# 1NC Berkeley Round 3

## 1

### CP

#### CP Text: The appropriation of outer space by private entities is unjust except for Space-Based Solar Power. Companies investing in Space-Based Solar Power should commit to at least 40% of the Energy Produced to be distributed to developing and marginalized communities.

#### Space-Based Solar Power constitutes Appropriation.

Matignon 19 Louis De Gouyon Matignon 4-15-2019 "THE LEGAL STATUS OF CHINESE SPACE-BASED SOLAR POWER STATIONS" <https://www.spacelegalissues.com/the-legal-status-of-chinese-space-based-solar-power-stations/> (PhD in space law)//Elmer

Near-Earth space is formed of different orbital layers. Terrestrial orbits are limited common resources and inherently repugnant to any appropriation: they are not property in the sense of law. Orbits and frequencies are res communis (a Latin term derived from Roman law that preceded today’s concepts of the commons and common heritage of mankind; it has relevance in international law and common law). It’s the first-come, first-served principle that applies to orbital positioning, which without any formal acquisition of sovereignty, records a promptness behaviour to which it grants an exclusive grabbing effect of the space concerned. Geostationary orbit is a limited but permanent resource: this de facto appropriation by the first-comers – the developed countries – of the orbit and the frequencies is protected by Space Law and the International Telecommunications Law. The challenge by developing countries of grabbing these resources is therefore unjustified on the basis of existing law. Denying new entrants geostationary-access or making access more difficult does not constitute appropriation; it simply results from the traditional system of distribution of access rights. The practice of developed States is based on free access and priority given to the first satellites placed in geostationary orbit. The geostationary orbit is part of outer space and, as such, the customary principle of non-appropriation and the 1967 Space Treaty apply to it. The equatorial countries have claimed sovereignty, then preferential rights over this space. These claims are contrary to the 1967 Treaty and customary law. However, they testify to the concern of the equatorial countries, shared by developing countries, in the face of saturation and seizure of geostationary positions by developed countries. The regime of res communis of outer space in Space Law (free access and non-appropriation) does not meet the demand of the developing countries that their possibilities of future access to the geostationary orbit and associated radio frequencies are guaranteed. New rules appear necessary and have been envisaged to ensure the access of all States to these positions and frequencies. As a conclusion, we may say that those Chinese space-based solar power stations would be considered space objects, the solar energy they would be exploiting would be free of use, and the orbital position they would occupy would have to obey the first-come, first-served principle that applies to orbital positioning. Concerning Article I of the 1967 Outer Space Treaty, which imposes that “The exploration and use of outer space, including the Moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind”, “the benefit and in the interests of all countries” doesn’t prohibit private exploitation, as it is the case with satellite navigation, satellite television and commercial satellite imagery for example.

#### Chinese Private Companies are pursuing Space-Based Solar Power.

McKirdy and Fang 19 Euan McKirdy and Nanlin Fang 3-3-2019 "Space power plant and a mission to Mars: China’s new plans to conquer the final frontier" <https://www.cnn.com/2019/03/03/asia/china-plans-solar-power-in-space-intl/index.html> (Journalists at CNN)//Elmer

China Aerospace Science and Technology Corporation plans to launch small solar satellites that can harness energy in space as soon as 2021. Then it will test larger plants capable of advanced functions, such as beaming energy back to Earth via lasers. A receiving station will be built in Xian, around 500 miles northeast of the Chinese city of Chongqing. The city is a regional space hub where a facility to develop the solar power farms has been founded. By 2050, the company plans that a full-sized space-based solar plant would be ready for commercial use, the Chinese media report said.

#### Space-Based Solar Power solves Paris Goals that checks back existential Warming.

Ravisetti 21 Monisha Ravisetti 11-8-2021 "Harvesting energy with space solar panels could power the Earth 24/7" <https://www.cnet.com/news/harvesting-energy-with-space-solar-panels-could-power-the-earth-247/> (Science Writer at CNet)//Elmer

Solar power has been a key part of humanity's clean energy repertoire. We spread masses of sunlight-harvesting panels on solar fields, and many people power their homes by decorating their roofs with the rectangles. But there's a caveat to this wonderful power source. Solar panels can't collect energy at night. To work at peak efficiency, they need as much sunlight as possible. So to maximize these sun catchers' performance, researchers are toying with a plan to send them to a place where the sun never sets: outer space. Theoretically, if a bunch of solar panels were blasted into orbit, they'd soak up the sun even on the foggiest days and the darkest nights, storing an enormous amount of power. If that power were wirelessly beamed down to Earth, our planet could breathe in renewable clean energy, 24/7. That would significantly reduce our carbon footprint. Against the backdrop of a worsening climate crisis, the success of space-based solar power could be more important than ever. The state of the climate is in the spotlight right now as world leaders gather in Glasgow, Scotland, for the COP26 summit, which has been called the "world's best last chance" to get the crisis under control. CNET Science is highlighting a few futuristic strategies intended to aid countries in cutting back on human-generated carbon emissions. Next-generation tech like space-based solar power can't solve our climate problems -- we still need to rapidly decarbonize our energy systems -- but green innovation could help achieve the goals of the Paris Agreement: Limit global warming to well below 2 degrees Celsius (3.6 degrees Fahrenheit) by the end of the century. An unlimited supply of renewable energy from the sun might help us do that.

#### SPSB is the only thing capable of ending Energy Poverty – just one country getting to it would have universal benefits – it’s a real material impact that millions of people face every day and isn’t being focused on by the media enough

Aleksey Shtivelman 12, Boston JD, “Solar Power Satellites: The Right To A Spot In The World's Highest Parking Lot,” https://www.bu.edu/jostl/files/2015/02/Shtivelman\_web.pdf

\*\*\*edited for gendered language

Rather than spending millions on land-based solar power projects, it would be much more profitable if these nations invested in SBSP satellites for two reasons. First, although SBSP satellites are much more expensive at the outset, the cost of initial investment is returned in a period of time comparable to what it would take to recoup the investment cost of a land-based solar farm. 113 Second, SBSP satellites generate about eight to ten times as much power as land-based solar farms."l 4 This means that after one and a half years, SBSP satellites would generate eight to ten times the revenue of a land-based solar farm. As a result, countries that currently rely on coal, nuclear or other types of non-clean, non-renewable energy may look to SBSP for their energy needs, and consequently generate a significant spike in demand for orbital locations on the GSO. This increased demand will raise two issues: (1) whether a GSO orbital slot can be owned, and, (2) if not, whether there is a way to allocate the right to access GSO orbital slots for a period of time. A viable legal framework could address both of these issues in a clear and precise manner. The ITU currently allocates slots for telecommunications satellites, but the increased demand for slots in GSO for SBSP satellites may force countries to reevaluate ITU's authority to regulate SBSP satellites. An unsuccessful attempt to appropriate GSO slots The ITU allocation is one way to solve the problem, but given the physical limitations of the GSO, there is an underlying conflict between the goals of fair and equitable access on one side and the GSO's efficient use on the other.' 5 The conflict arises when developed countries receive priority to access the GSO because they have the demand, infrastructure, and funding to put satellites into orbit, while developing countries without viable satellites also want access the GSO. 116 This a posteriori approach to GSO property rights favors those who are first to apply for frequency and orbital slots and protects those applicants from interference by later users."17 At the same time, developing countries do not favor such a "free-market-approach" to GSO access; on the contrary, they would like a multilateral approach that distributes access to the GSO equitably among all nations. 118 "As feared by the developing States, this a posteriori system [has] provided a few industrialized and rich States with the opportunity of temporarily unlimited use of registered frequencies and orbit positions."' "19 Developing countries feel that they should have equal access to these frequencies and orbital slots. 120 These countries have tried to gain leverage over the GSO resource by advocating for the creation of an administrative agency that would allocate a part of the GSO to each country. In 1976, eight developing countries above the equator claimed sovereign right over the parts of the GSO lying over their territories and called for the administration of the rest of the GSO. 12 ' The Declaration of the First Meeting of Equatorial Countries (the "Bogota Declaration") asserted that these countries had the right to parts of the GSO because the orbit should be considered part of the earth and not outer space. 22 These countries argued that the gravitational force that produces the GSO was defived from their land.' 23 Both developed and developing countries rejected the Bogota Declaration's arguments because its claims were weak: the gravity that produces the orbit (1) is produced by the entire earth, not just these eight nations, and (2) produces all orbits, not just the GSO.124 Another of the arguments in the Bogota Declaration was that there is no legally defined boundary as to where an atmosphere ends and space begins. 125 Furthermore, the Bogota Declaration declared that even the Outer Space Treaty, which provides the basic outline for the peaceful exploration and use of outer space, does not address the issue. 126 While there is no definition that all countries in the world accept regarding the boundary of space, the International Aeronautic Federation recognizes the Karman Line as the edge of the atmosphere and the beginning of space.' 27 The International Aeronautic Federation is a non-governmental organization founded in 1905, for the purpose of encouraging aeronautical and astronautical activities worldwide. 28 It has 100 member countries, including the United States, United Kingdom, Spain, Sweden, South Africa, Mongolia, Korea, Israel, Iran, as well as many others.1 29 For the preceding reasons, the International Aeronautic Federation portrays a widely held view concerning the definition of space. The Karman line is one hundred kilometers above sea level, and that is where the atmosphere becomes so thin that an airplane cannot fly and a spaceship is needed for flight.' 30 The GSO lies more than 35,000 kilometers above sea level, which is approximately 34,900 kilometers higher than the Karman line. Therefore, GSO is well above the demarcation of space that is internationally recognized. For this reason and others, most countries did not accept the Bogota Declaration. Accordingly, the Bogota Declaration was an unsuccessful attempt to appropriate GSO slots. Space law must allow appropriation of space for the good of everyone The Bogota Declaration was ultimately a failure because it violated internationally accepted principles. According to the Outer Space Treaty of 1967, GSO orbital positions and frequencies cannot be appropriated because no country can appropriate or own space. 31 Ninety-one states have signed this treaty, including the United States, the United Kingdom, Ukraine, Japan, Greece, Denmark, Spain, Uganda, Afghanistan, Iraq and many others. 32 The treaty specifies that outer space is the "province of mankind" and that all activity should be done for the benefit of all of humanity. 133 It would then seem that no country could have exclusive ownership over an orbital position in the GSO or any orbit. 134 Even if the Outer Space Treaty of 1967 prohibits countries from owning orbital slots in the GSO, the slots should still be allocated to countries that will use them, on a first-come, first-served basis. SBSP has so much potential to benefit all of [hu]mankind that if even a single country uses a GSO slot to gather power, the advantage of developing the technology of SBSP may outweigh the argument that all nations should have equal access to space.'3 5 Countries like Tonga that have no capability of sending satellites into orbit should not be able to claim GSO slots because this would prohibit developed countries from placing satellites into orbit that can benefit the whole world.136 The Outer Space Treaty of 1967 likely permits the allocation of GSO slots to individual countries on the condition that the slots are used for SBSP satellites that benefit all mankind. Countries with orbiting SBSP satellites could meet such conditional requirements in three ways. First, they could be required to provide power to less developed countries. Second, launching countries can help decrease global warming because SBSP satellites provide clean energy. Third, launching countries can lower the cost of solar power systems as they become cheaper and more affordable with time so that many less developed countries around the world will be able to access solar power from space. By satisfying any of these conditions, deployment of SBSP satellites would qualify under the treaty as "use of outer space ... carried out for the benefit and in the interests of all countries."'137 The universal benefits provided by SBSP satellites would therefore be consistent with the treaty's requirement that the use of outer space "shall be the province of all mankind." 138 Thus, while the Outer Space Treaty of 1967 may prohibit ownership of GSO slots, the temporary allocation of GSO slots for the use of SBSP satellites would be compatible with the goals of the treaty. ." As a result of the need to allow SBSP to have access to the GSO, there will need to be some sort of regulatory structure to GSO slot allocation. If a regulatory organization, such as the ITU, allows licensees to use a particular GSO position and microwave frequency, for a limited period of time, this would appear to satisfy the current international regime under the Outer Space Treaty of 1967. In order to comply with the treaty, countries would not have to surrender their slot or frequency, as they could simply allow other countries to lease the power satellites from them for a period of time. SBSP satellites in GSO would fall within the "province of mankind" requirement of the Outer Space Treaty of 1967 because SBSP can decrease global warming and help less developed countries by providing them with electricity in areas lacking infrastructure. Furthermore, SBSP satellites in GSO would satisfy the "peaceful purposes" requirement of the Outer Space Treaty of 1967 because the satellites are used for commercial power production and cannot be converted into weapons. 139

#### CP solves the Case – they’re indicting things like Exploration and Colonization which have no benefits other than Accumulation. Space-Based Solar Power occupies just one section of Space, doesn’t expand, and the CP has distributive effects that avoids Space as a “new frontier for capitalism” BUT rather uses it as a tool to combat material issues like Warming and Energy Poverty.

