**1AC**

**1AC – Capitalism**

**Contention 1: The Space Industrial Complex**

**Private space activity is expanding, 2022 is the crucial year to demonstrate profitability**

**Kramer 1-4-22**

(Miriam, https://www.axios.com/private-human-spaceflight-2022-8ec6082a-e3ae-4d6b-8073-3f8af3e7e2a5.html)

The private human spaceflight industry delivered on long-held promises in 2021, **but 2022 is the year where it will need to prove itself to the public**. Why it matters: The space industry is predicted to be worth more than $**1 trillion within the next 10 years**. But for that to happen, companies will need to turn the extraordinary feats of the last year into **routine operations.** What's happening: Last year, Blue Origin and Virgin Galactic both launched their founders — Jeff Bezos and Richard Branson respectively — to space for the first time. Blue Origin followed that up with two more suborbital human flights in 2021. Those missions marked the culmination of decades of work for the two companies and delivered on a promise of sending more non-professionals to space. SpaceX also consistently launched crewed missions to the International Space Station for NASA, a major customer that will influence the continued growth of the company, and had a huge success with four non-professionals flying to orbit without a pro-astronaut onboard on the Inspiration4 mission. What to watch: Now, those companies are trying to demonstrate they can consistently deliver these services — and turn a profit from them. That means flying more. Blue Origin, Virgin Galactic and SpaceX are expected by space watchers to fly people to space consistently and safely this year. That will be key to determining whether the successes of the last year are one-offs or if they can get into "some sort of rhythm and make some money," Carissa Christensen, founder and CEO of BryceTech, told Axios. SpaceX is planning to launch the Axiom Mission-1 mission to the International Space Station early in 2022, which will act as a followup to the Inspiration4 mission and could be an indicator of the market for more amateur orbital flights. It's hard to gauge whether private companies like Blue Origin are profitable — because their finances aren't open to the public — but routinely launching, which is expensive, can act as a proxy for it, Christensen said. Yes, but: Transforming these missions into routine services won't be easy. It will require companies to increase launch cadence, which is challenging because they're working with relatively newly-developed technology and within complicated regulatory frameworks. The big picture: The public demand for these types of services could also become more clear this year. Studies indicate there is "substantial demand" for suborbital spaceflight, Christensen says. "You have a larger pool of people that can afford it now." According to a May 2021 note sent to investors by analysts Ken Herbert and Austin Moeller, of Canaccord Genuity, the suborbital tourism market could reach $8 billion by 2030 with 1 million potential customers. Between the lines: Demonstrating they can turn a profit will be important for the companies working to make consistent, private human spaceflight a reality, but it's likely a small portion of the revenue for the space industry overall. However, human spaceflight will be one of the most important public-facing elements of the overall industry. Major failures and successes will shift the way the public sees the industry, adding to its support or detracting from it. The bottom line: Last year, the private spaceflight industry showed what it can do, but this year, these companies will need to capitalize on it.

**Private space enterprise *requires* massive inequality-it’s viewed as a *spatial fix* that allows infinite expansion of state backed colonialism**

**Penny 20**

(Eleanor Penny is a writer, poet and essayist based in London. She is a senior editor at Novara Media, <https://inthesetimes.com/article/space-privatization-future-technology-silicon-valley-elon-musk-jeff-bezos>, 12-17)

The eye-watering upfront costs of these exploratory, high-risk, high-reward endeavors can be absorbed by Silicon Valley venture capitalists and the personal fortunes of its aristocracy**. A concentration of capital stands ready to risk big money to secure a stake in future markets** (which will double down on its power in existing ones). The point is to ensure a slice of the territory everyone else will be clamoring for. This form of ​“creative destruction”—an idea developed by economist Joseph Schumpeter, understood in neoliberalism to describe the boom-bust cycle of innovation — **is often packaged in the mythology of moonshot genius that drives human progress**. But Schumpeter’s theory has a less discussed underbelly: Such creative destruction is usually twinned with **market capture.** As competitors are tossed onto the **scrap heap of history** by their own sudden irrelevance, **oligarchies and monopolies flourish**. The riches of the asteroid belt make earthly mining look positively parochial. The problem is that a sudden, vast supply of (formerly) precious metals would make market prices plummet. Journalist Aaron Bastani, author of Fully Automated Luxury Communism, notes that satellite-delivered digital information has the potential to replace our earthbound Internet networks with ​“space-based global Internet” — the way music streaming has replaced CDs and CDs replaced cassettes and vinyl — or to at least render them much cheaper (through, for example, open-access 3D printing). SpaceX and Blue Origin surely share a goal to make space transport cheaper. The question is, for whom? **These ventures train their sights on infinite excess**, with dwindling marginal costs as the supply of key materials and digital resources expands. This paradigm is great for those interested in the advancement of human civilization, but not so much for a grinning billionaire’s fixation on the bottom line. At first glance, expanding industry beyond Earth sounds like a pragmatic fix to the **earth-shatteringly simple dilemma faced by capitalism**: that it must grow to survive, but the planet **it grows upon is finite**. But to maintain profit margins in conditions of plenty (a demand of industry), **legal and political fixes** are required. If you exclusively own mining rights to asteroids rich in platinum — and precious little platinum is left on Earth — you can charge whatever you like for platinum. The diamond industry perfected this technique decades ago. (Elon Musk’s family fortune comes partially from a Zambian emerald mine.) Hence, the focus of the new space race is not on the production of goods or their most efficient sourcing, but on **ownership of land and transport networks**. In this latest phase of capitalism, as national growth slows, productive industries dwindle and wealth concentrates in fewer hands. As economist Thomas Piketty has observed, this phase is accompanied by a pivot toward rent-seeking as a profit mechanism. In other words, the scramble for space is the scramble to own satellites and ​“starways,” gatekeep the riches of the solar system and charge rent on the moon. Against this backdrop, Space Force might seem retrograde, a warped nostalgia for a time when the space race was about petty terrestrial wars rather than Musk’s supposedly enlightened vision to colonize Mars. **In reality, the two visions go hand in hand. Military might physically captures and secures territory, enforces the American political and legal apparatus and ensures business can function** (even on the moon). The darlings of this new space age paint their vision as daring futurism, a wild-eyed libertarian dream of human elevation. **But history repeats and the story is old.** Like Bezos and Musk, Cecil Rhodes — mining magnate and premier villain of the British Empire — also succumbed to dreams of wealth in the night sky. ​“**Expansion is everything**,” Rhodes said. ​“I would annex the planets if I could.” Where technology opens up the yawning unknown of new territory glittering with potential profit, private enterprises hustle for dominance — backed by the military and legal capacities of earthbound nations. **Colonialism in space is not some post-humanist utopia**, but the age-old dominion of land barons and mining magnates, billionaires sloughing off the wreckage of one planet and setting out for the stars.

**Capitalism is not natural or inevitable, extending it to space is a political choice. Empirics prove it will be disastrous**

**Penny 20**

(ELEANOR PENNY is a writer, poet and essayist based in London. She is a senior editor at Novara Media, <https://inthesetimes.com/article/space-privatization-future-technology-silicon-valley-elon-musk-jeff-bezos>, 12-17)

**Space is our birthright**. ​“Americans should have the right to engage in commercial exploration, recovery and use of resources in outer space,” President Donald Trump wrote April 6, 2020, issuing the ​“Executive Order on Encouraging International Support for the Recovery and Use of Space Resources.” In the stroke of a pen, Trump planted the U.S. flag on ​“the Moon, Mars and other celestial bodies.” As Trump declared these space lands and resources open for business, you could hear the cheers — mostly from ​“moonshot” corporations that have clamored to sweep away the patchy, unregularized Cold War-era space law in favor of new, unregulated corporate plunder of the solar system. While the institution of private land ownership is now widely taken for granted, it was — **like many so-called natural things — invented**. Before the muddied, grueling transition from feudalism to capitalism, peasants in Britain and much of Western Europe depended on their right to farm, forage and harvest on common, community lands. The land was controlled by local lords, but it belonged (in a loose, de facto sense) to the communities living on it and dependent upon it. Eventually, common lands were ​“enclosed” and became the private property of aristocrats. This exclusive right to land use (to own and profit from land) was the contrivance that established the new economic order. No longer held in common, the planet’s resources were parceled off to strictly private hands. No longer could peasants scrape by, subsisting on the commons. Instead, they depended on the grace and favor of a wage. Life in feudal times was no bucolic idyll, but enclosure was synonymous with **disaster, destitution and death for many people**. This model was mirrored in the capture, theft and enclosure of colony lands, the people (and resources) of which fueled the early capitalist transition and later the industrial revolution. **Capitalism must grow to persist,** and as it grows it must transform ripe, unregularized commons into private fiefdoms — at home and afar. So **it seems only ​“natural” to carve up the moon into stretches of valuable real estate**, just like Manhattan and the metal mines in the Democratic Republic of Congo. After all, Earth’s resources dwindle by the day, and boundless resources beyond the stratosphere could be a backstop for planetary scarcity. Never mind that our crisis of resources is, in part, **the result of this system of private ownership that rewards ruthless, short-term profiteering at the expense of the long-term survival of the natural commons.** This future access to a new natural commons is now a stress test on governmental priorities. As Trump proclaimed, ​“Outer space is a legally and physically unique domain of human activity, and the United States does not view it as a global commons.” Trump’s executive order to ​“encourage international support for the public and private recovery and use of resources in outer space” heralds yet another **public-private boondoggle, where nominally public institutions thrash out fresh boundaries of corporate activity**. As an example, look no further than SpaceX’s Crew Dragon capsule, which successfully transported NASA astronauts Bob Behnken and Doug Hurley to the International Space Station on May 31, 2020. The NASA-SpaceX crossover branding leaves no room for misinterpretation: The next small steps for mankind will be giant leaps for corporate America. Elon Musk, who founded SpaceX in 2002, talks misty-eyed about a relatively near future when humanity will have risen out of the mud, setting its sights on colonizing Mars — with SpaceX transportation rocketing there. In 2020, Musk began launching a cavalcade of thousands of satellites into low-Earth orbit to form the Starlink satellite system. As of November 2020, nearly 900 satellites had been launched (42,000 are planned in total). This network will potentially seed an **extraplanetary monopoly** for key economic infrastructure, such as domestic internet access. Fellow billionaire escapist Jeff Bezos, Amazon CEO, has been romanced by the wealth among the stars as well, founding his own aerospace company, Blue Origin, back in 2000. ​“We are going to build a road to space,” Bezos said in 2019. ​“And then, amazing things will happen.” Bezos has invited us all to cosplay his daydreams with the Amazon-funded, interplanetary sci-fi thriller The Expanse, in which a roll call of stock anti-heroes (the rogue policeman, the war-beleaguered pilot, etc.) tumble through a far future when only wise plutocratic innovators can plumb interstellar riches and deliver the solar system from interstellar war. Microsoft, too, has its fingers in the intergalactic pie, launching Azure Orbital in September 2020 to enable satellite operators on its cloud computing platform, along with a SpaceX partnership the following month. According to Forbes, **2019 was a record year for private space investments**, with ​“venture capitalists [investing] $5.8 billion in 178 commercial space startups worldwide.” As Earth’s billionaires burnish the power of new stratospheric tech, Trump launched Space Force, the first new branch of the U.S. military in more than seven decades. ​“Space is the world’s newest war-fighting domain,” Trump said. ​“Amid grave threats to our national security, American superiority in space is absolutely vital.” Space exploration has long been tied to military ambition. From its Cold War founding, NASA’s task was to advance the practical interests of the American state as it squared off against the Soviet behemoth. The new field of battle included space-guided missiles and satellite technology. Astronauts are still generally selected from the ranks of the military. Grumman (now better known as half of Northrop Grumman) made parts for both the NASA spacecraft that leapt into the great unknown and the military machines that waged war in Vietnam. As the shadow of nuclear war retreats in the bright light of a digital dawn, the mission of Space Force is to protect the economic and military infrastructure (communications and surveillance technology) seemingly threatened by rival global powers (namely, Russia and China) gearing up their own military space operations. The 1967 Outer Space Treaty, signed by the United States, the United Kingdom and the Soviet Union, attempted to guard against the militarization and the privatization of our shared stratosphere. The treaty limited governmental (and non-governmental) bodies from sending nuclear weapons into space and prohibited the annexation of the moon and temptingly mineral-rich asteroids. As the treaty outlined, any country could use and explore outer space but there could be no ​“appropriation” of astral territory. It was, at heart, a disarmament treaty — one whose ropey legalities were enforced by the now-defunct Cold War brinkmanship between its main two signatories. The treaty never foresaw the dizzying rise of **private enterprise clamoring for a slice of the sky**. Nor did it foresee the slow shelving of publicly funded U.S. space exploration (especially the manned variety) **that would allow venture capitalists to stake their claim in a new space scramble.**

