense Advanced Research Projects Agency (DARPA)—the famed origin of the World Wide Web—announced that it would launch a ‘responsive launch competition', meaning essentially the reuse of launch vehicles, representing an attempt by the state to ‘harness growing commercial capabilities' and place them in the service of the state’s interest in ensuring ‘national security' (Foust, 2018b). his libertarianism has been steadily growing in the nexus between Silicon Valley, Stanford University, Wall Street, and the Washington political establishment, which tend to place a high value on Randian ‘objectivism' and participate in a long American intellectual heritage of individualistic ‘bootstrapping' and (allegedly) gritty self-reliance. But as Nelson and Block (2018, p. 189–197) recognize, one of the central symbolic operations of capitalistkind resides in concealing its reliance on the state by mobilizing the charm of its entrepreneurial constituents and the spectacle of space. There is a case to be made for the idea that SpaceX and its ilk resemble semi-private corporations like the British East India Company. The latter, “incorporated by royal charter from Her Majesty Queen Elizabeth I in 1600 to trade in silk and spices, and other profitable Indian commodities,” recruited soldiers and built a ‘commercial business [that] quickly became a business of conquest' (Tharoor, 2017). SpaceX, too, is increasingly imbricated with an attempt on the part of a particular state, the United States, to colonize and appropriate resources derived from a particular area, that of outer space; it, too, depends on the infrastructure, contracts, and regulatory environment that thus far only a state seems able to provide. Its private character, like that of the East India Company, is troubled by being deeply embedded in the state. As one commentator has observed of SpaceX, ‘If there’s a consistent charge against Elon Musk and his high-flying companies…it’s that they’re not really examples of independent, innovative market capitalism. Rather, they’re government contractors, dependent on taxpayer money to stay afloat' (cit. Nelson and Block, 2018, p. 189). Perhaps this should not come as a surprise. As Bourdieu (2005, p. 12) observed, ‘The economic field is, more than any other, inhabited by the state, which contributes at every moment to its existence and persistence, and also to the structure of the relations of force that characterize it'. The state lays out the preconditions for market exchanges. Under neoliberalism, the state is the preeminent facilitator of markets. The neoliberal state is not so much a Minimalstaat, night watchman state, or slim state as it is the prima causa of market society (see, e.g., Wacquant, 2012). Simiarly, in the political theory of Deleuze and Guattari, any economic development presupposes the political differentiation caused by the state (Deleuze and Guattari, 2004a, p. 237–238). Even in the global environment of contemporary capitalism, the market cannot operate without the state becoming integrated with capitalism itself, as ‘it is the modern state that gives capitalism its models of realization' (Deleuze and Guattari, 2004b, p. 480). For capitalism to survive in outer space, the state must create a regulatory environment, subsidize infrastructure, and hand down contracts – in short, assemble outer space as a domain made accessible in legal, technical, and economic ways.

#### Cruel optimism in capitalistic institutions masks their flaws and ensures that meaningful revolution will never happen. Reject discourse that establishes that optimism

Berlant, Lauren. 2006. “Cruel Optimism”

“Cruel optimism” names a relation of attachment to compromised conditions of possibility. What is cruel about these attachments, and not merely inconvenient or tragic, is that the subjects who have x in their lives might not well endure the loss of their object or scene of desire, even though its presence threatens their well-being, because whatever the content of the attachment, the continuity of the form of it provides something of the continuity of the subject’s sense of what it means to keep on living on and to look forward to being in the world. This phrase points to a condition different than that of melancholia, which is enacted in the subject’s desire to temporize an experience of the loss of an object/scene with which she has identified her ego continuity. Cruel optimism is the condition of maintaining an attachment to a problematic object in advance of its loss. One might point out that all objects/scenes of desire are problematic, in that investments in them and projections onto them are less about them than about the cluster of desires and affects we manage to keep magnetized to them. I have indeed wondered whether all optimism is cruel, because the experience of loss of the conditions of its reproduction can be so breathtakingly bad. But some scenes of optimism are crueler than others: where cruel optimism operates, the very vitalizing or animating potency of an object/scene of desire contributes to the attrition of the very thriving that is supposed to be made possible in the work of attachment in the first place. This might point to something as banal as a scouring love, but it also opens out to obsessive appetites, patriotism, a career, all kinds of things. One makes affective bargains about the costliness of one’s attachments, usually unconscious ones, most of which keep one in proximity to the scene of desire/attrition.

#### Alternative text: Reject the affirmative as a means of refusing complicity with capitalism.

#### Rejecting capitalism is key to opening up new alternatives. Only complete refusal, not piecemeal reform, can prevent otherwise inevitable slavery and extinction.