## 2

### DA

#### Asteroid mining is starting now. New legal frameworks and massive investments bring it closer than you think-but we need to focus on maintaining progress

Gilbert 21 Alex Gilbert, 4-26-2021, "Mining in Space Is Coming," Milken Institute Review, <https://www.milkenreview.org/articles/mining-in-space-is-coming> //SJJK

Space exploration is back. after decades of disappointment, a combination of better technology, falling costs and a rush of competitive energy from the private sector has put space travel front and center. indeed, many analysts (even some with their feet on the ground) believe that commercial developments in the space industry may be on the cusp of starting the largest resource rush in history: mining on the Moon, Mars and asteroids. While this may sound fantastical, some baby steps toward the goal have already been taken. Last year, NASA awarded contracts to four companies to extract small amounts of lunar regolith by 2024, effectively beginning the [era of commercial space mining](https://payneinstitute.mines.edu/wp-content/uploads/sites/149/2020/09/Payne-Institute-Commentary-The-Era-of-Commercial-Space-Mining-Begins.pdf). Whether this proves to be the dawn of a gigantic adjunct to mining on earth — and more immediately, a key to unlocking cost-effective space travel — will turn on the answers to a host of questions ranging from what resources can be efficiently. As every fan of science fiction knows, the resources of the solar system appear virtually unlimited compared to those on Earth. There are whole other planets, dozens of moons, thousands of massive asteroids and millions of small ones that doubtless contain humungous quantities of materials that are scarce and very valuable (back on Earth). Visionaries including Jeff Bezos [imagine heavy industry moving to space](https://www.fastcompany.com/90347364/jeff-bezos-wants-to-save-earth-by-moving-industry-to-space) and Earth becoming a residential area. However, as entrepreneurs look to harness the riches beyond the atmosphere, access to space resources remains tangled in the realities of economics and governance. Start with the fact that space belongs to no country, complicating traditional methods of resource allocation, property rights and trade. With limited demand for materials in space itself and the need for huge amounts of energy to return materials to Earth, creating a viable industry will turn on major advances in technology, finance and business models. That said, there’s no grass growing under potential pioneers’ feet. Potential economic, scientific and even security benefits underlie an emerging [geopolitical competition](https://nationalinterest.org/feature/geostrategic-importance-outer-space-resources-154746) to pursue space mining. The United States is rapidly emerging as a front-runner, in part due to its ambitious Artemis Program to lead a multinational consortium back to the Moon. But it is also a leader in creating a legal infrastructure for mineral exploitation. The United States has adopted the world’s first spaceresources law, recognizing the property rights of private companies and individuals to materials gathered in space. However, the United States is hardly alone. Luxembourg and the United Arab Emirates (you read those right) are racing to codify space-resources laws of their own, hoping to attract investment to their entrepot nations with business-friendly legal frameworks. China reportedly views space-resource development as a national priority, part of a strategy to challenge U.S. economic and security primacy in space. Meanwhile, Russia, Japan, India and the European Space Agency all harbor space-mining ambitions of their own. Governing these emerging interests is an outdated treaty framework from the Cold War. Sooner rather than later, we’ll need [new agreements](https://issues.org/new-policies-needed-to-advance-space-mining/) to facilitate private investment and ensure international cooperation.

#### Private sector mining overcomes all extinction scenarios.

Pelton 17—Director Emeritus of the Space and Advanced Communications Research Institute at George Washington University, PHD in IR from Georgetown.. Pelton, Joseph N. 2017. The New Gold Rush: The Riches of Space Beckon! Springer. Accessed 8/30/19.

Are We Humans Doomed to Extinction? What will we do when Earth’s resources are used up by humanity? The world is now hugely over populated, with billions and billions crammed into our overcrowded cities. By 2050, we may be 9 billion strong, and by 2100 well over 11 billion people on Planet Earth. Some at the United Nations say we might even be an amazing 12 billion crawling around this small globe. And over 80 % of us will be living in congested cities. These cities will be ever more vulnerable to terrorist attack, natural disaster, and other plights that come with overcrowding and a dearth of jobs that will be fueled by rapid automation and the rise of artifi cial intelligence across the global economy. We are already rapidly running out of water and minerals. Climate change is threatening our very existence. Political leaders and even the Pope have cautioned us against inaction. Perhaps the naysayers are right. All humanity is at tremendous risk. Is there no hope for the future? This book is about hope. We think that there is literally heavenly hope for humanity. But we are not talking here about divine intervention. We are envisioning a new space economy that recognizes that there is more water in the skies that all our oceans. Th ere is a new wealth of natural resources and clean energy in the reaches of outer space—more than most of us could ever dream possible. There are those that say why waste money on outer space when we have severe problems here at home? Going into space is not a waste of money. It is our future. It is our hope for new jobs and resources. The great challenge of our times is to reverse public thinking to see space not as a resource drain but as the doorway to opportunity. The new space frontier can literally open up a “gold rush in the skies.” In brief, we think there is new hope for humanity. We see a new a pathway to the future via new ventures in space. For too long, space programs have been seen as a money pit. In the process, we have overlooked the great abundance available to us in the skies above. It is important to recognize there is already the beginning of a new gold rush in space—a pathway to astral abundance. “New Space” is a term increasingly used to describe radical new commercial space initiatives—many of which have come from Silicon Valley and often with backing from the group of entrepreneurs known popularly as the “space billionaires.” New space is revolutionizing the space industry with lower cost space transportation and space systems that represent significant cost savings and new technological breakthroughs. “New Commercial Space” and the “New Space Economy” represent more than a new way of looking at outer space. These new pathways to the stars could prove vital to human survival. If one does not believe in spending money to probe the mysteries of the universe then perhaps we can try what might be called “calibrated greed” on for size. One only needs to go to a cubesat workshop, or to Silicon Valley or one of many conferences like the “Disrupt Space” event in Bremen, Germany, held in April 2016 to recognize that entrepreneurial New Space initiatives are changing everything [ 1 ]. In fact, the very nature and dimensions of what outer space activities are today have changed forever. It is no longer your grandfather’s concept of outer space that was once dominated by the big national space agencies. The entrepreneurs are taking over. The hopeful statements in this book and the hard economic and technical data that backs them up are more than a minority opinion. It is a topic of growing interest at the World Economic Forum, where business and political heavyweights meet in Davos, Switzerland, to discuss how to stimulate new patterns of global economic growth. It is even the growing view of a group that call themselves “space ethicists.” Here is how Christopher J. Newman, at the University of Sunderland in the United Kingdom has put it: Space ethicists have offered the view that space exploration is not only desirable; it is a duty that we, as a species, must undertake in order to secure the survival of humanity over the longer term. Expanding both the resource base and, eventually, the habitats available for humanity means that any expenditure on space exploration, far from being viewed as frivolous, can legitimately be rationalized as an ethical investment choice. (Newman) On the other hand there are space ethicists and space exobiologists who argue that humans have created ecological ruin on the planet—and now space debris is starting to pollute space. Th ese countervailing thoughts by the “no growth” camp of space ethicists say we have no right to colonize other planets or to mine the Moon and asteroids—or at least no right to do so until we can prove we can sustain life here on Earth for the longer term. However, for most who are planning for the new space economy the opinion of space philosophers doesn’t really fl oat their boat. Legislators, bankers, and aspiring space entrepreneurs are far more interested in the views of the super-rich capitalists called the space billionaires. A number of these billionaires and space executives have already put some very serious money into enterprises intent on creating a new pathway to the stars. No less than five billionaires with established space ventures—Elon Musk, Paul Allen, Jeff Bezos, Sir Richard Branson, and Robert Bigelow—have invested millions if not billions of dollars into commercializing space. They are developing new technologies and establishing space enterprises that can bring the wealth of outer space down to Earth. This is not a pipe dream, but will increasingly be the economic reality of the 2020s. These wealthy space entrepreneurs see major new economic opportunities. To them space represents the last great frontier for enterprising pioneers. Th us they see an ever-expanding space frontier that offers opportunities in low-cost space transportation, satellite solar power satellites to produce clean energy 24h a day, space mining, space manufacturing and production, and eventually space habitats and colonies as a trajectory to a better human future. Some even more visionary thinkers envision the possibility of terraforming Mars, or creating new structures in space to protect our planet from cosmic hazards and even raising Earth’s orbit to escape the rising heat levels of the Sun in millennia to come. Some, of course, will say this is sci-fi hogwash. It can’t be done. We say that this is what people would have said in 1900 about airplanes, rocket ships, cell phones and nuclear devices. The skeptics laughed at Columbus and his plan to sail across the oceans to discover new worlds. When Thomas Jefferson bought the Louisiana Purchase from France or Seward bought Alaska, there were plenty of naysayers that said such investment in the unknown was an extravagant waste of money. A healthy skepticism is useful and can play a role in economic and business success. Before one dismisses the idea of an impending major new space economy and a new gold rush, it might useful to see what has already transpired in space development in just the past five decades. The world’s first geosynchronous communications satellite had a throughput capability of about 500 kb / s. In contrast, today’s state of the art Viasat 2 —a half century later— has an impressive throughput of some 140 Gb/s. Th is means that the relative throughput is nearly 300,000 greater, while its lifetime is some ten times longer (Figs. 1.1 and 1.2 ). Each new generation of communications satellite has had more power, better antenna systems, improved pointing and stabilization, and an extended lifetime. And the capabilities represented by remote sensing satellites , meteorological satellites , and navigation and timing satellites have also expanded their capabilities and performance in an impressive manner. When satellite applications first started, the market was measured in millions of dollars. Today commercial satellite services exceed a quarter of a billion dollars. Vital services such as the Internet, aircraft traffi c control and management, international banking, search and rescue and much, much more depend on application satellites. Th ose that would doubt the importance of satellites to the global economy might wish to view on You Tube the video “If Th ere Were a Day Without Satellites?” [ 2 ]. Let’s check in on what some of those very rich and smart guys think about the new space economy and its potential. (We are sorry to say that so far there are no female space billionaires, but surely this, too, will come someday soon.) Of course this twenty-fi rst century breakthrough that we call the New Space economy will not come just from new space commerce. It will also come from the amazing new technologies here on Earth. Vital new terrestrial technologies will accompany this cosmic journey into tomorrow. Information technology, robotics, artificial intelligence and commercial space travel systems have now set us on a course to allow us humans to harvest the amazing riches in the skies—new natural resources, new energy, and even totally new ways of looking at the purpose of human existence. If we pursue this course steadfastly, it can be the beginning of a New Space renaissance. But if we don’t seek to realize our ultimate destiny in space, Homo sapiens can end up in the dustbin of history—just like literally millions of already failed species. In each and every one of the five mass extinction events that have occurred over the last 1.5 billion years on Earth, some 50–80 % of all species have gone the way of the T. Rex, the woolly mammoth, and the Dodo bird along with extinct ferns, grasses and cacti. On the other hand, the best days of the human race could be just beginning. If we are smart about how we go about discovering and using these riches in the skies and applying the best of our new technologies, it could be the start of a new beginning for humanity. Konstantin Tsiokovsky, the Russian astronautics pioneer, who fi rst conceived of practical designs for spaceships, famously said: “A planet is the cradle of mankind, but one cannot live in a cradle forever.” Well before Tsiokovsky another genius, Leonardo da Vinci, said, quite poetically: “Once you have tasted flight, you will forever walk the earth with your eyes turned skyward, for there you have been, and there you will always long to return.” The founder of the X-Prize and of Planetary Resources, Inc., Dr. Peter Diamandis, has much more brashly said much the same thing in quite diff erent words when he said: “The meek shall inherit the Earth. The rest of us will go to Mars.” The New Space Billionaires Peter Diamandis is not alone in his thinking. From the list of “visionaries” quoted earlier, Elon Musk, the founder of SpaceX; Sir Richard Branson, the founder of Virgin Galactic; and Paul Allen, the co-founder of Microsoft and the man who financed SpaceShipOne, the world’s first successful spaceplane have all said the future will include a vibrant new space economy. Th ey, and others, have said that we can, we should and we soon shall go into space and realize the bounty that it can offer to us. Th e New Space enterprise is today indeed being led by those so-called space billionaires , who have an exciting vision of the future. They and others in the commercial space economy believe that the exploitation of outer space may open up a new golden age of astral abundance. They see outer space as a new frontier that can be a great source of new materials, energy and various forms of new wealth that might even save us from excesses of the past. Th is gold rush in the skies represents a new beginning. We are not talking about expensive new space ventures funded by NASA or other space agencies in Europe, Japan, China or India. No, these eff orts which we and others call New Space are today being forged by imaginative and resourceful commercial entrepreneurs. Th ese twenty-fi rst century visionaries have the fortitude and zeal to look to the abundance above. New breakthroughs in technology and New Space enterprises may be able to create an “astral life raft” for humanity. Just as Columbus and the Vikings had the imaginative drive that led them to discover the riches of a new world, we now have a cadre of space billionaires that are now leading us into this New Space era of tomorrow. These bold leaders, such as Paul Allen and Sir Richard Branson, plus other space entrepreneurs including Jeff Bezos of Amazon and Blue Origin, and Robert Bigelow, Chairman of Budget Suites and Bigelow Aerospace, not only dream of their future in the space industry but also have billions of dollars in assets. These are the bright stars of an entirely new industry that are leading us into the age of New Space commerce. These space billionaires, each in their own way, are proponents of a new age of astral abundance. Each of them is launching new commercial space industries. They are literally transforming our vision of tomorrow. These new types of entrepreneurial aerospace companies—the New Space enterprises—give new hope and new promise of transforming our world as we know it today. The New Space Frontier What happens in space in the next few decades, plus corresponding new information technologies and advanced robotics, will change our world forever. These changes will redefi ne wealth, change our views of work and employment and upend almost everything we think we know about economics, wealth, jobs, and politics. Th ese changes are about truly disruptive technologies of the most fundamental kinds. If you thought the Internet, smart phones, and spandex were disruptive technologies, just hang on. You have not seen anything yet. In short, if you want to understand a transition more fundamental than the changes brought to the twentieth century world by computers, communications and the Internet, then read this book. There are truly riches in the skies. Near-Earth asteroids largely composed of platinum and rare earth metals have an incredible value. Helium-3 isotopes accessible in outer space could provide clean and abundant energy. There is far more water in outer space than is in our oceans. In the pages that follow we will explain the potential for a cosmic shift in our global economy, our ecology, and our commercial and legal systems. These can take place by the end of this century. And if these changes do not take place we will be in trouble. Our conventional petro-chemical energy systems will fail us economically and eventually blanket us with a hydrocarbon haze of smog that will threaten our health and our very survival. Our rare precious metals that we need for modern electronic appliances will skyrocket in price, and the struggle between “haves” and “have nots” will grow increasingly ugly. A lack of affordable and readily available water, natural resources, food, health care and medical supplies, plus systematic threats to urban security and systemic warfare are the alternatives to astral abundance. The choices between astral abundance and a downward spiral in global standards of living are stark. Within the next few decades these problems will be increasingly real. By then the world may almost be begging for new, out of- the-box thinking. International peace and security will be an indispensable prerequisite for exploitation of astral abundance, as will good government for all. No one nation can be rich and secure when everyone else is poor and insecure. In short, global space security and strategic space defense, mediated by global space agreements, are part of this new pathway to the future.