**Utopian space fantasies are precisely that, they will never happen. Their purpose is to distract the public from a new age of capital accumulation**

**Marx 21**

(Paris Marx is a socialist writer and host of the Tech Won't Save Us podcast. <https://www.jacobinmag.com/2021/07/billionaires-space-richard-branson-jeff-bezos-elon-musk> , 7-13)

But as these billionaires had their eyes turned to the stars and the media showered them with the headlines they craved, the evidence that the climate of our planet is rapidly changing in a way that is hostile to life — both human and otherwise — **was escalating.** Near the end of June, Jacobabad, a city of 200,000 people in Pakistan, experienced “wet bulb” conditions where high humidity and scorching temperatures combine to reach a level where the human body can no longer cool itself down. Meanwhile, half a world away, on the West Coast of North America, a heat dome that was made much worse by climate change sent temperatures soaring so high that the town of Lytton, British Columbia, hit 49.6ºC, beating Canada’s previous temperature record by 4.6ºC, then burned to the ground when a wildfire tore through the town. The contrast between those stories is striking. On one hand, billionaires are engaging in a dick-measuring contest to see who can exit the atmosphere first, while on the other, the billions of us who will never make any such journey are increasing dealing with **the consequences of capitalism’s effects on the climate** — and the decades its most powerful adherents have spent stifling action to curb them. At a moment when we should be throwing everything we have into ensuring the planet remains habitable, billionaires are treating us to a spectacle to **distract us from their quest for continued capitalist accumulation and the disastrous effects it is already having.** The Spectacle of Billionaires in Space Last May, we were treated to a similar display of billionaire space ambition. As people across the United States were marching in the streets after the murder of George Floyd and the government was doing little to stop COVID-19 from sweeping the country, Elon Musk and President Donald Trump met in Florida to celebrate SpaceX’s first time launching astronauts to the International Space Station. As regular people were fighting for their lives, it felt like the elite were living in a completely separate world and had no qualms about showing it. They didn’t have to make it to another planet. Over the past few years, as the billionaire space race has escalated, the public has become increasingly familiar with its grand visions for our future. SpaceX’s Elon Musk wants us to colonize Mars and claims the mission of his space company is to lay the infrastructure to do just that. He wants humanity to be a “multiplanetary” species, and he claims a Martian colony would be a backup plan in case Earth becomes uninhabitable. Meanwhile, Bezos doesn’t have much time for Mars colonization. Instead, he believes we should build large structures in Earth’s orbit where the human population can grow to a trillion people without further harming the planet’s environment. As we live out our lives in O’Neill cylinders, as they’re called, we’ll take occasional vacations down to the surface to experience the wonder of the world we once called home. **Neither of these futures are appealing if you look past the billionaires’ rosy pitch decks**. Life on Mars would be horrendous for hundreds of years, at least, and would likely kill many of the people who made the journey, while the technology for massive space colonies doesn’t exist and similarly won’t be feasible for a long time to come. So, **what’s the point of promoting these futures in the face of an unprecedented threat to our species here on Earth**? It’s to get the public on board for **a new phase of capitalist accumulation** whose benefits will be reaped by those billionaires. To be clear, that does not even mean anything as grand as asteroid mining. Rather, its form can be seen in the event last May: as Musk and even Trump continued to push the spectacle of Mars for the public, SpaceX was becoming not just a key player in a privatized space industry but also in enabling a military buildup through billions of dollars in government contracts. The grand visions, rocket launches, and spectacles of billionaires leaving the atmosphere are all cover for the real space economy.

**Capitalism is the root cause of warming**

**Schutz 19** (Professor of Economics at Rollins College from 1987-2015, and author of Markets and Power: The Twentieth Century Command Economy and Inequality and Power: The Economics of Class, as well as articles in the Review of Radical Political Economics, the Forum for Social Economics, the Journal of Economic Issues, and the Encyclopedia of Political Economy. Eric A., “Planetary Eco-Collapse and Capitalism: A Contemporary Marxist Perspective,” Forum for Social Economics, Vol. 49, Issue 3, Taylor & Francis Online) //gordon

Of course, anything like the revolution needed appears pretty unlikely from the vantage point of the present moment. Perhaps contrary to his reputation, Marx was sympathetic and hopeful of more peaceful and gradual approaches to achieving progress, but in this case he would probably be impatient, to say the least. A “**reformist” approach**, as is now being ostensibly attempted by most of the world’s nations today in, for example, the United Nations Framework Convention on Climate Change (the “Paris Agreement”), appears not only **ineffective** in getting major nations’ compliance (the U.S. is about to withdraw) but inadequate even in its intent. The Intergovernmental Panel on Climate Change’s most recent report [IPCC (2018)] suggests that holding global warming to even its current level would require that global greenhouse gas emissions be cut by half within 12 years and down to zero by 2050. In order to stay below the 2 °C felt by the IPCC to be the limit short of total global catastrophe, emissions would need to be cut to zero within 75 years. In either case billions of tons of CO2 per year must also be removed from the atmosphere by means of technologies as yet undeveloped. The Paris Agreement’s aims seem lame at best. The march of planetary eco-collapse and the impending rise of worldwide social upheaval and worse continue on. As the conclusion to this essay is being written, three record-breaking tropical cyclones have just hit North America and Asia, with serious losses of lives and staggering damages—and scientists expect that increasing cyclone strength will continue with ocean waters warming. Major drought continues throughout the western U.S., but summer rainfall this year in the eastern U.S. has been up by as much as 200% above normal. Farmers in the U.S. midwest are now “terrified,” according to one news report, at the near and long term prospects for soybeans, corn and livestock.11 As **events such as these** all across the globe **make clearer** the threat for people everywhere, so too is **the role of the world capitalist socio-economic system** in all of this becoming clearer as well. Business-as-usual capitalism directs the flow of human development only in response to private monetary inducements manifest in markets. Such things as **pollution and resource over-use** on the one hand, **or clean, healthful and ecologically sustainable environments** on the other, simply **do not** generally **register in the capitalist accounting of things**. The system is based primarily on the interests of private owners (that is, capitalists), not a broader public interest such as would be expressed in a fully democratic system—the electoral democracy of capitalist history does not well resist the power of money.12 Thus, for example, **attempts to “internalize externalities”** (such as the full costs of atmospheric heat-trapping gases released from fossil fuel burning) **seldom succeed** very well when **a major sector of the capitalist class has a great interest in the industries involved** (e.g., in this case, oil, coal and gas producers, the auto industry, road-building, plastics, etc.). Moreover, capitalism has a compulsive expansionism deep within its roots. Firms in both its competitive markets and in the more concentrated markets of its leading industries either expand, die, or get bought out, and utilize every means available—private and public—to accomplish survival and growth. Thus the system, now after two centuries of growth a worldwide system, knows no inherent limits to growth. This was apparent to Karl Marx, and later theorists following his tradition have stressed the critical importance of these insights for the human dilemma of planetary eco-collapse. Contemporary marxists, having also witnessed firsthand the booming of an entire sector of the capitalist socio-economy devoted to the sales effort, have highlighted as well how the associated commercial culture permeates all of capitalist society and functions to stimulate a nearly unbounded consumerism in people. Commercial culture is itself a primary alienating element in the life world of capitalism, as contemporary marxists have emphasized, and compounds the estrangement already built into the most basic owner–employee relationship of the capitalist firm and the capitalist society’s class structure. **Commercialized consumerism thus becomes** the substance of a true addiction: a false “cure” for a deep life deprivation, the source of the only “fulfillment” to be found in this system, it is now **the opium poppy that would deplete the very earth itself**. Lastly and perhaps most significantly among the critical insights of marxists on the present planetary dilemma, the capitalist system is a class system. The colossal social effort that will be required to avert the worst of the growing global eco-catastrophe is well appreciated by now—the cutting of fossil fuel use and of consumption by the world’s affluent, the massive investments in sustainable energy and environmental clean-up, including in technologies not even yet developed (e.g., CO2 removal and sequestration), the total reordering of daily life worldwide that will be implied, not to mention the mitigation of the suffering that is already certain to come with the developing environmental catastrophe itself. But at the top of the capitalist system presides a ruling elite not really much concerned with nor responsible to the rest of the people. **Their monetary interests being the** private **interests in which the system** mostly **operates**, their powers consisting of nothing less than the system’s powers, their ideas and attitudes being by and large the ruling ideas and attitudes, and their life-styles being those to which most of the rest of the people aspire, they must be dealt with in order for real progress on this issue to occur. As Karl Marx and Friedrich Engels put it, in words that certainly ring true a 170 years later, here it becomes evident, that the bourgeoisie is unfit any longer to be the ruling class in society, and to impose its conditions of existence upon society as an over-riding law. It is unfit to rule because it is incompetent to assure an existence to its [people]… Society can no longer live under this bourgeoisie, in other words, its existence is no longer compatible with society. (Marx & Engels, 1848 in MER, 1978, p. 483.) **What is needed is** what can only be called “**a revolution.”** Whether that revolution, if there be one, entails great tumult and spectacle, or more hopefully proceeds more gradually and equably through the impending planetary upheaval, Marx’s thinking not only will endure but may well resound loudly as among the guiding ideas of the coming struggles.