**Herod, 04** (James, <http://site.www.umb.edu/faculty/salzman_g/Strate/GetFre/4thEd/4-index.htm>, Getting Free, 4th Edition

A sketch of an association of democratic, autonomous neighborhoods and how to create it, Fourth Edition, January 2004

It is time to try to describe, at first abstractly and later concretely, a strategy for destroying capitalism. This strategy, at its most basic, calls for pulling time, energy, and resources out of capitalist civilization and putting them into building a new civilization. The image then is one of emptying out capitalist structures, hollowing them out, by draining wealth, power, and meaning out of them until there is nothing left but shells. This is definitely an aggressive strategy. It requires great militancy, and constitutes an attack on the existing order. The strategy clearly recognizes that capitalism is the enemy and must be destroyed, but it is not a frontal attack aimed at overthrowing the system, but an inside attack aimed at gutting it, while simultaneously replacing it with something better, something we want. Thus capitalist structures(corporations, governments, banks, schools, etc.) are not seized so much as simply abandoned. Capitalist relations are not fought so much as they are simply rejected. We stop participating in activities that support (finance, condone) the capitalist world and start participating in activities that build a new world while simultaneously undermining the old. We create a new pattern of social relations alongside capitalist relations and then we continually build and strengthen our new pattern while doing every thing we can to weaken capitalist relations. In this way our new democratic, non-hierarchical, non-commodified relations can eventually overwhelm the capitalist relations and force them out of existence. This is how it has to be done. This is a plausible, realistic strategy. To think that we could create a whole new world of decent social arrangements overnight, in the midst of a crisis, during a so-called revolution, or during the collapse of capitalism, is foolhardy. Our new social world must grow within the old, and in opposition to it, until it is strong enough to dismantle and abolish capitalist relations. Such a revolution will never happen automatically, blindly, determinably, because of the inexorable, materialist laws of history. It will happen, and only happen, because we want it to, and because we know what we’re doing and know how we want to live, and know what obstacles have to be overcome before we can live that way, and know how to distinguish between our social patterns and theirs. But we must not think that the capitalist world can simply be ignored, in a live and let live attitude, while we try to build new lives elsewhere. (There *is* no elsewhere.) There is at least one thing, wage-slavery, that we can’t simply stop participating in (but even here there are ways we can chip away at it). Capitalism must be explicitly refused and replaced by something else. This constitutes War, but it is not a war in the traditional sense of armies and tanks, but a war fought on a daily basis, on the level of everyday life, by millions of people. It is a war nevertheless because the accumulators of capital will use coercion, brutality, and murder, as they have always done in the past, to try to block any rejection of the system. They have always had to force compliance; they will not hesitate to continue doing so. Nevertheless, there are many concrete ways that individuals, groups, and neighborhoods can gut capitalism, which I will enumerate shortly. We must always keep in mind how we became slaves; then we can see more clearly how we can cease being slaves. We were forced into wage-slavery because the ruling class slowly, systematically, and brutally destroyed our ability to live autonomously. By driving us off the land, changing the property laws, destroying community rights, destroying our tools, imposing taxes, destroying our local markets, and so forth, we were forced onto the labor market in order to survive, our only remaining option being to sell, for a wage, our ability to work. It’s quite clear then how we can overthrow slavery. We must reverse this process. We must begin to reacquire the ability to live without working for a wage or buying the products made by wage-slaves (that is, we must get free from the labor market and the way of living based on it), and embed ourselves instead in cooperative labor and cooperatively produced goods. Another clarification is needed. This strategy does not call for reforming capitalism, for changing capitalism into something else. It calls for replacing capitalism, totally, with a new civilization. This is an important distinction, because capitalism has proved impervious to reforms, as a system. We can sometimes in some places win certain concessions from it (usually only temporary ones) and win some (usually short-lived) improvements in our lives as its victims, but we cannot reform it piecemeal, as a system. Thus our strategy of gutting and eventually destroying capitalism requires at a minimum a totalizing image, an awareness that we are attacking an entire way of life and replacing it with another, and not merely reforming one way of life into something else. Many people may not be accustomed to thinking about entire systems and social orders, but everyone knows what a lifestyle is, or a way of life, and that is the way we should approach it. The thing is this: in order for capitalism to be destroyed millions and millions of people must be dissatisfied with their way of life. They must want something else and see certain existing things as obstacles to getting what they want. It is not useful to think of this as a new ideology. It is not merely a belief-system that is needed, like a religion, or like Marxism, or Anarchism. Rather it is a new prevailing vision, a dominant desire, an overriding need. What must exist is a pressing desire to live a certain way, and not to live another way. If this pressing desire were a desire to live free, to be autonomous, to live in democratically controlled communities, to participate in the self-regulating activities of a mature people, then capitalism could be destroyed. Otherwise we are doomed to perpetual slavery and possibly even to extinction.