## 3

### FW

#### The standard is maximizing expected well-being, or hedonistic act utilitarianism.

#### 1] Neuroscience- pleasure and pain *are* intrinsic value and disvalue – everything else regresses.

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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.

#### Impact calc –

#### 1] Extinction outweighs –

#### A] Reversibility- it forecloses the alternative because we can’t improve society if we are all dead

#### B] Structural violence- death causes suffering because people can’t get access to resources and basic necessities

#### C] Objectivity- body count is the most objective way to calculate impacts because comparing suffering is unethical

#### D] Uncertainty- if we’re unsure about which interpretation of the world is true, we should preserve the world to keep debating about it

## Case

### 1NC – Presumption

#### T/L – The only impact in the aff is capitalism but CX was clear, they can’t solve all flows of capitalism so vote neg on presumption:

#### 1] None of their ev is reverse causal – industrial agriculture, the defense industrial base, Amazon, Koch Industries are all examples of capitalism – plus capitalism predates space exploration, which proves they don’t control the root cause

#### 2] 1NC Penny and Schultz are critiques of growth mindset writ large – if governments are fundamentally neoliberal, they have the same incentives to appropriate space as private companies – the aff has zero bearing on NASA – means they don’t solve spatial fixes because NASA can appropriate space resources, then sell them to private companies – proven by existing contracts between NASA and New Space

#### 3] No brightline for when spatial fixes on Earth are exhausted – corporations will continue extracting resources from Earth even if it’s less lucrative

#### 4] 1AC Penny is about the militarization of space by programs like Space Force which are federal programs – that’s a massive alt cause

#### 5] **No methodological offense – it’s infinitely regressive and super subjective – only evaluating the direct consequences of the affirmative solves.**

### 1NC – Cap Good

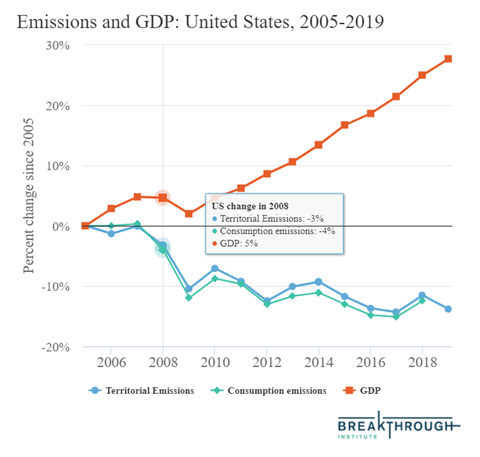
#### Capitalism is sustainable - Tech Innovation drives dematerialization that makes Cap Sustainable AND solves warming and alternatives don’t solve

McAfee 19, Andrew. More from Less: The Surprising Story of How We Learned to Prosper Using Fewer Resources—and What Happens Next. Scribner, 2019. Props to DML for finding. (Cofounder and codirector of the MIT Initiative on the Digital Economy at the MIT Sloan School of Management, former professor at Harvard Business School)//Elmer

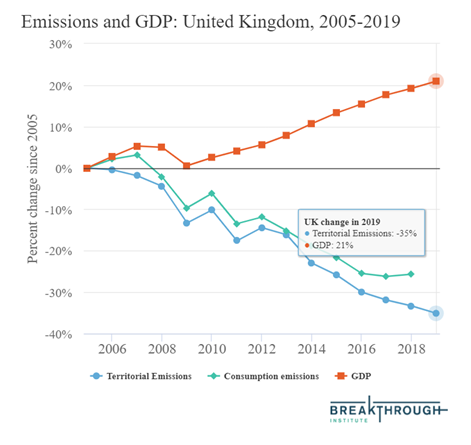
The decreases in resource use, pollution, and other exploitations of the earth cataloged in the preceding chapters are great news. But are they going to last? It could be that we're just living in a pleasant interlude between the Industrial Era and another rapacious period during which we massively increase our footprint on our planet and eventually cause a giant Malthusian crash. It could be, but I don't think so. Instead, I think we're going to take better care of our planet from now on. I'm confident that the Second Machine Age will mark the time in our history when we started to progressively and permanently tread more lightly on the earth, taking less from it and generally caring for it better, even as we humans continue to become more numerous and prosperous. The work of Paul Romer, who shared the 2018 Nobel Prize in economics, is one of the sources of this confidence. Growth Mindset Romer's largest contribution to economics was to show that **it's best not to think of new technologies as something that companies buy and bring in from the outside, but instead as something they create themselves** (the title of his most famous paper, published in 1990, is "Endogenous Technological Change"). These technologies are like designs or recipes; as Romer put it, they’re "the instructions that we follow for combining raw materials." This is close to the definitions of technology presented in chapter 7. Why do companies invent and improve technologies? Simply, to generate profits. They come up with instructions, recipes, and blueprints that will let them grow revenues or shrink costs. As we saw repeatedly in chapter 7, capitalism provides ample incentive for this kind of tech progress. So far, all this seems like a pretty standard argument for how the first two horsemen work together. Romer's brilliance was to highlight the importance of two key attributes of the technological ideas companies come up with as they pursue profits. The first is that they're nonrival, meaning that they can be used by more than one person or company at a time, and that they don't get used up. This is obviously not the case for most resources made out of atoms—I can't also use the pound of steel that you've just incorporated into the engine of a car—but it is the case for ideas and instructions. The Pythagorean theorem, a design for a steam engine, and a recipe for delicious chocolate chip cookies aren't ever going to get "used up" no matter how much they're used. The second important aspect of corporate technologies is that they're partially excludable. This means that companies can kind of prevent others from using them. They do this by keeping the technologies secret (such as the exact recipe for Coca-Cola), filing for patents and other intellectual-property protection, and so on. However, none of these measures is perfect (hence the words partially and kind of). Trade secrets leak. Patents expire, and even before they expire, they must describe the invention they're claiming and so let others study it. Partial excludability is a beautiful thing. It provides strong incentives for companies to create useful, profit-enhancing new technologies that they alone can benefit from for a time, yet it also ensures that the **new techs will eventually "spill over**"—that with time they’ll diffuse and get adopted by more and more companies, even if that's not what their originators want. Romer equated tech progress to the production by companies of nonrivalrous, partially excludable ideas and showed that these ideas cause an economy to grow. What's more, he also demonstrated that this **idea-fueled growth** doesn't have to slow down with time. It's **not constrained by** the size of the **labor** force, the amount of natural **resources**, or other such factors. Instead, economic growth is limited only by the idea-generating capacity of the people within a market. Romer called this capacity "human capital" and said at the end of his 1990 paper, "The most interesting positive implication of the model is that an economy with a larger total stock of human capital will experience faster growth." This notion, which has come to be called "increasing returns to scale," is as powerful as it is counterintuitive. Most formal models of economic growth, as well as the informal mental ones most of us walk around with, feature decreasing returns—growth slows down as the overall economy gets bigger. This makes intuitive sense; it just feels like it would be easier to experience 5 percent growth in a $1 billion economy than a $1 trillion one. But Romer showed that as long as that economy continued to add to its human capital—the overall ability of its people to come up with new technologies and put them to use—it could actually grow faster even as it grew bigger. This is because the stock of useful, nonrivalrous, nonexcludable ideas would keep growing. As Romer convincingly showed, economies run and grow on ideas. The Machinery of Prosperity Romer's ideas should leave us optimistic about the planetary benefits of digital tools—hardware, software, and networks—for three main reasons. First, countless examples show us how good these tools are at fulfilling the central role of technology, which is to provide "instructions that we follow for combining raw materials." Since raw materials cost money, profit-maximizing companies are particularly keen to find ways to use fewer of them. So they use digital tools to come up with beer cans that use less aluminum, car engines that use less steel and less gas, mapping software that removes the need for paper atlases, and so on and so on. None of this is done solely for the good of the earth—it's done for the pursuit of profit that's at the heart of capitalism—yet it benefits the planet by, as we've seen, causing us to take less from it. Digital tools are technologies for creating technologies, the most prolific and versatile ones we've ever come up with. They're machines for coming up with ideas. Lots of them. The same piece of computer-aided design software can be used to create a thinner aluminum can or a lighter and more fuel-efficient engine. A drone can be used to scan farmland to see if more irrigation is needed, or to substitute for a helicopter when filming a movie. A smartphone can be used to read the news, listen to music, and pay for things, all without consuming a single extra molecule. In the Second Machine Age, the global stock of digital tools is increasing much more quickly than ever before. It's being used in countless ways by profit-hungry companies to combine raw materials in ways that use fewer of them. In advanced economies such as America's, the cumulative impact of this combination of capitalism and tech progress is clear: **absolute dematerialization** of the economy and society, **and thus a smaller footprint on our planet**. The second way Romer's ideas about technology and growth are showing up at present is via decreased excludability. Pervasive digital tools are making it much easier for good designs and recipes to spread around the world. While this is often not what a company wants—it wants to exclude others from its great cost-saving idea— excludability is not as easy as it used to be. This isn't because of weaker patent protection, but instead because of stronger digital tools. Once one company shows what's possible, others use hardware, software, and networks to catch up to the leader. Even if they can't copy exactly because of intellectual-property restrictions, they can use digital tools to explore other means to the same end. So, many farmers learn to get higher yields while using less water and fertilizer, even though they combine these raw materials in different ways. Steve Jobs would certainly have preferred for Apple to be the only provider of smartphones after it developed the iPhone, but he couldn't maintain the monopoly no matter how many patents and lawsuits he filed. Other companies found ways to combine processors, memory, sensors, a touch screen, and software into phones that satisfied billions of customers around the world. The operating system that powers most non-Apple smartphones is Android, which is both free to use and freely modifiable. Google's parent company, Alphabet, developed and released Android without even trying to make it excludable; the explicit goal was to make it as widely imitable as possible. This is an example of the broad trend across digital industries of giving away valuable technologies for free. The Linux operating system, of which Android is a descendant, is probably the best-known example of free and open-source software, but there are many others. The online software repository GitHub maintains that it's "the largest open source community in the world" and hosts millions of projects. The Arduino community does something similar for electronic hardware, and the Instructables website contains detailed instructions for making equipment ranging from air-particle counters to machine tools, all with no intellectual-property protection. Contributors to efforts such as these have a range of motivations (Alphabet's goals with Android were far from purely altruistic—among other things, the parent of Google wanted to achieve a quantum leap in mobile phone users around the world, who would avail themselves of Google Search and services such as YouTube), but they're all part of the trend of technology without excludability, which is great news for growth. As we saw in chapter 10, smartphone use and access to the Internet are increasing quickly across the planet. This means that people no longer need to be near a decent library or school to gain knowledge and improve their abilities. Globally, people are taking advantage of the skill-building opportunities of new technologies. This is the third reason that the spread of digital tools should make us optimistic about future growth: these tools are helping human capital grow quickly. The free Duolingo app, for example, is now the world's most popular way to learn a second language. Of the nearly 15 billion Wikipedia page views during July of 2018, half were in languages other than English. Google's chief economist, Hal Varian, points out that hundreds of millions of how-to videos are viewed every day on YouTube, saying, "We never had a technology before that could educate such a broad group of people anytime on an as-needed basis for free." Romer's work leaves me hopeful because it shows that it's our ability to build human capital, rather than chop down forests, dig mines, or burn fossil fuels that drives growth and prosperity. His model of how economies grow also reinforces how well capitalism and tech progress work together, which is a central point of this book. The surest way to boost profits is to cut costs, and modern technologies, especially digital ones, offer unlimited ways to combine and recombine materials—to swap, slim, optimize, and evaporate—in cost-reducing ways. **There's no reason to expect that the two horsemen of capitalism and tech progress will stop** riding together anytime soon. Quite the contrary. Romer's insights reveal that they're likely to gallop faster and farther as economies grow. Our Brighter, Lighter Future The world still has billions of desperately poor people, but they won't remain that way. All available evidence strongly suggests that most will become much wealthier in the years and decades ahead. As they earn more and consume more, what will be the impact on the planet? The history and economics of the Industrial Era lead to pessimism on this important question. Resource use increased in lockstep with economic growth throughout the two centuries between James Watt's demonstration of his steam engine and the first Earth Day. Malthus and Jevons seemed to be right, and it was just a question of when, not if, we'd run up against the hard planetary limits to growth. But in America and other rich countries something strange, unexpected, and wonderful happened: we started getting more from less. We decoupled population and economic growth from resource consumption, pollution, and other environmental harms. Malthus's and Jevons's ideas gave way to Romer's, and the world will never be the same. This means that instead of worrying about the world's poor becoming richer, we should instead be helping them upgrade economically as much and as quickly as possible. Not only is it the morally correct thing to do, it's also the smart move for our planet. As today’s poor countries get richer, their institutions will improve and most will eventually go through what Ricardo Hausmann calls "the capitalist makeover of production." This makeover doesn't enslave people, nor does it befoul the earth. As today’s poor get richer, they'll consume more, but they'll also consume much differently from earlier generations. They won't read physical newspapers and magazines. They'll get a great deal of their power from renewables and (one hopes) nuclear because these energy sources will be the cheapest. They’ll live in cities, as we saw in chapter 12; in fact, they already are. They'll be less likely to own cars because a variety of transportation options will be only a few taps away. Most important, they'll come up with ideas that keep the growth going, and that benefit both humanity and the planet we live on. Predicting exactly how technological progress will unfold is much like predicting the weather: feasible in the short term, but impossible over a longer time. Great uncertainty and complexity prevent precise forecasts about, for example, the computing devices we’ll be using thirty years from now or the dominant types of artificial intelligence in 2050 and beyond. But even though we can't predict the weather long term, we can accurately forecast the climate. We know how much warmer and sunnier it will be on average in August than in January, for example, and we know that global average temperatures will rise as we keep adding greenhouse gases to the atmosphere. Similarly, we can predict the "climate" of future technological progress by starting from the knowledge that it will be heavily applied in the areas where it can affect capitalism the most. As we've seen over and over, tech progress supplies opportunities to trim costs (and improve performance) via dematerialization, and capitalism provides the motive to do so. As a result, the Second Enlightenment will continue as we move deeper into the twenty-first century. I'm confident that it will accelerate as digital technologies continue to improve and multiply and global competition continues to increase. We’ll see some of the most striking examples of slim, swap, evaporate, and optimize in exactly the places where the opportunities are biggest. Here are a few broad predictions, spanning humanity's biggest industries. Manufacturing. Complex parts will be made not by the techniques developed during the Industrial Era, but instead by three- dimensional printing. This is already the case for some rocket engines and other extremely expensive items. **As 3-D printing** improves and becomes cheaper, it will spread to automobile engine blocks, manifolds and other complicated arrangements of pipes, airplane struts and wings, and countless other parts. Because 3-D printing **generates virtually no waste** and doesn't require massive molds, it accelerates dematerialization.