**Warming causes extinction – a confluence of nonlinear and unpredictable effects will make human and natural systems inhospitable while increasing escalatory conflicts – even if the impacts are far off, only drastic action now solves**

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At least until 2050, and possibly for decades after, climate change will remain a **creeping threat** that will **exacerbate and amplify** existing, **structural** global **inequalities**. While the developed world will be negatively affected by climate change through 2050, the consequences of climate change will be felt most acutely in the developing world. The national security threats posed by climate change to 2050 are likely to differ in degree, not kind, from the kinds of threats already posed by climate change. For the next few decades, climate change will **exacerbate humanitarian crises**—some of which will result in the deployment of **military personnel**, as well as material and financial assistance. It will also **aggravate** natural **resource constraints**, potentially contributing to political and economic **conflict** over **water**, **food** and **energy**. The question for the next 30 years is not “can humanity survive as a species with 1.5°C or 2°C of warming,” but, “how much will the existing disparities between the developed and developing world widen, and how long (and how successfully) can these widening political/economic disparities be sustained?” The urgency of the climate threat in the next few decades will depend, to a large degree, on whether and how much the U.S. government perceives a widening of these global inequities as a threat to U.S. national security. By contrast, if emissions continue to **creep upward** (or if they do not decline rapidly), by 2100 climate-related national security threats could be **existential**. The question for the next hundred years is not, “are disparities politically and economically manageable?” but, “can the **global order**, premised on the **nation-state system**, itself based on territorial sovereignty, **survive** in a world in which **substantial swathes of territory** are potentially **uninhabitable**?” National Security Consequences of Climate Change to 2050 Scientists can predict the consequences of climate change to 2050 with some measure of certainty. (Beyond that date, the pace and magnitude of climate change—and therefore, the national security threat posed by it—depend heavily on the level of emissions in the coming years, as I have explained.) There is relative agreement across modeled climate scenarios that the world will likely warm, on average, at least 1.5°C above pre-industrial levels by about 2050—but perhaps as soon as 2030. This level of warming is likely to occur even if the world succeeds in dramatically reducing greenhouse gas emissions, as even the recent Intergovernmental Panel on Climate Change (IPCC) report implicitly admits. In other words, a certain amount of additional warming—at least 1.5°C, and probably more than that—is presumptively unavoidable. Looking ahead to 2050, it can be said with relative confidence that the national security consequences of climate change will vary in degree, not in kind, from the national security threats already facing the United States. This is hardly good news. Even **small differences** in global average **temperatures** result in **significant environmental changes**, with attendant **social**, **economic** and **political consequences**. By 2050, climate change will **wreak increasing havoc** on **human** and **natural systems**—predominantly, but not exclusively, in the developing world—with attenuated but **profound consequences** for **national security**. In particular, changes in **temperature**, the **hydrological cycle** and the **ranges of insects** will impact **food availability** and food access in much of the world, increasing food insecurity. **Storms**, **flooding**, **changes in ocean pH** and other climate-linked changes will damage **infrastructure** and negatively impact **labor productivity** and economic **growth** in much of the world. Vector-borne **diseases** will also become **more prevalent**, as climate change will expand the geographic **range** and **intensity** of **transmission** of diseases like malaria, West Nile, Zika and dengue fever, and cholera. Rising **public health challenges**, **economic devastation** and **food insecurity** will translate into an increased **demand** for **humanitarian assistance** provided by the **military**, increased **migration**—especially from tropical and subtropical regions—and **geopolitical conflict**. Long-term trends such as declining food security, coupled with short-term events like hurricanes, could sustain unprecedented levels of migration. The 2015 refugee crisis in Europe portends the kinds of population movements that will only accelerate in the coming decades: people from Africa, Southwest and South Asia and elsewhere crossing land and water to reach Europe. For the United States, this likely means greater numbers of people seeking entry from both Central America and the Caribbean. Such influxes are not unprecedented, but they are unlikely to abate and could increase in volume over the next few decades, driven in part by climate change-related food insecurity, climate change-related storms and also by economic and political instability. Food insecurity, economic losses and loss of human life are also likely to exacerbate existing political tensions in the developing world, especially in regions with poor governance and/or where the climate is particularly vulnerable to warming (e.g., the Mediterranean basin). While the Arab Spring had many underlying causes, it also coincided with a period of high food prices, which arguably contributed to the protests. In some situations, **food insecurity**, **economic losses** and **public health crises**, combined with **weak** and ineffectual **governance**, could **precipitate future conflicts** of this kind—although it will be difficult to know where and when without more precise local studies of both underlying political dynamics and the regionally-specific impacts of climate change. 2100 and Beyond While the national security impacts of climate change to 2050 are likely to be costly and disruptive for the U.S. military—and devastating for many people around the world—at some point after 2050, if warming continues at its current pace, changes to the climate could **fundamentally reshape geopolitics** and possibly even the current nation-state basis of the current global order. To be clear, both the ultimate level of warming and its attendant political consequences is highly speculative, for the reasons I explained in my last post. Nonetheless, we do know that the planet is currently on track for at least 3-4°C of warming by 2100. The “known knowns” of higher levels of warming—say, 3°C—are frightening. At that 3°C of warming, for example, scientists project that there will be a nearly **70 percent decline** in **wheat** production in **Central America** and the Caribbean, **75 percent** of the **land area** in the **Mid**dle **East** and more than 50 percent in South Asia will be affected by highly unusual heat, and **sea level rise** could **displace** and imperil the lives **hundreds of millions** of people, among other consequences. But even higher levels of warming are physically possible within this century. At these levels of warming, some **regions of the world** would be **literally uninhabitable**, likely resulting in the depopulation of the tropics, to say nothing of the consequences of **sea-level rise** for **economically important cities** such as Amsterdam and New York. Even if newly warmed regions of the far north could **theoretically accommodate** the resulting **migrants**, this **presumes** that the **political response** to this unprecedented **global displacement** would be **orderly** and **conflict-free** **borders on fantasy**. The geopolitical consequences of significant levels of warming are severe, but if these changes occur in a linear way, at least there will be time for human systems to adjust. Perhaps more challenging for national security is the possibility that the until-now **linear changes give way** to **abrupt** and **irreversible ones**. Scientists forecast that, at higher levels of warming—precisely what level is speculative—humanity could trigger **catastrophic**, **abrupt** and **unavoidable consequences** to the **ecosystem**. The IPCC has considered **nine** such abrupt changes; one example is the potential **shutting down** of the **Indian summer monsoon**. Over a **billion** people are **dependent** upon the Indian monsoon, which provides parts of South Asia with about 80 percent of its annual rainfall; relatively minor changes in the monsoon in either direction can cause disasters. In 2010, a wetter monsoon led to the catastrophic flooding in Pakistan, which directly affected 20 million people; a drier monsoon in 2002 led to devastating drought. Studies suggest that the Indian summer monsoon has two stable states: wet (i.e., the current state) and dry (characterized by low precipitation over the subcontinent). At some point, if warming continues, the monsoon could abruptly shift into the second, “dry” state, with catastrophic consequences for over a billion people dependent on monsoon-fed agriculture. The IPCC suggests that such a state-shift is “unlikely”—that is, there is a 10 to 33 percent chance that a state-shift will happen in the 21st century—but scientists also have relatively low confidence in their understanding of the underlying mechanisms in this and other large-scale natural systems. The consequences of abrupt, severe warming for national security are obvious in general, if unclear in the specifics. In 2003, the Defense Department asked a contractor to explore such a scenario. The resulting report outlined the offensive and defensive national security strategies countries may adopt if faced with abrupt climate change, and highlighted the **increased risk** of inter- and intra-state **conflict** over natural **resources** and **immigration**. Although the report may be off in its imagined timeframe (positing abrupt climate change by 2020), the world it conjures is improbable but not outlandish. If the Indian monsoon were to switch to dry state, and a billion people were suddenly without reliable food sources, for example, it is not clear how the Indian government would react, assuming it would survive in its current form. Major wars or low-intensity proxy conflicts seem likely, if not inevitable, in such a scenario. This is not to say that a parade of climate horribles is certain—or even likely—to come to pass. Scientific understanding of the sensitivities in the climate system are far from perfect. It is also possible that emissions will decline more rapidly than anticipated, averting the worst consequences of climate change. But this outcome is far from guaranteed. And even if global emissions decline precipitously, humanity cannot be sure when or whether the planet has crossed a climate tipping point beyond which the incremental nature of the current changes shifts from the current linear, gradual progression to a non-linear and abrupt process. Within the next few decades, the most likely scenario involves manageable, but costly, consequences on infrastructure, food security and natural disasters, which will be borne primarily by the world’s most impoverished citizens and the members of the military who provide them with humanitarian assistance and disaster relief. But **while** the head-turning national security **impacts** of climate change are **probably** several **decades away**, the **nature of the threat** is such that **waiting until** these **changes manifest** is **not a viable option**. By the time the climate consequences are severe enough to compel action, there is likely to be little that can be done on human timescales to undo the changes to **environmental systems** and the **human societies dependent upon them**.