#### Seriously, we’ll do the math and insert charts

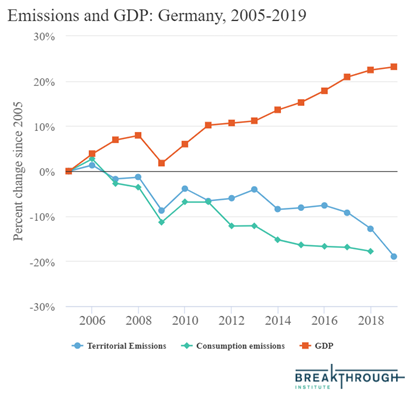
Hausfather 21 – a climate scientist and energy systems analyst whose research focuses on observational temperature records, climate models, and mitigation technologies. He spent 10 years working as a data scientist and entrepreneur in the cleantech sector, where he was the lead data scientist at Essess, the chief scientist at C3.ai, and the cofounder and chief scientist of Efficiency 2.0. He also worked as a research scientist with Berkeley Earth, was the senior climate analyst at Project Drawdown, and the US analyst for Carbon Brief. He has masters degrees in environmental science from Yale University and Vrije Universiteit Amsterdam and a PhD in climate science from the University of California, Berkeley. (Zeke, "Absolute Decoupling of Economic Growth and Emissions in 32 Countries," Breakthrough Institute, 4-6-2021, https://thebreakthrough.org/issues/energy/absolute-decoupling-of-economic-growth-and-emissions-in-32-countries, Accessed 4-11-2021, LASA-SC)



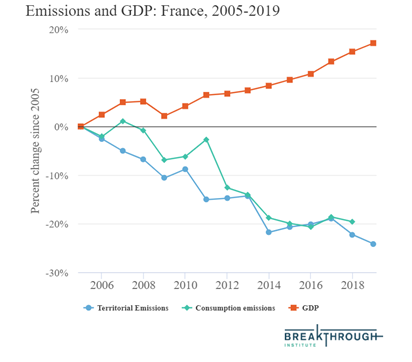
Emissions reductions in the US have been a result of a wide variety of factors; this includes the switch from coal generation to lower-carbon natural gas, the rapid expansion of wind and solar generation, reduced industrial energy consumption, reduced electricity use in buildings, and reductions in transportation emissions — particularly as a result of increased vehicle fuel economy and reduced miles driven per-capita. Since 2005, US territorial emissions have fallen around 15%, with consumption emissions falling around 18% (much larger reductions were seen in 2020, and some of this is expected to persist). At the same time, GDP has increased by around 29%.



In the UK, territorial emissions have fallen by nearly 40% and consumption emissions have fallen by around 30%, while GDP has increased by 22%. Similar to the US, there are a wide variety of drivers of UK emissions reductions, though renewable energy generation, reductions in electricity use, and reductions in industrial and residential energy use are the largest contributors.



In Germany, territorial emissions have fallen around 15%, and consumption emissions have fallen by around 20%, while GDP has increased by 24%



In France, territorial emissions have fallen by around 25%, and consumption emissions have fallen by a similar amount, while GDP has increased by 16%. It is a bit notable that France has seen larger emission reductions — as a percentage of total emissions — than Germany over this period, likely due in part to Germany’s choice to prioritize shutting down nuclear power plants over coal ones.

#### Physical limits aren’t absolute---laundry list of warrants.

Bailey 18 [Ronald; February 16; B.A. in Economics from the University of Virginia, member of the Society of Environmental Journalists and the American Society for Bioethics and Humanities, citing a compilation of interdisciplinary research; Reason, “Is Degrowth the Only Way to Save the World?” https://reason.com/2018/02/16/is-degrowth-the-only-way-to-save-the-wor; RP]

Unless us folks in rich countries drastically reduce our material living standards and distribute most of what we have to people living in poor countries, the world will come to an end. Or at least that's the stark conclusion of a study published earlier this month in the journal Nature Sustainability. The researchers who wrote it, led by the Leeds University ecological economist Dan O'Neill, think the way to prevent the apocalypse is "degrowth." Vice, pestilence, war, and "gigantic inevitable famine" were the planetary boundaries set on human population by the 18th-century economist Robert Thomas Malthus. The new study gussies up old-fashioned Malthusianism by devising a set of seven biophysical indicators of national environmental pressure, which they then link to 11 indicators of social outcomes. The aim of the exercise is to concoct a "safe and just space" for humanity. Using data from 2011, the researchers calculate that the annual per capita boundaries for the world's 7 billion people consist of the emission of 1.6 tons of carbon dioxide per year and the annual consumption of 0.9 kilograms of phosphorus, 8.9 kilograms of nitrogen, 574 cubic meters of water, 2.6 tons of biomass (crops and wood), plus the ecological services of 1.7 hectares of land and 7.2 tons of material per person. On the social side, meanwhile, the researchers say that life satisfaction in each country should exceed 6.5 on the 10-point Cantril scale, that healthy life expectancy should average at least 65 years, and that nutrition should be over 2,700 calories per day. At least 95 percent of each country's citizens must have access to good sanitation, earn more than $1.90 per day, and pass through secondary school. Ninety percent of citizens must have friends and family they can depend on. The threshold for democratic quality must exceed 0.8 on an index scale stretching from -1 to +1, while the threshold for equality is set at no higher than 70 on a Gini Index where 0 represents perfect equality and 100 implies perfect inequality. They set the threshold for percent of labor force employed at 94 percent. So how does the U.S. do with regard to their biophysical boundaries and social outcomes measures? We Americans transgress all seven of the biophysical boundaries. Carbon dioxide emissions stand at 21.2 tons per person; we each use an average of 7 kilograms of phosphorus, 59.1 kilograms of nitrogen, 611 cubic meters of water, and 3.7 tons of biomass; we rely on the ecological services of 6.8 hectares of land and 27.2 tons of material. Although the researchers urge us to move "beyond the pursuit of GDP growth to embrace new measures of progress," it is worth noting that U.S. GDP is $59,609 per capita. On the other hand, those transgressions have provided a pretty good life for Americans. For example, life satisfaction is 7.1; healthy life expectancy is 69.7 years; and democratic quality stands at 0.8 points. The only two social indicators we just missed on were employment (91 percent) and secondary education (94.7 percent). On the other hand, our hemisphere is home to one paragon of sustainability—Haiti. Haitians breach none of the researchers' biophysical boundaries. But the Caribbean country performs abysmally on all 11 social indicators. Life satisfaction scores at 4.8; healthy life expectancy is 52.3 years; and Haitians average 2,105 calories per day. The country tallies -0.9 on the democratic quality index. Haiti's GDP is $719 per capita. Other near-sustainability champions include Malawi, Nepal, Myanmar, and Nicaragua. All of them score dismally on the social indicators, and their GDPs per capita are $322, $799, $1,375, and $2,208, respectively. The country that currently comes closest to the researchers' ideal of remaining within its biophysical boundaries while sufficient social indicators is…Vietnam. For the record, Vietnam's per capita GDP is $2,306. "Countries with higher levels of life satisfaction and healthy life expectancy also tend to transgress more biophysical boundaries," the researchers note. A better way to put this relationship is that more wealth and technology tend to make people happier, healthier, and freer. O'Neill and his unhappy team fail drastically to understand how human ingenuity unleashed in markets is already well on the way toward making their supposed planetary boundaries irrelevant. Take carbon dioxide emissions: Supporters of renewable energy technologies say that their costs are already or will soon be lower than those of fossil fuels. Boosters of advanced nuclear reactors similarly argue that they can supply all of the carbon-free energy the world will need. There's a good chance that fleets of battery-powered self-driving vehicles will largely replace private cars and mass transit later in this century. Are we about to run out of phosphorous to fertilize our crops? Peak phosphorus is not at hand. The U.S. Geological Survey (USGS) reports that at current rates of mining, the world's known reserves will last 266 years. The estimated total resources of phosphate rock would last over 1,140 years. "There are no imminent shortages of phosphate rock," notes the USGS. With respect to the deleterious effects that using phosphorus to fertilize crops might have outside of farm fields, researchers are working on ways to endow crops with traits that enable them to use less while maintaining yields. O'Neill and his colleagues are also concerned that farmers are using too much nitrogen fertilizer, which runs off fields into the natural environment and contributes to deoxygenated dead zones in the oceans, among other ill effects. This is a problem, but one that plant breeders are already working to solve. For example, researchers at Arcadia Biosciences have used biotechnology to create nitrogen-efficient varieties of staples like rice and wheat that enable farmers to increase yields while significantly reducing fertilizer use. Meanwhile, other researchers are moving on projects to engineer the nitrogen fixation trait from legumes into cereal crops. In other words, the crops would make their own fertilizer from air. Water? Most water is devoted to the irrigation of crops; the ongoing development of drought-resistant and saline-tolerant crops will help with that. Hectares per capita? Humanity has probably already reached peak farmland, and nearly 400 million hectares will be restored to nature by 2060—an area almost double the size of the United States east of the Mississippi River. In fact, it is entirely possible that most animal farming will be replaced by resource-sparing lab-grown steaks, chops, and milk. Such developments in food production undermine the researchers' worries about overconsumption of biomass. And humanity's material footprint is likely to get smaller too as trends toward further dematerialization take hold. The price system is a superb mechanism for encouraging innovators to find ways to wring ever more value out less and less stuff. Rockefeller University researcher Jesse Ausubel has shown that this process of absolute dematerialization has already taken off for many commodities. After cranking their way through their models of doom, O'Neill and his colleagues lugubriously conclude: "If all people are to lead a good life within planetary boundaries, then the level of resource use associated with meeting basic needs must be dramatically reduced." They are right, but they are entirely backward with regard to how to achieve those goals. Economic growth provides the wealth and technologies needed to lift people from poverty while simultaneously lightening humanity's footprint on the natural world. Rather than degrowth, the planet—and especially its poor people—need more and faster economic growth.

#### Economic data restricts biases, promotes critical thinking, and prevents flawed decision-making errors---rejecting economists plagues public discourse with innumeracy that results in worse outcomes.