**Contention 2: A New Hope**

**Thus, I affirm that the appropriation of outer space by private entities is unjust.**

**Nationalizing space industries socializes risk and reward- public funding is the basis of most innovation, private space guts progress through brain drain**

**Aronoff 18**

(KATE ARONOFF is a staff writer at The New Republic and author of Overheated: How Capitalism Broke the Planet — And How We Fight Back. <https://inthesetimes.com/article/elon-musk-spacex-tesla-falcon-heavy-launch> , 2-8)

Scientific American gawked, ​“Elon Musk Does It Again,” praising the ​“bold technological innovations and newfound operational efficiencies that allow SpaceX to not only build its rockets for less money, but also reuse them.” That view — shared by several other outlets — fits comfortably with **the Tony Stark-like image** Musk has crafted for himself over the years: a quirky and slightly off-kilter playboy genius inventor capable of conquering everything from outer space to the climate crisis with the sheer force of his imagination. One of Musk’s long-term goals is to create a self-sustaining colony on Mars, and make humanity an interplanetary species. He hopes to shoot two very wealthy people around the moon at some point this year. Musk has invested an awful lot of public money into making those dreams a reality. But why should Americans keep footing the bill for projects where only Musk and his wealthy friends can reap the rewards? Enter: **the case for nationalizing** Elon Musk, and making the U.S. government a major stakeholder in his companies. The common logic now holds that the private sector — and prodigies like Musk, in particular — are better at coming up with world-changing ideas than the public sector, which is allegedly bloated and allergic to new, outside-the-box thinking. Corporations’ hunt for profits and lack of bureaucratic constraints, it’s said, compel cutting-edge research and development in a way that the government is simply incapable of. With any hope, more of these billionaires’ breakthroughs than not will be in the public interest. The reality, as economist Mariana Mazzucato argues in her 2013 book The Entrepreneurial State: Debunking Public vs. Private Sector Myths**, is very different**. Many of the companies that are today considered to be headed by brilliant savants — people like Steve Jobs and, yes, Elon Musk — owe much of their success to **decades of public sector innovation**, through repackaging technologies developed over the course of several decades into new products. Take the iPhone, essentially a collection of Defense Department research and National Science Foundation-grant projects packed into one shiny machine. “The prospect of the State owning a stake in a private corporation may be anathema to many parts of the capitalist world,” Mazzucato writes, ​“but given that governments are already investing in the private sector, they may as well earn a return on those investments.” As she notes, Musk’s future-oriented empire — Tesla Motors, SolarCity and SpaceX — has benefitted from around $5 billion in local, state and federal government support, not to mention many years of foundational public research into programs like rocket technology. SpaceX itself exists largely for the sake of competing for government contracts, like its $5.5 billion partnership with NASA and the U.S. Air Force. The U.S. Department of Energy invested directly in that company, as well as in Tesla’s work on battery technology and solar panels. The latter is perhaps the biggest success story of the Department of Energy stimulus grant that also supported Solyndra, a solar energy company reliably held up by the Right as an example of the government’s failure to make wise investment decisions. ​“Taxpayers footed the bill for Solyndra’s losses — yet got hardly any of Tesla’s profits,” Mazzucato notes. As Mazzucato finds, the private sector hasn’t done much to earn its reputation as a risk-taker. **Corporations and venture capitalists often adopt conservative thinking and fall into ​“path dependency,” and are generally reluctant to invest in important early-stage research that won’t necessarily turn a profit in the short-run**. This kind of research is inherently risky, and the vast majority of this kind of protean R&D (research and development) fails. For every internet — birthed in the Defense Department — there are a well over a dozen Solyndras, but it’s virtually impossible to have one without the other. The problem runs deeper still. Whereas in the past public sector research has been able to attract top-tier talent, the myth that the private sector can do what the State can’t has created **a negative feedback loop** whereby bright young scientists and engineers flock toward a private sector that goes on to further its reputation for being the place where the real innovation is happening. The alternative Mazzucato suggests **is to socialize risk and reward alike**, rather than simply allowing companies that enjoy the benefits of public innovation to funnel their profits into things like stock buybacks and tax havens — or, for that matter, flamethrowers. When companies like SpaceX make it big, they’d be obligated to return some portion of their gains to the public infrastructure that helped them succeed, **expanding the government’s capacity to facilitate more innovative development.** All this is not to say that there isn’t a critical role to play for people like Jobs and Musk in bringing new technology to the market. In all likelihood, Tesla’s Powerwall and SolarCity panels will play a key role in our transition off of fossil fuels. But lionizing Musk as the sole creator of the Powerwall and this week’s space launch stands to perpetuate a **dangerous series of myths about who’s responsible** for such cutting-edge development. Through smart supply-and-demand-side policy, states can play a **crucial role in shaping and creating markets** for the technologies we’ll need to navigate the 21st century. This can happen not just through R&D but also through developments like fuel efficiency standards, which encourage carmakers to prioritize vehicles that run off of renewable energy. Given the mounting reality of climate change and the necessity to rapidly switch over to a clean energy economy, there’s also a bigger question about how actively the state should be encouraging certain kinds of research and manufacturing. During World War II, the United States essentially had a planned economy: By 1945, around a quarter of manufacturing in the country was under state control. The reason for that was simple — the U.S. government saw an existential threat, and directed some of its biggest corporations to pitch in to stop it or else risk getting taken over by the state. There’s some Cold War nostalgia to hoisting shiny objects into orbit — a telegenic show of America’s technological supremacy. But it may not be much solace to coastal residents forced to flee in the coming decades, whose homes are rendered unlivable by a mixture of extreme weather and crumbling, antiquated infrastructure. And if you’ve watched any number of big-budget sci-fi productions over the last several years, it’s not hard to imagine Musk’s Martian colony spinning off into some Elysium-style eco-apartheid, where the rich — for the right price — can escape to new worlds while the rest of us make do on a planet of dystopian slums, swamps and deserts. Today, the risk posed by climate change is greater still than that posed by fascism on the eve of World War II, threatening to bring about a planet that’s uninhabitable for humans, and plenty hostile to them in the meantime. In such a context, do we need to launch cars into space? Maybe not. If the public sector is going to continue footing the bill for Elon Musk’s fantasies, though, he should at least have to give back some credit, and a cut of the profits.

**Nationalization of space replaces dystopian, militaristic visions with educational, valiant ones. Space has the possibility to transform national competition but must be vested from private hands**

**Roberts 21**

(Spencer Roberts is a science writer, musician, ecologist, and rooftop solar engineer from Colorado. <https://www.jacobinmag.com/2021/09/socialist-space-exploration-publicly-funded-nasa-education-futurism> , 9-8)

In 1961, Soviet cosmonaut Yuri Gagarin flew higher and orbited longer than Richard Branson and Jeff Bezos combined aboard Vostok 1, the world’s first piloted space flight. Upon his return to Earth, Gagarin became a global celebrity, traveling the world and recounting what it felt like to drift weightless and see the planet from above. For a brief moment, **he transcended the boundaries of the Cold War**, greeting cheering crowds in both Soviet and US-allied countries, capturing our collective fascination with the cosmos. The Vostok mission was meticulously planned and engineered, its cosmonauts trained for years. Its successor, Soyuz 1, was a different story. The 7K-OK spacecraft had been hastily constructed, its three unmanned flight tests all ending in failure. According to one account, Gagarin helped detail over two hundred structural concerns in a report urging the flight be called off. It’s rumored that he even tried to take his fellow cosmonaut Vladimir Komarov’s place piloting the doomed mission. In the end Komarov’s parachute failed to deploy and he burst into flames on reentry, plummeting at forty meters per second into the Earth. In aeronautics, the margin between triumph and tragedy is narrow. While hubris may have been Soyuz 1’s fatal flaw, the **pursuit of profit** has similarly incentivized corner cutting in the US space program. NASA, once the crown jewel of the public sector, has been **slowly sold off to private contractors in the neoliberal era**. Since 2020, NASA astronauts have ridden SpaceX Falcon 9 rockets into orbit, a model that has raised safety concerns among engineers and logged more failures since its debut in 2006 than the space shuttle did in thirty years. Recently, another NASA contractor, Virgin Galactic, was grounded for investigation by the Federal Aviation Administration after its pilots failed to notify the agency that its celebrated Unity flight was veering into commercial airspace. Mission objectives have changed as well. While perhaps always mythic, **the once allegedly valiant aspirations** of the space program have given way to openly **touristic and militaristic goals**. Corporations pursuing commercial space flight have received billions in public financing, and the US Space Force alone already has nearly three quarters the total budget of NASA. The true ethos of space exploration, however, **is one of public works and education**. Peering into the void of space inspires the deepest questions facing humanity: Who are we? Where do we come from? Where are we going? While a space program catering to the science fiction fantasies of billionaires is **decidedly dystopian**, conceptualizing space exploration as an **educational mission** to remotely probe the depths of the galaxy can help animate a **more equitable vision of futurism.** Space Exploration for the People How can space exploration serve society? Our first priority must be to decarbonize space flight. Without achieving this, the emissions that space flight generates are hardly justifiable given the state of our planet. Like the space blanket and cochlear implant, the applications of zero-carbon jet fuel would go far beyond the space program that developed it. Commercial aviation contributes an estimated 3.5 percent of effective radiative forcing — a figure that space tourism could skyrocket. Due to the weight of batteries and other logistical challenges, hydrogen fuel cells are considered one of the few viable pathways to decarbonizing long-distance flight. While some private space corporations have begun incorporating hydrogen, the fuel production is likely emissions-intensive and the technology remains proprietary. A publicly directed moonshot research program, coupled with tight restrictions on fossil-fueled rocket launches, could greatly accelerate the implementation of green hydrogen fuel cells in aviation and other difficult-to-decarbonize sectors. In addition to our atmosphere, we must respect the sanctity of orbital space, which we have littered with trash. The Defense Department’s Space Surveillance Network currently estimates there are more than twenty-seven thousand pieces of debris orbiting Earth. Yet even as their own ships run a gauntlet of garbage, billionaires are **trashing space more than ever**. While perhaps none match the vanity of the Tesla Roadster, competing commercial satellite networks like Musk’s Starlink and Bezos’ Project Kuiper actually **pose a much greater collision threat and are also egregious sources of light pollution and electromagnetic interference**. These redundant and dangerous **monuments to the egos of oligarchs ought** to be taken down from our skies along with other forms of space trash. Rather than granting billions in subsidies to enable this pollution, governments should instead **collect the taxes** that corporations like SpaceX, Blue Origin, and Virgin Galactic have evaded and **use them to create public sector careers** cleaning up their mess. To the extent that it is useful, **publicly sponsored infrastructure in private hands should be nationalized**