Ip 17, \*Greg Ip is a Canadian-American journalist, currently the chief economics commentator for The Wall Street Journal. A native of Canada, Ip received a bachelor's degree in economics and journalism from Carleton University in Ottawa, Ontario; (August 25th, 2017, “In Defense of the Dismal Science”, https://www.wsj.com/articles/in-defense-of-the-dismal-science-1503679118) Recut Jet

But such misjudgments don’t justify the charges leveled at economists. Take, for example, their inability to predict financial meltdowns. Crises almost by definition are unpredictable. In a recent essay, Ricardo Reis, an economist at the London School of Economics, argues that failing to foretell a financial crash is no more an indictment of economics than failing to predict when a patient will die is an indictment of medicine. Economists didn’t predict the financial crisis, Prof. Reis notes, but they did help to arrest it by applying theory and experience: “The economy did not die, and a Great Depression was avoided, in no small part due to the advances of economics over many decades.” Another caricature of economists is that they try to emulate physicists, fetishizing elegant, abstract mathematical models disconnected from economic reality. Paul Romer, the chief economist at the World Bank, derisively calls this approach “mathiness.” The critique is certainly fair in some corners of academia, but it is increasingly untrue of the profession as a whole. In 1963, roughly half the papers published in the top three American economics journals were theoretical, according to a tally by Daniel Hamermesh, now at Royal Holloway, University of London. By 2011, that figure had shrunk to 28%; the remainder were empirical papers based on public data, on data gathered by the authors or on experiments. Economic debates these days are won not by the best theory but by the best data: Statistics are more important than calculus. Economists are far more obsessed with measurement than with math. When public discourse is plagued by innumeracy, this capacity to count is no small thing. Economists are also instinctively skeptical of simple explanations. They are trained to look for equilibrium, which is another way of saying, “When you change one thing, how do other things respond? Where do things settle once all interactions have occurred?” Advocates for a higher minimum wage extol the benefits to workers. Economists ask: Will it change employers’ demand for workers who earn the minimum wage? Or what they pay workers who earn just above the minimum? Or the prices they charge, or how much market share they lose to companies that don’t face the higher minimum or how much they invest in automation? Does it reduce turnover and thus make workers more productive? Advocates of tariffs on imported steel focus on the benefit to domestic steelmakers and their workers. But economists ask: What happens to steel-consuming companies that now face higher prices, as well as to their workers and customers? Does penalizing imports boost the dollar and hurt U.S. exports? The more data economists collect, the better they can map such complex interactions. Seemingly simple questions seldom have simple answers. A higher minimum wage helps workers in some circumstances but hurts them in others. Tariffs help some workers but hurt many others. Global warming will do some economic harm, but not enough to justify banning fossil fuels. Sometimes, this attachment to numbers conveys a false precision. Critics say that the Congressional Budget Office overestimated how many people would get insurance under Obamacare and must therefore be overestimating how many will lose it if the law were to be replaced. But the CBO always warned that its estimates were highly uncertain; what no economists doubted, including those working in Mr. Trump’s administration, is that the number would be large. Economists could confidently predict that price controls would lead to shortages in Venezuela, though not how severe they would be. Non-economists see all this as hopeless equivocation, but it is actually the way that evidence drives science. Economists still have their ideological leanings, but data has helped to restrict these biases. Surveys of top academic economists by the University of Chicago show considerable agreement, even among liberals and conservatives. For example, the scholars almost all agree that fiscal stimulus reduced unemployment after the last recession and that trade with China benefits Americans by providing them with cheap goods. A study by Gordon Dahl and Roger Gordon of the University of California, San Diego, found that disagreement among economists was greatest where the empirical research was most sparse, as with the issue of whether natural-gas fracking helps U.S. exports. Though economics remains an imperfect science, it has come a long way in 200 years. Its greatest challenge today isn’t the quality of the analysis it supplies, but whether there is still sufficient demand for it.

#### Perceived status threats trigger psychological predispositions that favor authoritarianism – leads to extremism and far right backlash

Stenner and Stern 21 [Karen Stenner and Jessica Stern, 2/11/21, Foreign Policy, "how to live with authoritarians," https://foreignpolicy.com/2021/02/11/capitol-insurrection-trump-authoritarianism-psychology-innate-fear-envy-change-diversity-populism/, mm] Recut Jet

Even after the Jan. 6 insurrection at the U.S. Capitol, 60 percent of Republican and Republican-leaning voters still approved of Donald Trump's performance as president. Though this level of popular support baffles many Americans, it follows in the tails of an approval rating that while generally hovering around a modest 40 percent remained remarkably steady throughout Trump's blunderous presidency and near-constant assault on democratic norms and institutions. Knee-jerk Beltway attempts to explain away this loyal adherence tend to revert to suggestions that Trump supporters are uneducated or impoverished or both mostly angry at being 'left behind' by the new economy. Now, after a mob of Trump supporters quite literally laid siege to U.S. democracy, it's clear that there are more significant and enduring factors at play. Growing evidence suggests that Trumpism and right-wing populist movements like it must prompt a serious reckoning with vulnerabilities not just within the U.S. political system but within liberal democracy more generally. It may take years to arrive at a complete understanding of Trump's surprising mass appeal, but prior research and preliminary studies already suggest a more nuanced view of how authoritarians and malignant nationalists rise. Rather than tangible economic grievance, decades of cross-national empirical research show that feelings and perceptions of sociocultural threat are the principal drivers of surging authoritarian sentiment among the electorate and the demagoguery that rises up to service it. In a modern, multicultural society, certain citizens simply become overwhelmed by growing complexity and rapid change. These individuals fear a loss of their social order, status, and familiar way of life. Whether rational or not, this trepidation provokes intolerance of threats to the collective order, in which they are unusually invested. Trump's support, then, is derived in large part from those who believe he understands and speaks to these kinds of fears. This finding is not meant to excuse Trump, the overt racism of many of his supporters, nor the very real harm they have caused. It is simply derived from decades of research. About a third of the population in Western countries is predisposed to authoritarianism, which is about 50 percent heritable. Authoritarians have an inherent preference for oneness and sameness; they favor obedience and conformity and value strong leaders and social homogeneity over freedom and diversity. That diversity can take any form: whether based on racial or ethnic lines or moral and political difference. Authoritarianism is also associated with some cognitive limitations. Comparative data suggests that the United States may be somewhat overstocked with authoritarians, though they may simply be more easily identifiable in the country's high-arousal political environment. This predisposition to favor oneness and sameness exists on a spectrum, from very low to very high authoritarianism. Importantly, the predisposition which is stable and enduring but normally latent is activated and expressed when triggered by perceived political or social disorder. Once authoritarianism is understood in relation to suppressing difference especially in the face of threats to oneness and sameness a whole array of seemingly disparate Trumpian stances assume a more universal character: Whether in Washington or Warsaw, Western liberal democracy's ongoing struggle with populism is united by fear. People with innate authoritarian tendencies can be found on both the right and left of the political spectrum, although they are somewhat less common on the left. This leads us to a critical point: Authoritarianism is not the same as conservatism, although they are modestly correlated. Authoritarians' fundamental aversion to diversity complexity and variety is distinct from traditional conservatives' aversion to change which is more about novelty and uncertainty. When the status quo is a modern liberal democracy, traditional conservatives by nature ought to defend any established regime of institutions and laws designed to protect individual rights. Authoritarians, by contrast, can welcome vast social change and blithely overthrow established authorities and institutions if some charismatic strongman is promising them greater oneness and sameness on the other side of their revolution. This distinction may seem counterintuitive given the modern U.S. political system where erstwhile conservatism has largely become synonymous with Trumpism. But it also means that, under the right conditions, conservatives can be a liberal democracy's strongest bulwark against the dangers posed by authoritarian social movements. Still, the rapid demographic transformation of the United States likely provokes both authoritarians opposed to diversity and traditional conservatives averse to change. More nonwhite than white babies have been born in the country since 2013, and the United States will be majority nonwhite by 2043. In concert with the declining life expectancy of white American men, this trend away from a white majority has helped give rise to 'white genocide' and 'Great Replacement' conspiracy theories among white supremacists. Multiculturalism, changing gender norms, and rapid globalization can also provoke both groups some become overtly racist and anti-immigrant or enraged at the acceptance of LGBTQ rights and behaviors they view as morally deviant. Since classic authoritarian defensive stances are invoked to defend a whole regime of oneness and sameness, perceived threats in one domain can provoke defenses in other or all domains. For example, the strongest predictor of a Brexit 'leave' vote ostensibly rooted in racial and ethnic intolerance was support for the death penalty and for the public whipping of sex criminals. In a recent study[ by the Vanderbilt political scientist Larry Bartels, over half of Republicans agreed 'the traditional American way of life is disappearing so fast that we may have to use force to save it. 'More than 40 percent concurred that 'a time will come when patriotic Americans have to take the law into their own hands. 'But it's not just Republicans: Significant proportions of both Democrats and Republicans appear willing to endorse violence or violate democratic procedure to defend their values, especially where the president is concerned. A 2019 survey by political scientists at Louisiana State University and the University of Maryland found around18 percent of Democrats and 13 percent of Republicans thought violence would be justified if the opposing party won the 2020 election. In 2014, when Barack Obama was president and Republicans controlled Congress, 30 percent of Democrats supported the president closing Congress and governing without it 'when the country is facing very difficult times.' Still, Bartels's study reveals that the strongest predictor of anti-democratic attitudes among Republicans was not partisanship or political expediency; it was ethnic and racial antagonism. This vitriol was often explained as being rooted in concerns about the political power of immigrants, African Americans, and Latinos, as well as these groups' claims on government resources. An alternative explanation is that this grievance is partly a rationalization on the part of many white Americans and that their expressed racial antagonism is a product of and proxy for underlying authoritarian inclinations. All people have an innate bias toward those like themselves; studies confirm that humans are wired to be tribal. For authoritarians, this bias is greatly magnified. And when put under pressure or given leaders' approval, people may nurture and act on their biases against the 'other.' Prejudice evokes emotions like disgust, fear, pity, and envy but of all these, envy proves the most dangerous. An uptick in envy helps explain why violent hate crimes in the United States are on the rise. The social psychologist Michael Hogg of Claremont Graduate University has argued that dramatic social disruption can lead to highly aversive identity confusion, causing people to demarcate and identify with in-groups as opposed to people different from themselves. In these situations, he says, people may be drawn to extremist groups with exclusionary ideologies and 'strong, directive leadership.' Strongman authoritarians fit the bill. Some Trump supporters feel humiliated by rapid social change. Diana Mutz, a political scientist at the University of Pennsylvania, found that the most important driver of electoral support for Trump in 2016 was a perceived status threat among high-status groups, which she delineates as white people, Christians, and men. Specific anxieties included declining dominance as a percentage of the overall U.S. population, African Americans' perceived rising status, and insecurity about U.S. global economic power which collectively left them feeling 'under siege.' A recent poll by the Pew Research Center shows that voters' attitudes about gender and race are even more divided today than they were four years ago. All of this paints a grisly picture. But are there any relevant policy lessons for the Biden administration? Joe Biden's electoral victory rested in part on his ability to embrace change and diversity while also representing more traditional values. Now in office, he will need to walk a very fine line to avoid triggering destructive fears among those in the electorate predisposed to authoritarianism .In terms of policy, the Biden administration's emphasis on making permanent the Deferred Action for Childhood Arrivals (DACA) program seems a promising start, since it has overwhelming public support probably because undocumented immigrants who arrived as children and never knew another home feel more like 'us' than 'them.' It might also be very fruitful for the administration to promote, early on, an emotionally compelling narrative about the critical role played by (loyal, self-sacrificing) immigrant health care workers in saving American lives during the pandemic. But most importantly, those who are predisposed to favor freedom and diversity over authority and conformity must recognize that the authoritarian preference for oneness and sameness is largely innate and unlikely to change. A polyglot, multiethnic populace of mixed morals and lifestyles will almost inevitably prompt flare-ups of both racial antagonism and political or moral intolerance, activating a latent longing for obedience and conformity even autocratic rule that will continue to threaten democracies periodically. The new U.S. administration should promote equity and justice while avoiding a loud and provocative display of stances and messaging that unnecessarily aggravates authoritarians. The progressive policy agenda shouldn't be amended; it should simply be promoted more subtly. Given the ongoing threats of right-wing extremist violence, this may seem unreasonable, if not wholly untenable. But it is achievable if the Biden administration recognizes that even creating the mere feeling or appearance of oneness and sameness can be reassuring to authoritarians. Critically, authoritarian predispositions are not a problem that can just be educated away: In fact, liberal democracy's loud and showy celebration of freedom and diversity drives authoritarians not to the limits of their tolerance but to their intolerant extremes. For this reason, a strong rhetorical focus on a unified Americanness can play a vital role in reassuring and deactivating the innately intolerant.

#### The aff causes transition wars--- People use low-cost fuels instead of renewables.

Monbiot 11 [George Monbiot 5-2-11. Fellowship and Professorships, Oxford. "Let's face it: none of our environmental fixes break the planet-wrecking project," Guardian. https://www.theguardian.com/commentisfree/2011/may/02/environmental-fixes-all-greens-lost]

The problem we face is not that we have too little fossil fuel but too much. As oil declines, economies will switch to tar sands, shale gas and coal; as accessible coal declines they’ll switch to ultra-deep reserves (using underground gasification to exploit them) and methane clathrates. The same probably applies to almost all minerals: we will find them, but exploiting them will mean trashing an ever greater proportion of the world’s surface. We have enough non-renewable resources of all kinds to complete our wreckage of renewable resources: forests, soil, fish, fresh water, benign weather. Collapse will come one day, but not before we have pulled everything else down with us.¶ And even if there were an immediate economic cataclysm, it’s not clear that the result would be a decline in our capacity for destruction. In east Africa, for example, I’ve seen how, when supplies of paraffin or kerosene are disrupted, people don’t give up cooking; they cut down more trees. History shows us that wherever large-scale collapse has occurred, psychopaths take over. This is hardly conducive to the rational use of natural assets.

#### Yes Transition Wars and they cause Extinction

Nyquist 05 J.R. Nyquist 2-4-2005 “The Political Consequences of a Financial Crash” [www.financialsense.com/stormw...2005/0204.html](http://www.financialsense.com/stormw...2005/0204.html) (renowned expert in geopolitics and international relations)//Elmer

Should the United States experience a severe economic contraction during the second term of President Bush, the American people will likely support politicians who advocate further restrictions and controls on our market economy – guaranteeing its strangulation and the steady pauperization of the country. In Congress today, Sen. Edward Kennedy supports nearly all the economic dogmas listed above. It is easy to see, therefore, that the coming economic contraction, due in part to a policy of massive credit expansion, will have serious political consequences for the Republican Party (to the benefit of the Democrats). Furthermore, an economic contraction will encourage the formation of **anti-capitalist** majorities and a turning away from the free market system. The danger here is not merely economic. The political left openly favors the collapse of America’s strategic position abroad. The withdrawal of the **U**nited **S**tates from the Middle East, the Far East and Europe would **catastrophically impact an international system that presently allows 6 billion** people to live on the earth’s surface in relative peace. Should anti-capitalist dogmas overwhelm the global market and trading system that evolved under American leadership, the planet’s economy would contract and untold **millions would die of starvation**. Nationalistic totalitarianism, fueled by a politics of blame, would once again bring war to Asia and Europe. But this time the war would be **waged with mass destruction weapons** and the United States would be blamed because it is the center of global capitalism. Furthermore, if the anti-capitalist party gains power in Washington, we can expect to see policies of appeasement and unilateral disarmament enacted. American appeasement and disarmament, in this context, would be an admission of guilt before the court of world opinion. Russia and China, above all, would exploit this admission to justify aggressive wars, invasions and mass destruction attacks. A future financial crash, therefore, must be prevented at all costs.