**Contention 3: The Thanos Paradox**

**Beware the space industrial complex- “corporate innovations” are really government handouts that extend unequal social relations to the stars. Neg futurism should be viewed with extreme skepticism**

**Savage 21**

(Luke, Editor, https://www.jacobinmag.com/2021/05/spacex-blue-origin-musk-bezos-space-race-endless-frontier-act)

In its promethean quest to conquer the heavens and transcend the limitations of earthly existence, the human race may be on the cusp of reaching an historic milestone: in this case, the successful launch of a giant barrel filled with pork into outer space. Thanks in large part to the **giant corporate PR machines** now in the fray, the burgeoning contest for dominance of the twenty-first century space travel market tends to be perceived in the **loftiest of terms**: **saturated with futurist mythology and defined by grandiose pronouncements** about asteroid mining, multiyear voyages to Mars, and interstellar colonization. But, as this week’s wrangling in Congress suggests, the accelerating rivalry between Elon Musk’s SpaceX and Jeff Bezos’ Blue Origin is destined to play out in a decidedly **less than utopian fashion**. The tell, as documented in a recent report from the Intercept, is an absurd $10 billion amendment to the sinisterly titled Endless Frontier Act introduced by Washington senator Maria Cantwell. Under the highly dubious auspices of funding scientific and technological research, the cash would almost certainly go straight to Blue Origin — which last month narrowly missed out on a lucrative contract to put astronauts on the moon, and just so happens to be based in Cantwell’s home state (the contract instead went to SpaceX, a move NASA has justified with the absolute howler that it was attempting to “preserve a competitive environment”). The question at hand may officially concern lunar exploration, but **the whole episode looks like a textbook case of pork barrel politics run amok**. In introducing a rival amendment intended to strip the bill of its absurd $10 billion handout to Blue Origin, the famously direct junior senator from Vermont simply had this to say: “It does not make a lot of sense to me that we would provide billions of dollars to a company owned by the wealthiest guy in America.” As is typically the case, Bernie Sanders had it right: Jeff Bezos’s wealth is by this point less an actual number than a matter for philosophical debate, and there is no tenable justification for handing him public money. He was equally right in using the occasion to **question the whole idea** of privately led space exploration: When we were younger, and Neil Armstrong made it to the Moon, there was incredible joy and pride in this country that the United States of America did something people had forever thought was impossible: we sent a man to the Moon … an extraordinary accomplishment for all of humanity, not just the United States…. I worry very much that what we are seeing now is two of the wealthiest people in this country — Elon Musk and Mr. Bezos — deciding that they are going to take control over our [efforts] to get to the Moon and, maybe, even the extraordinary accomplishment of getting to Mars…. I have a real problem that, to a significant degree, **we are privatizing that effort**…. This is something that … **all of us should be part of, and not simply a private corporate undertaking**. As the free market **innovates its way to monopolistic control of the solar system** by the Earth’s two richest men, it remains as yet unclear how far both technology and capitalism will actually allow the billionaire-dominated venture to go. Bezos and Musk, as you might expect, **paint a utopian portrait of interplanetary** colonies and abundant life flourishing off-world. Investors in speculative companies like Planetary Resources and Deep Space Industries, meanwhile, hope that the mining of precious metals from asteroids will unlock untold wealth and bring about a new industrial revolution. The most probable scenario for such efforts, of course, is also far more banal: **a primary focus on control of vital infrastructure like satellites by large corporations and their billionaire owners.** In the unlikely event that technology ever does allow interstellar colonization to be both possible and profitable, however, it’s safe to assume the result will look more **like Blade Runner than Star Trek** if people like Musk and Bezos are involved. There’s no reason to believe, after all, that extending the profit motive into outer space would yield a **different set of social relations** than the ones it already produces here on Earth (think orbital Tesla workhouses and overworked Amazon employees trying to relieve themselves in zero-g). Either way, this week’s absurd congressional wranglings over glorified handouts to the world’s two wealthiest men are as good a reminder as any that a privatized space race has far more to do with earthly vice than off-world utopia. Billionaires have already been allowed to devour much of the global economy. **Must we let them own the solar system too?**

**Capitalism undergirds all modern conflicts and regions of instability**

**Fernandes PhD 18** (Marcelo Fernandes, Ph.D. - Université Libre de Bruxelles, Research Areas: Econometrics Empirical Finance, Jan-April 2018, "Imperialism and the Question of System Stability," ScieElo, http://www.scielo.br/scielo.php?script=sci\_arttext&pid=S0102-85292018000100033)///PSC