#### Cap solves poverty--Collapse is not inevitable and political reform is in the right direction – the alt cedes influence of left.

Teixeira and Judis 17—senior fellow at both The Century Foundation and American Progress AND editor-at-large at Talking Points Memo, former senior writer at The National Journal and a former senior editor at The New Republic (Ruy and John, “Why The Left Will (Eventually) Triumph: An Interview With Ruy Teixeira,” <http://talkingpointsmemo.com/cafe/why-left-will-eventually-win-ruy-teixeira>, dml) Recut Jet

But if you look at other parts of the left, they are actually doing relatively well. If you look at the Netherlands election, the green left did very well, and if you add up the votes of the Socialist Party (a left-socialist party), the greens, Democrats 66 (a left social-liberal party) and the social democrats, the left **hasn’t been totally decimated**. What has really been decimated is the Party of Labor, as the social democrats in the Netherlands are called. We are seeing the same thing in France where the Socialist Party (the French social democrats) candidate did terribly, but [independent socialist Jean-Luc] Melenchon did quite well. The left **still has strength**, but it is **divided up among different political tendencies**. It is going to have to **reorganize itself around an economic program** that is going to deliver what people want, which is **better growth** and **better distribution**. Until that happens, the left will be **in a quagmire**. Judis: I want to look more closely at your argument that the left does better in good times and the right in bad times. Bill Clinton got elected in the wake of a recession in 1992, Barack Obama might not have won the presidency in 2008 if the financial crash hadn’t happened that September. The Populists came out of the farm crisis in 1880s and early 1890s; the New Deal out of the Great Depression. I am not saying that bad times is better for the left, but only that there isn’t a necessary connection in either case and that you are making too facile an assumption about which times promote which politics. Teixeira: Bad times do propel people into motion and produce protest and reaction, but looked at from when you can accomplish the goals of the left of **making society better** and **implementing important reforms**, I think it is **typically easier** when the economy is **expanding fairly rapidly** and **living standards are going up** than when the reverse is true. It is **not a perfect relationship**, but **by and large** I think it’s true. So yeah, Obama can get elected in a situation where he was aided by an economic downturn, but his ability to **put together a progressive coalition** that could **stick together for a long time** and continue to implement reforms was **very much undermined by the economic situation**. Judis: Let’s turn it around and look at the connection between the right and good and bad times. In America, the 1920s were relatively good times, and the Republicans controlled the government the whole decade. Teixeira: The 1920s were not nearly as good a time people think it was. It was a time of relatively slow per capita income growth. It was very unequally distributed, the industrial working class did somewhat well, but the rural areas did poorly, and there were four recessions between 1918 and 1929. It was not such a great time. It was relatively poor compared to the Progressive Era. Judis: So the Republicans did well in the 1920s because they were really bad times? Teixeira: There was a sense of real uncertainty, real economic paranoia. Judis: I don’t think you could call the 1920s bad times. You could call it uneven times. “Bad times” is stretching it. In addition, you have the real bad times of the Depression staring you in your face which is the time of the greatest advance in terms of a left and social democracy in our history. Teixeira: Desperate times make for desperate measure sometimes. There is **no guarantee they will help the left rather than the right**. I think that’s what we saw in the U.S. Obviously it didn’t work out so well in Europe. When I make the general analysis that the left is better off in a period of economic expansion and rising living standards, it doesn’t correspond exactly to the political outcomes you’ll have in those different periods. I am saying that **in a general sense**, the left has the **easiest time making advances** and **improving society** when things are going well **rather than when are going poorly**. Judis: Let’s look at Europe. In some of the countries in Northern Europe that are doing well, the center-right parties are in charge. Teixeira: Yes, but I think you can make the case the center-right parties aren’t exactly in charge in Europe. They also have their problems. The rise of populism in Europe is blowing apart the party system. Judis: You have got Holland, Denmark, Germany, and Austria. Those are all countries that are doing pretty well compared to the rest of the EU and that have center-right governments. Teixeira: The Netherlands is not doing that well. It’s all relative. Their recovery has been somewhat better. Their employment level has been high compared to other European countries, but there are a number of cuts in social services, wages haven’t been going up much, there is a lot more insecurity. Judis: Isn’t Germany doing well? Teixeira:. Germany is doing relatively well, but it hasn’t been a period of expansive growth for them either. There is a lot of wage stagnation and compression there. I **never meant to imply** that you can **perfectly predict social reform from economic outcomes**. But I think it **provides an important lens** on when the left does well and when the left does poorly. By and large when you look at Europe, you see the ~~straitjacket~~ [**dilemma**] that the Eurozone has created in the economies. People are **fearful**, they are **pessimistic**, they are **passive**. This is **very bad for the left**. Until you **break out** of that [dilemma] ~~straitjacket~~, the left is **not going to be able to do that well**, and the right is **going to continue to do relatively well** compared to them, and you’ll see the **continued rise in populism** because people have no faith in the system. So what I am trying to do is to get the left to focus on **getting to a new stage of capitalist growth** and **being able actually to deliver rising incomes**. There is No Alternative to the Left Judis: So let’s talk about how this political change will come about. What I took from your book is that we are currently suffering from secular stagnation, and that to get to a new stage of growth, we will have to implement the kind of left program that you describe. I worry that this argument contains a contradiction. On the one hand, the left can’t get its program enacted as long as times are bad. On the other hand, the only way to get out of bad times is for the left to get its program enacted. Teixeira: I see what you are asking. I think it is going to be **two steps forward**, **one step back**. We are sort of **slouching** toward the next stage of capitalism. I **don’t think it’s going to be pretty**. Political and economic factors are going to propel us in that direction. Ultimately, people want things to work better, they want their problems to be solved. And the **only way** we are going to get there is along the road I have described. I think this **equitable growth** approach that the Democrats united around is the future. The level of growth is going to vary over time, but I think the Democrats are the ones who are going to put us there and I think they are going to be rewarded for it. Judis:. But how does that happen? Isn’t there a crisis scenario implicit in your account? At some time, the current Third Way or neoliberal approach results in another Great Recession and at that point people will buy into a left-wing approach, the left-wing approach will create prosperity and at that time we will have an enduring left-wing or Democratic majority. Isn’t a step like this missing from your argument? Teixeira:. That certainly could be the way it goes down, but it’s **not clear we are required to have a recession** on the level we did in 2007 and 2008, or whether this sort of rolling crisis we have combined with other political events might do it. I don’t know, it’s hard to predict, but I think the great economist Herbert Stein said, if something cannot go on forever, it will stop. Judis: The great socialist Rosa Luxembourg said the choice was socialism or barbarism. I am not saying we are heading toward barbarism, but I think there is a determinism in your argument. I think you are saying that people will eventually choose a politics that will best help them. Reason will prevail. And I am not sure if that holds up historically. When you talk about the EU, you say eventually they will consolidate into a fiscal monetary union. I am not sure that is going to happen. It’s also possible that the Eurozone could break up and that there could be a lot of chaos. We have periods in history where things don’t happen in the best of all possible ways. Teixeira: The trajectory is **ultimately going to take us** to a **different** and **better place**. I think **eventually we will adapt** and we will **get something better** than we have because it is the **only solution to the ongoing problems**. **There is no alternative**. Judis: Countries are sometime structurally unable to do what is in their best interest. In the U.S., we have this strong anti-statist tradition going back to the revolution that seems to get in the way every time we want to do something like what you are proposing. It is possible that contrary to Hegel, the rational won’t turn out to be the real. Teixeira: Of course it is possible, but if you look at the history of the United States, **despite the anti-statist bias** and **despite all the other political problems**, the way the country has evolved over time is toward a **larger government** that **does more** and **provides more for people**. And we **obviously have evolved tremendously** in the social realm as well. Governments don’t do what is rational in the short term, at least rational in the sense you are describing it, but political systems **evolve over time** in a way that is consistent with the values and priorities of the left, and I expect that to continue over time. The 2016 Election Judis: Let’s talk about the 2016 election. Why did Clinton lose to such a weak opponent? Teixeira: The Democrats have an evolving majority that consists of groups like minorities, professionals, young people, single women and what have you, and that’s a true fact. It’s growing over time and it will continue to grow, but it was always mathematically true that if you take the declining group, the white non-college voters, and they move sufficiently in the direction of the other party, that will be enough to undermine your coalition. You won’t win. That’s exactly what happened in 2016. These voters moved rapidly away from the Democrats both in local and state races and in the presidential election. Judis: Why did they move? Teixeira: They do not have any faith that the Democrats share their values and are going to deliver a better life for them and their kids, and I think Hillary Clinton was a very efficient bearer of that meme. Whether she wanted to or not, the message she sent to these voters is that you are really not that important and I don’t take your problems seriously, and frankly I don’t have much to offer you. And that’s despite the fact that her economic program and policies would have actually been very good for these people. There was a study of campaign advertising in 2016 that showed Hillary outspent Trump significantly and that almost none of her advertising was about what she would actually do. Almost all of it was about how he was a bad dude. Voters were **fed up with stagnation** and with the Democrats and they **turned to someone who thought could blow up the system**. The way the Democrats and the left could **mitigate that problem** is to show these voters that they **take their problems seriously** and have their interests in mind, and could improve their lives. I **don’t think there is any way of doing that** without a **new model of economic growth**.

#### Causes mass death---only capitalism enables a peaceful solution to poverty.

Rainer Zitelmann 21. German historian and author of “The Rich in Public Opinion.” "Violence Is History’s Great Economic Leveler." National Interest. 6-30-2021. https://nationalinterest.org/feature/violence-history%E2%80%99s-great-economic-leveler-188974

Another question that is all too rarely asked is: What would be the price of eliminating inequality? In 2017, the renowned Stanford historian and scholar of ancient history Walter Scheidel presented an impressive historical analysis of this question: The Great Leveler: Violence and the History of Inequality from the Stone Age to the Twenty-First Century. He concludes that societies that have been spared mass violence and catastrophes have never experienced substantial reductions in inequality.

Substantial reductions in inequality have only ever been achieved as the result of violent shocks, primarily consisting of war, revolution, state failure and systems collapse, and plague.

According to Scheidel, the greatest levelers of the twentieth century did not include peaceful social reforms, they were the two world wars and the communist revolutions. More than 100 million people died in each of the two world wars and in the communist social experiments.

Total War as a Great Leveler

World War II serves as Scheidel’s strongest example of “total war” leveling. Take Japan: In 1938, the wealthiest 1 percent of the population received 19.9 percent of all reported income before taxes and transfers. Within the next seven years, their share dropped by two-thirds, all the way down to 6.4 percent. More than half of this loss was incurred by the richest tenth of that top bracket: their income share collapsed from 9.2 percent to 1.9 percent in the same period, a decline by almost four-fifths. The declared real value of the income of the largest 1 percent of estates in Japan’s population fell by 90 percent between 1936 and 1945 and by almost 97 percent between 1936 to 1949. The top 0.1 percent of all estates lost even more during this period, 93 and 98 percent, respectively. During this period, the Japanese economic system was transformed as state intervention gradually created a planned economy that preserved only a facade of free-market capitalism. Executive bonuses were capped, rental income was fixed by the authorities, and between 1935 and 1943 the top income tax rate in Japan doubled.

Significant leveling also took place in other countries during wartime. According to Scheidel’s analysis, the two world wars were among the greatest levelers in history. The average percentage drop of top income shares in countries that actively fought in World War II as frontline states was 31 percent of the prewar level. This is a robust finding because the sample consists of a dozen countries. The only two countries in which inequality increased during this period were also those farthest from the major theaters of war (Argentina and South Africa).

Low savings rates and depressed asset prices, physical destruction and the loss of foreign assets, inflation and progressive taxation, rent and price controls, and nationalization all contributed in varying degrees to equalization. The wealth of the rich was dramatically reduced in the two world wars, whether countries lost or won, suffered occupation during or after the war, were democracies or run by autocratic regimes.

The economic consequences of the two world wars were, therefore, devastating for the rich—a fact that stands in direct opposition to the thesis that it was capitalists that instigated the wars in pursuit of their own economic interests. Contrary to the popular perception that the lower classes suffered most in the wars, in economic terms it was the capitalists who were the biggest losers.

Incidentally, the left-wing economist Thomas Piketty comes to a similar conclusion. In his book Capital in the Twenty-First Century, he argues that progressive taxation in the twentieth century was primarily a product of the two world wars and not of democracy.

Poverty is Eliminated Peacefully

The price of reducing inequality has thus usually involved violent shocks and catastrophes, whose victims have been not only the rich but millions and millions of people. Neither nonviolent land reforms nor economic crises nor democratization has had as great a leveling effect throughout recorded history as these violent upheavals. If the goal is to distribute income and wealth more equally, says historian Scheidel, then we simply cannot close our eyes to the violent ruptures that have so often proved necessary to achieve that goal. We must ask ourselves whether humanity has ever succeeded in equalizing the distribution of wealth without considerable violence. Analyzing thousands of years of human history, Scheidel’s answer is no. This may be a depressing finding for many adherents of egalitarian ideas.