Numerous Marxist authors – including Harvey (2004), Callinicos (2009) and Gowan (2003) – reject the notion that capitalism could reach a level of stability capable of putting an end to inter-imperialist rivalries. But authors such as Sakellaropoulos (2009), Sakellaropoulos and Sotiris (2015), and Marshall (2014) have a more consistent understanding of this phenomenon, since they develop an explanation based on Lenin’s theory of imperialism. Therefore, they manage to establish some opposition to the idea of system stability analysed in the previous sections. Lenin ([1916] 1979) characterised imperialism as a specific stage of the capitalist mode of production, resulting from a substantial change in its organisational structure, the stage of monopoly capitalism, and not merely a ‘preferred’ policy of finance capital for territorial expansion and economic-political control. Having started only in the last quarter of the 19th century, imperialism was the result of the inherent tendencies of the process of capital accumulation – in which concentration and centralisation prevail – and of the contradictions arising from the class struggle in capitalism, as analysed by Marx. At this stage, in which monopolies prevailed, crises were not suppressed, or competition among different capital formations eliminated. Far from it, **monopolies amplified the anarchy and contradictions of the economic world, bringing competition to a level in which conflicts would escalate**. **The statement that cartels can abolish crises is a fable spread by bourgeois economists who at all costs desire to place capitalism in a favourable light**. On the contrary, monopoly which is created in certain branches of industry increases and intensifies the anarchy inherent in the system of capitalist production as a whole (Lenin [1916] 1979: 701). Lenin also identified finance capital as the central force of imperialism. In the financial sphere, a qualitative change had taken place: unlike the earlier stage in which industrial capitalism prevailed, the economic impulse of imperialism now lay in haute finance. Thus, the particularity of imperialism lay in the intrinsic need to export capital, rather than commodities. It would be precisely through the export of capital that the international character of capitalism with all its economic and social contradictions would assert itself in an aggressive and irreversible way. This would not be through the formal incorporation of territories, as Lenin ([1916] 1979: 735) highlighted when he wrote about the informal British domination of Brazil, Argentina and Uruguay. Even so, the state plays an essential role in the functioning of capitalism. In the absence of global government, capital cannot reproduce itself without nation-states. **In order to ensure the interests of the bourgeoisie, the state develops strategies to manage the labour force, intervenes to maintain the profit of national capital and promote its expansion in the international economy** (Sakellaropoulos 2009: 63). However, capital exports also lead to competition among states, since they also play the role of mediating among the interests of different ruling classes. Monopolies can join forces in several parts of the world, yet need to remain linked to their home states where they receive legal protection, even outside legal systems, when this is convenient (Harman 2003). Therefore, international conflicts (economic, political and/or military) are intrinsic to the system, although moments of cooperation may prevail (Lenin [1916] 1979). Capital expansion does not necessarily require war, but this cannot be ruled out. For that reason, **activities linked to arms acquire a privileged position in national economies**. That causes a permanent warmongering atmosphere, since it is functional for monopolies linked to the war industry to have external enemies, whether real or illusory, to justify military purchases. Hence, the term ‘globalisation’, which describes a capitalist world without borders, available and subservient to the supposedly stateless capital of a unified bourgeoisie, hides or denies crucial aspects of the functioning of the international system15 (Halliday 2002; Petras and Veltmeyer 2000; Ruccio 2003). In reality, **the concepts of imperialism and globalisation are not compatible**. Although several Marxist authors started to use them as a way of explaining contemporary capitalism, both concepts cannot be adopted at the same time, since the idea of globalisation suppresses a series of questions related to the historical development of the relations of exploitation within the capitalist system, and the role of imperialism as a theoretical and historical reference (Sakellaropoulos 2009). The view of various Marxist authors that the international system is characterised by stability seems to find support in certain passages of the Manifesto of the Communist Party, by Marx and Engels (2010). In this understanding, conflicts are caused almost exclusively by the division between the bourgeoisie and proletarians at the international level. Since international capital has attained unprecedented power, there is little room for protest movements that could undermine the system. This view underestimates the importance of the state and other forms of struggle, such as the struggle of nations oppressed by imperialism. However, even in the Manifesto, the nation-state problem is already raised when the authors call for the national liberation of Poland (Marx and Engels 2010: 68). Another relevant example is the struggle for women’s liberation in countries like the United Arab Emirates and Saudi Arabia. These are countries where the oppression of women is a structural problem – although not necessarily connected to multinational corporations – and any deeper gender-related change favouring women can cause great instability, since the region plays an important role in the geopolitical interests of imperialist countries. The notion that multinational companies have an extraordinary capacity for co-ordination that facilitates international exploitation is also more or less explicit in the writings of the authors referred to in the previous section. However, this is a questionable theoretical assumption in the context of Marxism. The tendency towards the centralisation and concentration of capital inherent in the movement of capital does not eliminate competition, but rather brings it to another level, as pointed out by Lenin, following in the footsteps of Marx. This is because it is competition that forces the capitalist to accumulate uncontrollably. **Capital produces without considering its limits, because it is an intrinsic expansionist force; hence the crises that occur from time to time when such limits are exceeded**. For the capitalist, there is no other way but to continue seeking a continuous expansion. In the logic of capital, there is no room for sentimentality; ‘he who does not rise, descends.’ Therefore, there can be no unified bourgeoisie exploiting markets around the world in an organised way, capable of suppressing economic crises and their economic-social consequences. In fact, the upsurge of capital internationalisation after the Cold War and the image of companies producing simultaneously in several countries – although this is nothing new – create the perception that these companies are no longer related to their states, as Robinson (2007) mistakenly suggests.16 But we need to distinguish between appearance and reality. When General Motors and Chrysler filed for bankruptcy in 2009, they were bailed out by the US government in their country of origin, at a cost of US$80 billion to the American Treasury until 2013 (Beech 2014). And in 2014, the French bank Paribas was fined a staggering US$8.9 billion by a New York court of justice because it had contravened a Federal law, the International Emergency Economic Powers Act of 1977, by facilitating financial transactions with Cuba, Iran and Sudan, countries that were under US embargo (Lauer 2014). The French government intervened directly, in the form of its president, François Hollande. The Paribas case also runs counter to Panitch and Gindin’s idea that the USA serves the interests of a world capitalist class first and foremost. Therefore, in contrast to ‘globalisation’, the notion of an ‘imperialist chain’ formulated by Lenin is still an accurate description of the hierarchical, uneven, and complex relations arising from the reproduction of capital in the international system.17 It brings together the existing capitalist powers, each of them at a different level of development. According to Milios and Sotiropoulos (2009: 19), the notion of ‘imperialist chain’ leads to two questions. The first is about the law of uneven development. According to Lenin, **capitalism could never be a stable system because uneven development causes changes in the correlation of forces of the more advanced nations, tending to erode the centre’s power in relation to new poles of power with greater economic dynamism**. Consequently, the contradictions among the powers making up the imperialist chain would escalate (Lenin [1916] 1979: 760). The law of uneven development is central to explaining relations among the countries in the imperialist chain, providing an economic basis for military conflicts. The second question is about the weakest link in the imperialist chain. Uneven development creates the possibility of revolutions in the relatively weaker links of the chain, and not in those states in which the productive forces are more advanced, as Marx initially predicted. But this is a relative position: each country in the imperialist chain is weaker or stronger than the other links in the chain (Poulantzas 1979: 23). Indeed, the international scenario that has emerged at the beginning of the 21st century does not seem to confirm the idea that the capitalist system tends towards stability. On the economic front, crises have become more frequent in the ‘globalisation’ era. They began with the Mexican crisis (1994-5), which had serious repercussions, since Mexico used to be regarded as a model to be followed due to neoliberal reforms implemented since the late 1980s. Later on, the crises in East Asia (1997-8), Russia (1998) and Brazil (1998-1999) exposed the fragility of the international financial architecture that emerged in the 1970s. The turn of the century was the stage for new economic turmoil, as in Turkey and Argentina in 2001. Afterwards, the international economy went through a period of relative calm that lasted for about five years, **but this was soon followed by the US subprimecrisis in 2007, triggering the greatest global economic crisis since the Great Depression of the 1930s**. The crisis began in the USA, the centre of capitalism, and affected a major part of Europe as well as other world regions. **This exposed the fragility of the global financial architecture, and caused unrest about the economic order in several governments and within US society itself, as evidenced by the protest movement ‘Occupy Wall Street’**. Despite the intense debate that followed about the reforms needed to prevent a crisis of such magnitude from happening again, few proposals have been implemented, mainly because of the contradictory interests inside the imperialist chain. Added to this, low levels of economic growth in the wake of the crisis have tended to make the environment even less conducive to fresh understandings, stirring up contradictions instead. Given this, it cannot be concluded that the international economic system is more stable, despite the enormous capacity of intervention of central banks, the US Federal Bank in particular, as evidenced in the worst moments of the financial crisis of 2008. Likewise, it cannot be concluded that competition among states no longer exists, and that the problem remains only in the economic sphere. Countries continue to use uneven structures of power to maintain and conquer new spaces of accumulation, according to the interests of their capitalists. During the 1990s, when the USA expanded economically at an unprecedented rate, it managed to maintain its hegemony over other powers, preventing the emergence of autonomous regional strategies with relative success. **This did not make the US state more friendly**, as Fiori (2008), Gowan (2004), and Sakellaropoulos and Sotiris (2015) demonstrate. In fact, shortly after the end of the Cold War, the central powers adopted some forms of intervention as legitimate, justified by arguments related to violations of human rights,18 the war on drug cartels in Latin America, the fight against corruption, the preservation of international security, and, more recently, the preventive ‘war against terror’ (Bandeira 2014; Sakellaropoulos and Sotiris 2008: 220; Johnson 2004: 31). However, as the law of uneven development prevails, new poles of power are emerging. Cooperation among states has become more problematic due to the growing multipolarisation of the international system, as can be seen in the formation of the BRICS alliance and the Union of South American Nations (USAN), for example, and the relative decrease of US power (Fernandes 2016). **This situation helps to explain the growing reaction against US foreign policy, which after ‘09/11’ began to use a warmongering and interventionist language**. Since then, the USA has fomented conflict in several parts of the world, ignoring the sovereignty of countries like Afghanistan (2001) and Iraq (2003). Libya and Syria were also targets of US interventions in conjunction with France, Britain and a group of Middle Eastern countries with diverse interests in the region (Bandeira 2014: 382-384). Following the bombing of Libya in 2011, the regime of Muammar al-Gaddafi was overthrown. The same modus operandi was used in Syria.19 However, **Russia has played a decisive role in preserving the Bashar al-Assad regime. More recently, the intervention in Ukraine has created strong instability in the region, leading to a referendum on the reincorporation of Crimea into Russia**.20 This is evidence that rivalries among the great powers persist, and that Russia is playing an increasingly active role. Finally**, it should be noted that, despite the persistent global economic crisis, many countries – including numerous European countries – continue to spend a lot of money on arms** (Marshall 2014: 328). According to the Stockholm International Peace Research Institute (SIPRI), global military expenditure reached US$1.68 trillion in 2015, representing a real increase of 1% over 2014. This was the first increase since 2011. But before that, expenditure grew steadily for 13 years between 1998 and 2011 (Perlo-Freeman et al 2016). The USA spends far more on armaments than any other country – 36% of the total in 2015 – but European expenditure should be noted. As shown by Slijper (2013), the military spending of countries such as Spain, Greece and Italy, which were at the epicentre of the crisis in the euro area and have struggled to implement economic austerity programmes at great social cost, remains impressively high. This clearly contradicts the Kautskyan perspective, which predicted a reduction in military spending as a primary result of ultra-imperialism.

**The impact of structural violence cumulatively outweighs – challenging the structures that facilitate inequality is necessary**

**Ansell 17** - David A. Ansell, Senior Vice President, Associate Provost for Community Health Equity, and Michael E. Kelly Professor of Medicine at Rush University Medical Center (The Death Gap: How Inequality Kills, p. 7-10)

There are many different kinds of violence. Some are obvious: punches, attacks, gunshots, explosions. These are the kinds of inter- personal violence that we tend to hear about in the news. Other kinds of violence are intimate and emotional. But the deadliest and most thoroughgoing kind of violence is **woven into the fabric of American society.** It exists when some groups have more access to goods, resources, and opportunities than other groups, including health and life itself. This violence delivers specific blows against particular bodies in particular neighborhoods. This unequal advantage and violence is built into the very rules that govern our society. In the absence of this violence, large numbers of Americans would be able to live fuller and longer lives. This kind of violence is called **structural violence**, because it is embedded in the very laws, policies, and rules that govern day-to- day life.8 It is the cumulative impact of laws and social and economic policies and practices that render some Americans less able to access resources and opportunities than others. This inequity of advantage is not a result of the individuals personal abilities but is built into the systems that govern society. Often it is a product of racism, gender, and income inequality. The diseases and premature mortality that Windora and many of my patients experienced were, in the words of Dr. Paul Farmer, "biological reflections of social fault lines."9 As a result of these fault lines, a disproportional burden of illness, suffering, and premature mortality falls on certain neighborhoods, like Windora's. Structural violence can overwhelm an individual's ability to live a free, unfettered, healthy life. As I ran to evaluate Windora, I knew that her stroke was caused in part by lifelong exposure to suffering, racism, and economic deprivation. Worse, the poverty of West Humboldt Park that contributed to her illness is directly and inextricably related to the massive concentration of wealth and power in other neighborhoods just miles away in Chicago's Gold Coast and suburbs. That concentration of wealth could not have occurred without laws, policies, and practices that favored some at the expense of others. Those laws, policies, and practices could not have been passed or enforced if access to political and economic power had not been concentrated in the hands of a few. Yet these political and economic structures have become so firmly entrenched (in habits, social relations, economic arrangements, institutional practices, law, and policy) that they have become part of the matrix of American society. The rules that govern day-to-day life were written to benefit a small elite at the expense of people like Windora and her family. These rules and structures are powerful destructive forces. The same structures that render life predictable, secure, comfortable, and pleasant for many destroy the lives of others like Windora through suffering, poverty, ill health, and violence. These structures are neither natural nor neutral. The results of structural violence can be very specific. In Windora's case, stroke precursors like chronic stress, poverty, and uncontrolled hypertension run rampant in neighborhoods like hers. Windora's ill- ness was caused by neither her cultural traits nor the failure of her will. Her stroke was caused in part by inequity. She is one of the lucky ones, though, because even while structural violence ravages her neighbor- hood, it also abets the concentration of expensive stroke-intervention services in certain wealthy teaching hospitals like mine. If I can get to her in time, we can still help her. Income Inequality and Life Inequality Of course, Windora is not the only person struggling on account of structural violence. Countless neighborhoods nationwide are suffering from it, and people are dying needlessly young as a result. The mag- nitude of this excess mortality is mind-boggling. In 2009 my friend Dr. Steve Whitman asked a simple question, "How many extra black people died in Chicago each year, just because they do not have the same health outcomes as white Chicagoans?" When the Chicago Sun- Times got wind of his results, it ran them on the front page in bold white letters on a black background: "health care gap kills 3200 Black Chicagoans and the Gap is Growing." The paper styled the head- line to look like the declaration of war that it should have been. In fact, we did find ourselves at war not long ago, when almost 3,000 Americans were killed. That was September 11,2001. That tragedy propelled the country to war. Yet when it comes to the premature deaths of urban Americans, no disaster area has been declared. No federal troops have been called up. No acts of Congress have been passed. Yet this disaster is even worse: those 3,200 black people were in Chicago alone, in just one year. Nationwide each year, more than 60,000 black people die prematurely because of **inequality**.10 While blacks suffer the most from this, it is not just an issue of racism, though racism has been a unique and powerful transmitter of violence in America for over four hundred years.11 Beyond **racism, poverty and income inequality** perpetuated by exploitative market capitalism are singular agents of transmission of disease and early death. As a result, there is a new and alarming pattern of declining life expectancy among white Americans as well. Deaths from drug overdoses in young white Americans ages 25 to 34 have exploded to levels not seen since the AIDS epidemic. This generation is the first since the Vietnam War era to experience higher death rates than the prior generation.12 White Americans ages 45 to 54 have experienced skyrocketing premature death rates as well, something not seen in any other developed na- tion.13 White men in some Appalachian towns live on average twenty years less than white men a half-day's drive away in the suburbs of Washington, DC. Men in McDowell County, West Virginia, can look forward to a life expectancy only slightly better than that of Haitians.14 But those statistics reflect averages, and every death from structural violence is a person. When these illnesses and deaths are occurring one at a time in neighborhoods that society has decided not to care about—neighborhoods populated by poor, black, or brown people— they seem easy to overlook, especially if you are among the fortunate few who are doing incredibly well. The tide of prosperity in America has lifted some boats while others have swamped. Paul Farmer, the physician-anthropologist who founded Partners in Health, an inter- national human rights agency, reflects on the juxtaposition of "unprecedented bounty and untold penury": "It stands to reason that as beneficiaries of growing inequality, we do not like to be reminded of misery of squalor and failure. Our popular culture provides us with no shortage of anesthesia."15 That people suffer and die prematurely because of inequality is wrong. It is wrong from an ethical perspective. It is wrong from a fair- ness perspective. And it is wrong **because we have the means to fix it**.