However, if we shift perspective, and ask not “How do we reduce inequality?” but “How do we reduce poverty?” then we can provide an optimistic answer: Not violent ruptures of the kind that led to reductions of inequality, but very peaceful mechanisms, namely innovations and growth, brought about by the forces of capitalism, have led to the greatest declines in poverty. Or, to put it another way: The greatest “levelers” in history have been violent events such as wars, revolutions, state and systems collapses, and pandemics, but the greatest poverty reducer in history has been capitalism. Before capitalism came into being, most of the world’s population was living in extreme poverty—in 1820, the rate stood at 90 percent. Today, it’s down to less than 10 percent. And the most remarkable aspect of all this progress is that, in the recent decades since the end of communism in China and other countries, the decline in poverty has accelerated to a pace unmatched in any previous period of human history. In 1981, the rate was still 42.7 percent; by 2000, it had fallen to 27.8 percent, and in 2021 it was only 9.3 percent.

#### Exploitation is inevitable without markets, but at worst it’s only a short run effect of global capitalism. There’s a built-in incentive for equality in markets

Karlsson 17 [Dr Rasmus Karlsson is an Associate Professor in political science. He has published widely on climate mitigation policy, development ethics, and global affairs from an ecomodernist perspective. The Environmental Risks of Incomplete Globalisation. Globalizations, Vol 14, No 4 – 2017. https://www.tandfonline.com/doi/pdf/10.1080/14747731.2016.1216820?needAccess=true]

Even if pre-modern human history was essentially defined by poverty, social domination, and violent conflict, it is still common to blame the prevalence of such ills on modernity. Yet, as many have rightly pointed out, what is difficult to explain is not underdevelopment but that development was at all possible. According to a progressive reading of history, the key driver behind the great acceleration of the last centuries has been the emergence of broad social investments (Lindert, 2004). While both Marxists and libertarians may think otherwise, equality is crucial for modern capitalism to function as it provides both consumers who can afford the goods of industrialism and producers who can create ever more sophisticated things of value to others. Whatever short-term gains that may be obtained through exploitation or other unequal forms of exchange, they are dwarfed by the long-term gains that come with greater measures of equality as clearly illustrated by the resounding economic success of welfare capitalism over the course of the twentieth century (Berman, 2006). The same of course holds true in a globalised economy. Rich countries may benefit in the short run from low consumer prices of imported goods but, for every Bangladesh that becomes a South Korea, the value of rising global demand and new export markets is obviously much greater.

#### US economic strength is an impact filter---creates a cap on escalation and rules governing emerging tech

Burrows 16 [Mathew Burrows, Director of the Atlantic Council’s Strategic Foresight Initiative, PhD in European History from the University of Cambridge, Appointed Director of the Analysis and Production Staff (APS) in 2010, September 2016, “Global Risks 2035: Mathew J. Burrows Foreword by Brent Scowcroft The Search for a New Normal” Atlantic Council Strategy Papers, http://espas.eu/orbis/sites/default/files/generated/document/en/Global\_Risks\_2035\_web\_0922.pdf]

The multilateralist global system that the United States and the West built after the end of the Second World War was premised on an economically strong United States and West. In 1945, the United States was the only victor that was not completely devastated. World War II had brought the country out of the Great Depression, and the US GDP constituted more than 50 percent of the world’s total. Into the twenty-first century, the members of the Group of Seven (G7) were the world’s political and economic heavyweights. It has only been in the past several years that the collective GDP of the developing world—led by China—has surpassed the developed world’s. Even as non-Western powers grow, it is psychologically hard for the West to think about relinquishing its reins. Demographically, the West has, for a long time, been in the minority. What’s more recent is the aging of the Western population (analyzed in chapter 2), which is already occurring in Japan and Europe, beginning to squeeze the availability of resources for anything but health, social security, and interest payments on debt. Unless healthcare becomes far more efficient, the US economy will be overburdened with healthcare and pension costs as the “baby boomer” generation ages. Healthcare constitutes a whopping 18 percent of the US GDP—significantly more than is the case for other industrialized countries—without necessarily providing better results. With more going to health and pensions, there will be less capacity for defense and military spending. The United States is the biggest military spender, but China is increasing its portion of worldwide military spending, while the worldwide share of European NATO members is diminishing. China’s military probably will not rival the United States’ power-projection capabilities even by 2035, but it will have greater anti-access and denial powers. In a military contest, China may never be able to deliver a knockout blow, but it could tarnish the US image of military invincibility in a conventional state-on-state contest held in its region. Equally, a confrontation that results in a Chinese humiliation could set back China’s aspirations for regional leadership, if not trigger a domestic legitimacy crisis for the Communist Party leadership. Biggest Problem Is Domestic The biggest psychological blow to ordinary Western citizens has been their sagging standard of living (more analysis in chapter 1). Despite a much better record of overall growth in the United States since the 2008 financial crisis, those with median incomes have taken a hit. Worrisome for future US growth potential has been the drop in the labor-participation rate, from the 67 percent range before the 2008 financial crisis to 62-63 percent in the years since. The labor-participation rate was destined to drop due to a growing numbers of retirees, but much of the current sharp decrease comes from unskilled males in their prime working years—forties and early fifties—dropping out. Additionally, many younger women are not entering or staying in the job market. Global Trends 2030 looked at two scenarios for future US growth—one in which the United States maintained or slightly increased its average 2.5 percent pre-2008 growth rate, or one in which growth would slow to an average of 1.5 percent a year. In the first, there would still be the global economic shift to China. On the other hand, the 2.5 percent average growth would help boost average living standards, engendering a “feel-good” factor, which would make more Americans interested in reengaging with world issues.91 Given the record of slower growth and labor-force decline since the 2008 financial crisis, the likelihood of the second scenario is increasing. That scenario anticipated lower growth rates—which accelerated declines in average living standards—making it harder to continue trade-liberalization efforts. Indeed, the IMF warned in June 2016 that the United States faces potentially significant longer-term challenges to strong and sustained growth, saying, “concerted policy actions are warranted, sooner rather than later… focusing on the causes and consequences of falling labor force participation, an increasingly polarized income distribution, high levels of poverty, and weak productivity.”92 Moreover, it is not as if traditional US partners—Europe and Japan—are doing much better. Japan and many European countries are aging faster than the United States, eliminating labor-force growth as a driver of future economic growth. Europe’s and Japan’s economic performances have been declining since the 1990s. In Europe, the public discontent with high unemployment and declining incomes has helped to spur the rise of antiestablishment far-right and populist parties that want to weaken the EU and transatlantic ties. Even in richer European countries, such as Germany, a backlash has been growing against the Transatlantic Trade and Investment Partnership (TTIP), out of fear that Europe’s rewards would be meager and European standards would be diluted. McKinsey Global Institute, for example, believes a “return to sustained growth of 2-to-3 percent” is possible for Europe, but would require many politically difficult reforms.93 These include: reducing dependence on imports (much coming from Russia) for crude oil and natural gas; fostering a more vibrant digital economy; increasing workforce participation by the elderly, women, and migrants; and promoting flexibility in labor markets. China now spends a greater share of its GDP on research and development than does Europe. The latest OECD figures show that Europe now spends even less than the rest of the OECD.94 In both the United States and Europe, there is increasing anti-immigrant sentiment despite documented economic benefits from immigration. According to EU Commission Employment Analyst Dr. Jorg Peschner, productivity, by itself, will not be enough to reverse the negative employment trend absent more immigration: “EU’s productivity growth would have to double in order to keep the EU’s economy growing at the same pace as it did before the crisis started.” For employment growth to remain positive as long as possible, improving the labor participation of women, low-educated people, and migrants will also have to be a priority. In the United States, many of the new businesses started every year are started by first- or second-generation immigrants.95 Politically, there has been a large rise in support for right-wing and populist parties in the United States and Europe, undermining traditional parties. The gaps, for example, between the leadership and supporters in the US Republican and UK Tory and Labor Parties have been particularly evident in the selection of Donald Trump as presidential candidate and the June 2016 victory of the “Leave” vote in Britain. Unfortunately, there is no end of economic disruption. The job churn will continue as more and more skills and professions are automated, also increasing the potential for more “losers” from globalization, greater political polarization, and inequality. The increased competitiveness of the developing world with the West is a particular morale buster for Western middle classes who got used to ever-increasing prosperity for themselves and succeeding generations. Adapting to a new norm of economic turbulence—more prevalent in other eras—may be one of the biggest mental hurdles for Westerners. The West is used to thinking of the “Third World,” not home, as the place where economic turmoil happens. And a Multipolar Financial Architecture, Too Historically, US and Western power has rested on having a monopoly on reserve currencies and a Westerndominated financial system. In 2035, the dollar will be the biggest reserve currency, but its share of global financial transactions is expected to drop from 60 percent today to 45 percent. The euro will probably remain the second reserve currency, while the Chinese yuan or RMB—which became a part of the IMF benchmark-currency basket in 2015—will become a third reserve currency, accounting for 10 to 15 percent of global finance in two decades’ time.96 The financial architecture will also become more regionalized. The central role played by the financial centers of New York and London will also diminish, and a multitiered financial architecture will develop. Following the UK Brexit, those centers’ share in financial intermediation will decrease, as a second pole of global finance forms in the Eurozone. A third pole will develop in East Asia and Southeast Asia. Gradually, a growing share of global financial resources will be concentrated in those regional clusters. As with the growth of regional trade, the regional clusters will be more self-encapsulated, spurred by rising domestic demand in China and other developing countries with growing middle classes. With the role of electronic money likely to grow, the traditional banking system will probably also undergo major revision, with potential impacts on governmental powers. A more multipolar reserve system and regionalized financial architecture should lessen risks and contribute to greater stability. But the large-scale technological innovations—some of which contributed to the 2008 breakdown—will continue, making global finance still volatile. Emerging-market countries with fragmentary regulatory regimes will be particularly prone to suffering financial crises. The agingpopulation factor also increases risks to public finances. This report anticipates modestly increased volatility, lower than what occurred in the global economy during the 1890s through the 1940s, but higher than in the 1950s and 1960s—more of a continuation of what has been the trend line since the mid-1980s. Are There Alternative Visions to Western Order? Four years ago, when Global Trends 2030 was published, the answer was largely no.97 Increasingly, the facts on the ground would suggest otherwise. They do not add up to a cohesive plan to substitute wholesale all Western institutions and practices. However, they clearly indicate that there are some no-go areas, particularly those connected to regime change, democracy promotion, state control over NGOs, and maintaining sovereignty. Russia and China, in particular, see themselves as great powers and, as such, believe they have special rights to dominance in their regions. However, as other powers like India develop, it is likely that they will see themselves as regional powers with inherent prerogatives. It is worth recalling the United States’ expansive Manifest Destiny and nineteenth-century Monroe Doctrine, claiming special rights to determine the future of the Western Hemisphere. The Mercator Institute for China Studies (MERICS) has been closely following Beijing’s efforts to build a network of parallel structures to existing international organizations. It has concluded that China “is not seeking to demolish or exit from current international organizations…It is constructing supplementary— in part complementary, in part competitive—channels for shaping the international order beyond Western claims to leadership.”98 As the accompanying chart indicates, China’s shadow network of alternative international structures encompasses everything from financial and economic partnerships (the Silk Road Economic Belt and the Asian Infrastructure Investment Bank) to full-blown political groupings like the Shanghai Cooperation Organization, Conference on Interaction and Confidence Building Measures in Asia (CICA), and the BRICS association of Brazil, Russia, India, China, and South Africa.99 Moreover, there is increasing cooperation among many of the emerging powers—beyond just authoritarians—to not just limit what they see as Western meddling in domestic affairs, but to go on the attack globally. According to a recent academic study, the “Big Five” authoritarian states of China, Russia, Iran, Saudi Arabia, and Venezuela “have taken more coordinated and decisive action to contain democracy on the global level.” They have sought to “alter the democracy and human-rights mechanisms of key rulesbased institutions, including the Organization of American States, the Council of Europe, the Organization for Security and Cooperation in Europe, and international bodies concerned with the governance of the Internet.”100 How durable are these preferences for nondemocracy and state control? By 2035, if not sooner (in the case of Venezuela), some of the now-authoritarian states could be liberalized, and the perceived threat posed by Western civil-society NGOs may ease. However, China and Russia are more likely than not to want to dominate their regions. Nationalism and democracy have been shown to be highly compatible. It is not clear that an even more powerful China or India would defer to Western leadership of the global order, even if both sides’ values in other areas begin to converge. What Kind of Post-Western World? Clearly, there is a need to plan for a world that will not have the West as its big economic powerhouse—a prospect hard for Western elites and publics to conceive of, despite a decade or more of publicity about the “rise of the rest.” According to a recent survey, Europeans and Americans are more comfortable with each other than they are with anybody else. Although a majority of Europeans said, in the most recent German Marshall Fund transatlantic-trends polling, that they would like to see their country take an approach more independent from the United States, both Americans and Europeans still prefer each other over more Russian or Chinese leadership in the world. The Obama administration—considered among the most multilateralist of recent administrations— campaigned hard in 2015 to convince Europeans not to join China’s proposed Asian Infrastructure and Investment Bank (AIIB). It was as if the United States was against any governance structure not “made in the USA,” even when those running the AIIB have made clear their intentions of operating with the World Bank and the Asian Development Bank. More and more, the talk among Western elites is about locking in as much as possible the status quo, which favors the West, so that it will be harder for the newcomers to overcome. The TPP was sold as a way to set the rules before China gains much more power. A former Obama administration official advised that now might be the best time to undertake UN Security Council reform, before China and other uncooperative powers become more powerful. “A new US administration may be able to advance a proposal to address the Security Council’s anachronistic makeup while perpetuating a council that Washington can work with.”101 For Westerners, the challenge will be to plan for a future that will not be solely run by them, but which they can live with. Handovers have been historically difficult and fraught—more often than not, decided by bloody contests. One could envisage different scenarios, some already described in the earlier chapter on conflict, of military contests between the United States and China, or the United States and China with Russia, or the United States with NATO against Russia. Without delivering a knockout blow by one side or the other, these contests would most likely pit West against East, creating something akin to a new Cold War. Even if there were a knockout blow by the United States against China, it is hard to imagine a defeated China deferring permanently to the West. Its population has been imbued with such a narrative about the injustices by the West against China that any defeat or setback would be confirmation that the United States and West are dead set against a rising China. Perhaps the most harmful effect of such a contest would be to convince both sides that neither is trustworthy. For the non-West, it would confirm the suspicion that the West does not want to relinquish its leadership position. For the West, it would make it harder to ever reach out and help establish a truly global system. Need for a Second-Generation US and Western Leadership Model War is not, and should not be, inevitable as the West struggles with the growing clout of China and other developing states on the world stage. Unlike during other transitions, the tools exist for ensuring more peaceful outcomes. They will require Western acquiescence to greater roles for the developing world to set and implement new rules of the road for the international order. A key feature of the post-1945 US design for the world order is its multilateralist structures. Many of these operate below most people’s radar. This plumbing of the international system has enabled the daily functioning of globalization. To keep it viable, China, as well as other developing countries, must be accorded more representation. There are too many long-term risks involved, for example, in China having only the equivalent of France’s voting rights in the IMF, when it is the first or second economic power in the world. This is how resentments are nurtured—all the more dangerous in China’s case because of its underlying “century of humiliation” mental complex. As emerging technologies come online, the lack of a truly global institutional framework could be particularly dangerous. Assuring the future security of the Internet is particularly important in this regard, because all the new emerging technologies—bio, 3D printing, robotics, big data—take for granted a secure, global Internet. Everyone loses if cyber crime and cyber terrorism undermine the Internet. In the worstcase scenarios, in which cyber crime proliferates or strong national borders fragment the Internet, an Atlantic Council study, as mentioned, found that the economic costs could be as much as $90 trillion out to 2030, in addition to the risk of open conflict.102 Besides bringing the emerging powers into leadership roles in the panoply of multilateral institutions, the United States will need to temper its often “exemptionalist” stance to ensure the survival of the multilateralist order. According to the Council on Foreign Relations’ Patrick Stewart, a prominent scholar of global governance, one of the persistent paradoxes of the post-1945 decades has been that the “United States is at once the world’s most vocal champion of a rules-based international order and the power most insistent on opting out of the constraints that it hopes to see binding on others.”103 No country has the networks and connections that the United States does, but the system is now polycentric, rather than unipolar, and others resent the “exceptional” privileges that the United States claims. The Global Trends works have talked about the need for a new model of US global leadership. The United States needs to be guiding the international system as a “first among equals,” and willing to play by its own rules. Paradoxically, there is likely to be no vibrant global-governance system without US and Western leadership, but too much domineering behavior could doom it. Even if the United States adapted its global role, this is not to say that the tensions and differences with many emerging powers would all disappear, or that the governance system would function seamlessly. In addition to the growing number of new state actors, the increasing importance of nonstate actors adds a new complexity to the functioning of global institutions. Moreover, there are clear-cut differences between the West and emerging powers on values-based issues, such as democracy promotion and the responsibility to protect. Many developing-country publics still resent Western colonialism and equate any intrusion with past historical wrong. They point to the 2011 humanitarian intervention in Libya, for example, as cover for the Western goal of regime change. Hence, the UN Security Council failure to stop the fighting in Syria, with more than two hundred thousand killed and 7.6 million displaced. Russia and China want to make a stand against the United States and the West getting their way and ousting the Assad regime. On the other hand, the lack of a solution smacks more of anarchy than global governance. Certainly, it shows one of the gaps that remains, and likely will remain, limiting global governance because of differences in values. The speed with which new technologies are coming online and becoming an important political, military, and economic tool—for both good and bad—carries big risks for global governance. Stewart Patrick lists four potential new technologies that “cry out for regulation”: geoengineering, drones, synthetic biology, and nanotechnology. Without some setting of rules for their operation, there is the risk of major disruptions, if not catastrophes, stemming from their abuse. The recent advances in synthetic biology lower the bar to abuse by amateurs and terrorists alike, forever affecting human DNA. Geoengineering involves planetaryscale interventions that could interfere with complex climatic systems. However cumbersome, politically unpopular, and ineffective at times, there is little alternative to increased global cooperation if one does not want to see higher risks of conflict and economic degradation. Without some sort of bolstered global governance, the West would end up with less sovereignty in a “dog-eat-dog” world, in which it was increasingly in the minority. But can the United States and the West rise to the challenge of investing in a global-governance system that will not always favor their interests on every issue? Historically, the United States could be especially generous because it was on top of the world in about everything after the Second World War. Europeans came to truly believe in pooling sovereignty and joint governance after centuries of internecine conflict. The tough economic times at home have seen US and European publics become distrustful of overarching multilateral institutions, believing the will of the United States or individual European countries will not be served. It is oftentimes easier for political leaders to fall in with the public mood rather than display leadership that might appear to work against it. Over time, economic power will also be consolidated in Asia, replicating the situation three centuries ago, when China and India were the biggest economic powers in the world, and the center of the global economy was in the East. Over a longer term, one could also see a concentration in just three countries: The breakdown of the post-Cold War political and security order is irrevocable. Not only are there new powers—particularly China—that do not share the West’s vision of a liberal order, but Western publics themselves have turned against globalization, which has been the overall megatrend of the past three decades. The geopolitical landscape ahead will be much different. The best case is looking at multipolarity with limited multilateralism. In the worst case, that multipolarity evolves into bipolarity with China, Russia, and their partners pitted against the United States, Europe, Japan, and other allies. In that scenario, conflict would be almost inevitable.