**FW**

**The standard is maximizing expected well-being. To clarify, hedonistic act util. Prefer –**

**1] Pleasure and pain *are* intrinsic value and disvalue – everything else *regresses* – robust neuroscience.**

**Blum et al. 18**

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**Pleasure** is not only one of the three primary reward functions but it also **defines reward.** As homeostasis explains the functions of only a limited number of rewards, the principal reason why particular stimuli, objects, events, situations, and activities are rewarding may be due to pleasure. This applies first of all to sex and to the primary homeostatic rewards of food and liquid and extends to money, taste, beauty, social encounters and nonmaterial, internally set, and intrinsic rewards. Pleasure, as the primary effect of rewards, drives the prime reward functions of learning, approach behavior, and decision making and provides the **basis for hedonic theories** of reward function. We are attracted by most rewards and exert intense efforts to obtain them, just because they are enjoyable [10].

Pleasure is a passive reaction that derives from the experience or prediction of reward and may lead to a long-lasting state of happiness. The word happiness is difficult to define. In fact, just obtaining physical pleasure may not be enough. One key to happiness involves a network of good friends. However, it is not obvious how the higher forms of satisfaction and pleasure are related to an ice cream cone, or to your team winning a sporting event. Recent multidisciplinary research, using both humans and detailed invasive brain analysis of animals has discovered some critical ways that the brain processes pleasure [14].

Pleasure as a hallmark of reward is sufficient for defining a reward, but it may not be necessary. A reward may generate positive learning and approach behavior simply because it contains substances that are essential for body function. When we are hungry, we may eat bad and unpleasant meals. A monkey who receives hundreds of small drops of water every morning in the laboratory is unlikely to feel a rush of pleasure every time it gets the 0.1 ml. Nevertheless, with these precautions in mind, we may define any stimulus, object, event, activity, or situation that has the potential to produce pleasure as a reward. In the context of reward deficiency or for disorders of addiction, homeostasis pursues pharmacological treatments: drugs to treat drug addiction, obesity, and other compulsive behaviors. The theory of allostasis suggests broader approaches - such as re-expanding the range of possible pleasures and providing opportunities to expend effort in their pursuit. [15]. It is noteworthy, the first animal studies eliciting approach behavior by electrical brain stimulation interpreted their findings as a discovery of the brain’s pleasure centers [16] which were later partly associated with midbrain dopamine neurons [17–19] despite the notorious difficulties of identifying emotions in animals.

Evolutionary theories of pleasure: The love connection BO:D

Charles Darwin and other biological scientists that have examined the biological evolution and its basic principles found various mechanisms that steer behavior and biological development. Besides their theory on natural selection, it was particularly the sexual selection process that gained significance in the latter context over the last century, especially when it comes to the question of what makes us “what we are,” i.e., human. However, the capacity to sexually select and evolve is not at all a human accomplishment alone or a sign of our uniqueness; yet, we humans, as it seems, are ingenious in fooling ourselves and others–when we are in love or desperately search for it.

It is well established that modern biological theory conjectures that **organisms are** the **result of evolutionary competition.** In fact, Richard Dawkins stresses gene survival and propagation as the basic mechanism of life [20]. Only genes that lead to the fittest phenotype will make it. It is noteworthy that the phenotype is selected based on behavior that maximizes gene propagation. To do so, the phenotype must survive and generate offspring, and be better at it than its competitors. Thus, the ultimate, distal function of rewards is to increase evolutionary fitness by ensuring the survival of the organism and reproduction. It is agreed that learning, approach, economic decisions, and positive emotions are the proximal functions through which phenotypes obtain other necessary nutrients for survival, mating, and care for offspring.

Behavioral reward functions have evolved to help individuals to survive and propagate their genes. Apparently, people need to live well and long enough to reproduce. Most would agree that homo-sapiens do so by ingesting the substances that make their bodies function properly. For this reason, foods and drinks are rewards. Additional rewards, including those used for economic exchanges, ensure sufficient palatable food and drink supply. Mating and gene propagation is supported by powerful sexual attraction. Additional properties, like body form, augment the chance to mate and nourish and defend offspring and are therefore also rewards. Care for offspring until they can reproduce themselves helps gene propagation and is rewarding; otherwise, many believe mating is useless. According to David E Comings, as any small edge will ultimately result in evolutionary advantage [21], additional reward mechanisms like novelty seeking and exploration widen the spectrum of available rewards and thus enhance the chance for survival, reproduction, and ultimate gene propagation. These functions may help us to obtain the benefits of distant rewards that are determined by our own interests and not immediately available in the environment. Thus the distal reward function in gene propagation and evolutionary fitness defines the proximal reward functions that we see in everyday behavior. That is why foods, drinks, mates, and offspring are rewarding.

There have been theories linking pleasure as a required component of health benefits salutogenesis, (salugenesis). In essence, under these terms, pleasure is described as a state or feeling of happiness and satisfaction resulting from an experience that one enjoys. Regarding pleasure, it is a double-edged sword, on the one hand, it promotes positive feelings (like mindfulness) and even better cognition, possibly through the release of dopamine [22]. But on the other hand, pleasure simultaneously encourages addiction and other negative behaviors, i.e., motivational toxicity. It is a complex neurobiological phenomenon, relying on reward circuitry or limbic activity. It is important to realize that through the “Brain Reward Cascade” (BRC) endorphin and endogenous morphinergic mechanisms may play a role [23]. While natural rewards are essential for survival and appetitive motivation leading to beneficial biological behaviors like eating, sex, and reproduction, crucial social interactions seem to further facilitate the positive effects exerted by pleasurable experiences. Indeed, experimentation with addictive drugs is capable of directly acting on reward pathways and causing deterioration of these systems promoting hypodopaminergia [24]. Most would agree that pleasurable activities can stimulate personal growth and may help to induce healthy behavioral changes, including stress management [25]. The work of Esch and Stefano [26] concerning the link between compassion and love implicate the brain reward system, and pleasure induction suggests that social contact in general, i.e., love, attachment, and compassion, can be highly effective in stress reduction, survival, and overall health.

Understanding the role of neurotransmission and pleasurable states both positive and negative have been adequately studied over many decades [26–37], but comparative anatomical and neurobiological function between animals and homo sapiens appear to be required and seem to be in an infancy stage.

Finding happiness is different between apes and humans

As stated earlier in this expert opinion one key to happiness involves a network of good friends [38]. However, it is not entirely clear exactly how the higher forms of satisfaction and pleasure are related to a sugar rush, winning a sports event or even sky diving, all of which augment dopamine release at the reward brain site. Recent multidisciplinary research, using both humans and detailed invasive brain analysis of animals has discovered some critical ways that the brain processes pleasure.

Remarkably, there are pathways for ordinary liking and pleasure, which are limited in scope as described above in this commentary. However, there are **many brain regions**, often termed hot and cold spots, that significantly **modulate** (increase or decrease) our **pleasure or** even produce **the opposite** of pleasure— that is disgust and fear [39]. One specific region of the nucleus accumbens is organized like a computer keyboard, with particular stimulus triggers in rows— producing an increase and decrease of pleasure and disgust. Moreover, the cortex has unique roles in the cognitive evaluation of our feelings of pleasure [40]. Importantly, the interplay of these multiple triggers and the higher brain centers in the prefrontal cortex are very intricate and are just being uncovered.

Desire and reward centers

It is surprising that many different sources of pleasure activate the same circuits between the mesocorticolimbic regions (Figure 1). Reward and desire are two aspects pleasure induction and have a very widespread, large circuit. Some part of this circuit distinguishes between desire and dread. The so-called pleasure circuitry called “REWARD” involves a well-known dopamine pathway in the mesolimbic system that can influence both pleasure and motivation.

In simplest terms, the well-established mesolimbic system is a dopamine circuit for reward. It starts in the ventral tegmental area (VTA) of the midbrain and travels to the nucleus accumbens (Figure 2). It is the cornerstone target to all addictions. The VTA is encompassed with neurons using glutamate, GABA, and dopamine. The nucleus accumbens (NAc) is located within the ventral striatum and is divided into two sub-regions—the motor and limbic regions associated with its core and shell, respectively. The NAc has spiny neurons that receive dopamine from the VTA and glutamate (a dopamine driver) from the hippocampus, amygdala and medial prefrontal cortex. Subsequently, the NAc projects GABA signals to an area termed the ventral pallidum (VP). The region is a relay station in the limbic loop of the basal ganglia, critical for motivation, behavior, emotions and the “Feel Good” response. This defined system of the brain is involved in all addictions –substance, and non –substance related. In 1995, our laboratory coined the term “Reward Deficiency Syndrome” (RDS) to describe genetic and epigenetic induced hypodopaminergia in the “Brain Reward Cascade” that contribute to addiction and compulsive behaviors [3,6,41].

Furthermore, ordinary “liking” of something, or pure pleasure, is represented by small regions mainly in the limbic system (old reptilian part of the brain). These may be part of larger neural circuits. In Latin, hedus is the term for “sweet”; and in Greek, hodone is the term for “pleasure.” Thus, the word Hedonic is now referring to various subcomponents of pleasure: some associated with purely sensory and others with more complex emotions involving morals, aesthetics, and social interactions. The capacity to have pleasure is part of being healthy and may even extend life, especially if linked to optimism as a dopaminergic response [42].

Psychiatric illness often includes symptoms of an abnormal inability to experience pleasure, referred to as anhedonia. A negative feeling state is called dysphoria, which can consist of many emotions such as pain, depression, anxiety, fear, and disgust. Previously many scientists used animal research to uncover the complex mechanisms of pleasure, liking, motivation and even emotions like panic and fear, as discussed above [43]. However, as a significant amount of related research about the specific brain regions of pleasure/reward circuitry has been derived from invasive studies of animals, these cannot be directly compared with subjective states experienced by humans.

In an attempt to resolve the controversy regarding the causal contributions of mesolimbic dopamine systems to reward, we have previously evaluated the three-main competing explanatory categories: “liking,” “learning,” and “wanting” [3]. That is, dopamine may mediate (a) liking: the hedonic impact of reward, (b) learning: learned predictions about rewarding effects, or (c) wanting: the pursuit of rewards by attributing incentive salience to reward-related stimuli [44]. We have evaluated these hypotheses, especially as they relate to the RDS, and we find that the incentive salience or “wanting” hypothesis of dopaminergic functioning is supported by a majority of the scientific evidence. Various neuroimaging studies have shown that anticipated behaviors such as sex and gaming, delicious foods and drugs of abuse all affect brain regions associated with reward networks, and may not be unidirectional. Drugs of abuse enhance dopamine signaling which sensitizes mesolimbic brain mechanisms that apparently evolved explicitly to attribute incentive salience to various rewards [45].

Addictive substances are voluntarily self-administered, and they enhance (directly or indirectly) dopaminergic synaptic function in the NAc. This activation of the brain reward networks (producing the ecstatic “high” that users seek). Although these circuits were initially thought to encode a set point of hedonic tone, it is now being considered to be far more complicated in function, also encoding attention, reward expectancy, disconfirmation of reward expectancy, and incentive motivation [46]. The argument about addiction as a disease may be confused with a predisposition to substance and nonsubstance rewards relative to the extreme effect of drugs of abuse on brain neurochemistry. The former sets up an individual to be at high risk through both genetic polymorphisms in reward genes as well as harmful epigenetic insult. Some Psychologists, even with all the data, still infer that addiction is not a disease [47]. Elevated stress levels, together with polymorphisms (genetic variations) of various dopaminergic genes and the genes related to other neurotransmitters (and their genetic variants), and may have an additive effect on vulnerability to various addictions [48]. In this regard, Vanyukov, et al. [48] suggested based on review that whereas the gateway hypothesis does not specify mechanistic connections between “stages,” and does not extend to the risks for addictions the concept of common liability to addictions may be more parsimonious. The latter theory is grounded in genetic theory and supported by data identifying common sources of variation in the risk for specific addictions (e.g., RDS). This commonality has identifiable neurobiological substrate and plausible evolutionary explanations.

Over many years the controversy of dopamine involvement in especially “pleasure” has led to confusion concerning separating motivation from actual pleasure (wanting versus liking) [49]. We take the position that animal studies cannot provide real clinical information as described by self-reports in humans. As mentioned earlier and in the abstract, on November 23rd, 2017, evidence for our concerns was discovered [50]

In essence, although nonhuman primate brains are similar to our own, the disparity between other primates and those of human cognitive abilities tells us that surface similarity is not the whole story. Sousa et al. [50] small case found various differentially expressed genes, to associate with pleasure related systems. Furthermore, the dopaminergic interneurons located in the human neocortex were absent from the neocortex of nonhuman African apes. Such differences in neuronal transcriptional programs may underlie a variety of neurodevelopmental disorders.

In simpler terms, the system controls the production of dopamine, a chemical messenger that plays a significant role in pleasure and rewards. The senior author, Dr. Nenad Sestan from Yale, stated: “Humans have evolved a dopamine system that is different than the one in chimpanzees.” This may explain why the behavior of humans is so unique from that of non-human primates, even though our brains are so surprisingly similar, Sestan said: “It might also shed light on why people are vulnerable to mental disorders such as autism (possibly even addiction).” Remarkably, this research finding emerged from an extensive, multicenter collaboration to compare the brains across several species. These researchers examined 247 specimens of neural tissue from six humans, five chimpanzees, and five macaque monkeys. Moreover, these investigators analyzed which genes were turned on or off in 16 regions of the brain. While the differences among species were subtle, **there was** a **remarkable contrast in** the **neocortices**, specifically in an area of the brain that is much more developed in humans than in chimpanzees. In fact, these researchers found that a gene called tyrosine hydroxylase (TH) for the enzyme, responsible for the production of dopamine, was expressed in the neocortex of humans, but not chimpanzees. As discussed earlier, dopamine is best known for its essential role within the brain’s reward system; the very system that responds to everything from sex, to gambling, to food, and to addictive drugs. However, dopamine also assists in regulating emotional responses, memory, and movement. Notably, abnormal dopamine levels have been linked to disorders including Parkinson’s, schizophrenia and spectrum disorders such as autism and addiction or RDS.

Nora Volkow, the director of NIDA, pointed out that one alluring possibility is that the neurotransmitter dopamine plays a substantial role in humans’ ability to pursue various rewards that are perhaps months or even years away in the future. This same idea has been suggested by Dr. Robert Sapolsky, a professor of biology and neurology at Stanford University. Dr. Sapolsky cited evidence that dopamine levels rise dramatically in humans when we anticipate potential rewards that are uncertain and even far off in our futures, such as retirement or even the possible alterlife. This may explain what often motivates people to work for things that have no apparent short-term benefit [51]. In similar work, Volkow and Bale [52] proposed a model in which dopamine can favor NOW processes through phasic signaling in reward circuits or LATER processes through tonic signaling in control circuits. Specifically, they suggest that through its modulation of the orbitofrontal cortex, which processes salience attribution, dopamine also enables shilting from NOW to LATER, while its modulation of the insula, which processes interoceptive information, influences the probability of selecting NOW versus LATER actions based on an individual’s physiological state. This hypothesis further supports the concept that disruptions along these circuits contribute to diverse pathologies, including obesity and addiction or RDS.

**2] Substitutability—only consequentialism explains necessary enablers.**

**Sinnott-Armstrong 92** [Walter, professor of practical ethics. “An Argument for Consequentialism” Dartmouth College Philosophical Perspectives. 1992.]

**A moral reason to do an act is consequential if and only if the reason depends only on the consequences of either doing the act or not doing the act.** For example, a moral reason not to hit someone is that this will hurt her or him. A moral reason to turn your car to the left might be that, if you do not do so, you will run over and kill someone. A moral reason to feed a starving child is that the child will lose important mental or physical abilities if you do not feed it. All such reasons are consequential reasons. All other moral reasons are non-consequential. Thus, **a moral reason** to do an act **is non-consequential if** and only if **the reason depends even partly on some property that the act has independently of its consequences. For example, an act can be a lie regardless of what happens as a result of the lie** (since some lies are not believed), and some moral theories claim that that property of being a lie provides amoral reason not to tell a lie regardless of the consequences of this lie. Similarly, the fact that an act fulfills a promise is often seen as a moral reason to do the act, even though the act has that property of fulfilling a promise independently ofits consequences. All such moral reasons are non-consequential. In order to avoid so many negations, I will also call them 'deontological'. This distinction would not make sense if we did not restrict the notion of consequences. If I promise to mow the lawn, then one consequence of my mowing might seem to be that my promise is fulfilled. One way to avoid this problem is to specify that the consequences of an act must be distinct from the act itself. My act of fulfilling my promise and my act of mowing are not distinct, because they are done by the same bodily movements.10 Thus, my fulfilling my promise is not a consequence of my mowing. A consequence of an act need not be later in time than the act, since causation can be simultaneous, but the consequence must at least be different from the act. Even with this clarification, it is still hard to classify some moral reasons as consequential or deontological,11 but I will stick to examples that are clear. In accordance with this distinction between kinds of moral reasons, I can now distinguish different kinds of moral theories. I will say that **a moral theory is consequentialist if and only if it implies that all basic moral reasons are consequential. A moral theory is then non-consequentialist or deontological if it includes any basic moral reasons which are not consequential**. 5. Against Deontology So defined, the class of deontological moral theories is very large and diverse. This makes it hard to say anything in general about it. Nonetheless, I will argue that no deontological moral theory can explain why moral substitutability holds. My argument applies to all deontological theories because it depends only on what is common to them all, namely, the claim that some basic moral reasons are not consequential. Some deontological theories allow very many weighty moral reasons that are consequential, and these theories might be able to explain why moral substitutability holds for some of their moral reasons: the consequential ones. But even these theories cannot explain why moral substitutability holds for all moral reasons, including the non-consequential reasons that make the theory deontological. The failure of deontological moral theories to explain moral substitutability in the very cases that make them deontological is a reason to reject all deontological moral theories. I cannot discuss every deontological moral theory, so I will discuss only a few paradigm examples and show why they cannot explain moral substitutability. After this, I will argue that similar problems are bound to arise for all other deontological theories by their very nature. The simplest deontological theory is the pluralistic intuitionism of Prichard and Ross. Ross writes that, when someone promises to do something, 'This we consider obligatory in its own nature, just because it is a fulfillment of a promise, and not because of its consequences.'12 Such deontologists claim in effect that, **if I promise to mow the grass, there is a moral reason for me to mow the grass, and this moral reason is constituted by the fact that mowing the grass fulfills my promise.** This reason exists regardless of the consequences of mowing the grass, even though it might be overridden by certain bad consequences. **However**, if this is why I have a moral reason to mow the grass, then, even **if I cannot mow the grass without starting my mower, and starting the mower would enable me to mow the grass, it still would not follow that I have any moral reason to start my mower, since I did not promise to start my mower**, and starting my mower does not fulfill my promise. Thus, **a moral theory cannot explain** moral **substitutability if it claims that properties** like this **provide moral reasons.**