#### Unregulated emerging tech causes extinction.

Tate et al. 15 – (Jitendra S. Tate, Ph.D., Mechanical Engineering, M.S. & B.S., Mechanical Engineering; Sergio Espinoza; Davontae Habbit; Craig Hanks; Walk Trybula; Dominick Fazarro; “JOTS v41n1 - Military And National Security Implications Of Nanotechnology”; Virginia Tech University Press; D.A. June 24th 2020, [Published Spring 2015]; <https://scholar.lib.vt.edu/ejournals/JOTS/v41/v41n1/tate.html>) //LFS—JCM

The purpose of country’s armed forces is to provide protection from foreign threats and from internal conflict. On the other hand, they may also harm a society by engaging in counter- productive warfare or serving as an economic burden. Expenditures on science and technology to develop weapons and systems sometimes produces side benefits, such as new medicines, technologies, or materials. Being ahead in military technology provides an important advantage in armed conflict. Thus, all potential opponents have a strong motive for military research and development. From the perspective of international security and arms control it appears that in depth studies of the social science of these implications has hardly begun. Warnings about this emerging technology have been sounded against excessive promises made too soon. The public may be too caught up with a “nanohype” ( [Gubrud & Altmann, 2002](https://scholar.lib.vt.edu/ejournals/JOTS/v41/v41n1/tate.html#gubrud)). It is essential to address questions of possible dangers arising from military use of nanotechnology and its impacts on national security. Their consequences need to be analyzed.

NT and Preventative Arms Control  
Background

The goal of preventive arms control is to limit how the development of future weapons could create horrific situations, as seen in the past world wars. A qualitative method here is to design boundaries which could limit the creation of new military technologies before they are ever deployed or even thought of. One criterion regards arms control and how the development of military and surveillance technologies could go beyond the limits of international law warfare and control agreements. This could include autonomous fighting war machines failing to define combatants of either side and Biological weapons could possibly give terrorist circumvention over existing treaties ( [Altmann & Gubrud, Military, arms control, and security aspects of nanotechnology, 2004](https://scholar.lib.vt.edu/ejournals/JOTS/v41/v41n1/tate.html#altmann5)). The second criterion is to prevent destabilization of the military situation which emerging technologies could make response times in battle much faster. Who will strike first? The third criterion, according to Altman & Gubrud, is how to consider unintended hazards to humans, the environment, and society. Nanoscience is paving the way for smaller more efficient systems which could leak into civilian sectors that could bring risks to human health and personal data. Concrete data on how this will affect humans or the environment is still uncertain.

Arms Control Agreements  
The development of smaller chemical or biological weapons that may contain less to no metal could potentially violate existing international laws of warfare by becoming virtually undetectable. Smaller weapons could fall into categories that would undermine peace treaties. The manipulation of these weapons by terrorist could give a better opportunity to select specific targets for assassination. Anti- satellite attacks by smaller more autonomous satellites could potentially destabilize the space situation. Therefore a comprehensive ban on space weapons should be established ( [Altmann & Gubrud, 2002](https://scholar.lib.vt.edu/ejournals/JOTS/v41/v41n1/tate.html#altmann3)). Autonomous robots with a degree of artificial intelligence will potentially bring great problems. The ability to identify a soldiers current situation such as a plea for surrender, a call for medical attention, or illness is a a very complicated tasks that to an extent requires human intelligence. This could potentially violate humanitarian law.

Stability  
New weapons could pressure the military to prevent attacks by pursuing the development of new technologies faster. This could lead to an arms race with other nations trying to attain the same goal. Destabilization may occur through faster action, and more available nano systems. Vehicles will become much lighter and will be used for surveillance. This will significantly reduce time to acquire a targets location. Medical devices implanted in soldiers’ bodies will enable the release of drugs that influence mood and response times. For example, an implant that attaches to the brains nervous system could give the possibility to reduce reaction time by processing information much faster than usual ( [Altmann & Gubrud, Anticipating military nanotechnology, 2004](https://scholar.lib.vt.edu/ejournals/JOTS/v41/v41n1/tate.html#altmann4)). Artificial intelligence based genetic algorithms could make tactical decisions much faster through computational power by adapting to a situations decision. Nano robots could eavesdrop, manipulate or even destroy targets while at the same time being undetected ( [Altmann J. , Military Uses of Nanotechnology: Perspectives and Concerns, 2004](https://scholar.lib.vt.edu/ejournals/JOTS/v41/v41n1/tate.html#altmann1)).

Environment Society & Humans  
Human beings have always been exposed to natural reoccurring nanomaterials in nature. These particles may enter the human body through respiration, and ingestion ( [Bennet- Woods, 2008](https://scholar.lib.vt.edu/ejournals/JOTS/v41/v41n1/tate.html#bennet)). Little been known about how manufactured nanoscale materials will have an impact to the environment. Jerome (2005) argues that nanomaterials used for military uniforms could break of and enter the body and environment. New materials could destroy species of plants and animal. Fumes from fuel additives could be inhaled by military personnel. Contaminant due to weapon blasts could lead to diseases such as cancer or leukemia due to absorption through the skin or inhalation. Improper disposal of batteries using nano particles could also affect a wide variety of species. An increase in nanoparticle release into the environment could be aided by waste streams from military research facilities. Advanced nuclear weapons that are miniaturized may leave large areas of soil contaminated with radioactive materials. There is an increase in toxicity as the particle size decrease which could cause unknown environmental changes. Bennet-woods ( [2008](https://scholar.lib.vt.edu/ejournals/JOTS/v41/v41n1/tate.html#bennet)) argues that there is great uncertainty in which the way nano materials will degrade under natural conditions and interact with local organisms in the environment.

Danger to society could greatly be affected due to self-replicating, mutating, mechanical or biological plagues. In the event that these intelligent nano systems were to be unleashed, they could potentially attack the physical world. There are a number of applications that will be developed with nanotechnology that could potentially crossover from the military to national security that can harm the civilian sector ( [Bennet-Woods, 2008](https://scholar.lib.vt.edu/ejournals/JOTS/v41/v41n1/tate.html#bennet)). There is a heightened awareness that new technologies will allow for a more efficient access to personal privacy and autonomy ( [Roco & Bainbridge, 2005](https://scholar.lib.vt.edu/ejournals/JOTS/v41/v41n1/tate.html" \l "roco2)). Concerns regarding artificial intelligence acquiring a vast amount of personal data, voice recognition, and financial data will also arise. Implantable brain devices, intended for communication, raise concerns for actually observing and manipulating thoughts. Some of the most feared risks due to nanotechnology in the society are the loss of privacy ( [Flagg, 2005](https://scholar.lib.vt.edu/ejournals/JOTS/v41/v41n1/tate.html#flagg)). Nano sensors developed for the battlefield could be used for eavesdropping and tracking of citizens by state agencies. This could lead to improvised warfare or terrorism. Bennet-Woods ( [2008](https://scholar.lib.vt.edu/ejournals/JOTS/v41/v41n1/tate.html#bennet)) argues that there should be an outright ban on nanoenabled tracking and surveillance devices for any purpose.

Nanotechnology in combination with biotechnology and medicine raise concerns regarding human safety. This includes nanoscale drugs that may allow for improvements in terrorism alongside more efficient soldiers for combat. Bioterrorism could greatly be improved through nano-engineered drugs and chemicals ( [Milleson, 2013](https://scholar.lib.vt.edu/ejournals/JOTS/v41/v41n1/tate.html" \l "milleson)). Body implants could be used by soldiers to provide for better fighting efficiency but in the society, the extent in which the availability of body manipulation will have to be debated at large ( [Altmann J. , Nanotechnology and preventive arms control, 2005](https://scholar.lib.vt.edu/ejournals/JOTS/v41/v41n1/tate.html#altmann1)). Brain implanted stimulates could become addictive and lead to health defects. The availability of body and brain implants could have negative effects during peace time. Milleson ( [2013](https://scholar.lib.vt.edu/ejournals/JOTS/v41/v41n1/tate.html#milleson)) argues that there is fear that this technology could destabilize the human race, society, and family. Thus, the use in society should be delayed for at least a decade.