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#### CP Text: States, except the United States, should ban the appropriation of outer space for asteroid mining by private entities. The United States should fund the appropriation of outer space for the mining of rare earth metals from asteroids by private entities.

#### The PIC is key to beat China and protect against Chinese REM gatekeeping

Stavridis 21 [(James, retired US Navy admiral, chief international diplomacy and national security analyst for NBC News, senior fellow at JHU Applied Physics Library, PhD in Law and Diplomacy from Tufts) “U.S. Needs a Strong Defense Against China’s Rare-Earth Weapon,” Bloomberg Opinion, March 4, 2021, <https://www.bloomberg.com/opinion/articles/2021-03-04/u-s-needs-a-strong-defense-against-china-s-rare-earth-weapon>] TDI

You could be forgiven if you are confused about what’s going on with rare-earth elements. On the one hand, news reports indicate that China may increase production quotas of the minerals this quarter as a [goodwill gesture](https://www.scmp.com/news/china/diplomacy/article/3122501/china-raises-rare-earth-quotas-goodwill-trade-signal-us) to the Joe Biden administration. But other sources say that China may ultimately ban the export of the rare earths altogether on “[security concerns](https://www.bloomberg.com/news/articles/2021-02-19/china-may-ban-rare-earth-technology-exports-on-security-concerns?sref=QYxyklwO).” What’s really going on here?

There are 17 elements considered [rare earths](https://www.bloomberg.com/news/articles/2021-02-16/why-rare-earths-are-achilles-heal-for-europe-u-s-quicktake) — lanthanum, cerium, praseodymium, neodymium, promethium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium, lutetium, scandium and yttrium — and while many aren’t actually rare in terms of global deposits, extracting them is difficult and expensive. They are used across high-tech manufacturing, including smartphones, fighter aircraft and components in virtually all advanced electronics. Of particular note, they are essential to many of the clean-energy technologies expected to come online in this decade.

I began to focus on rare-earth elements when I commanded the North Atlantic Treaty Organization’s presence in Afghanistan, known as the International Security Assistance Force. While Afghans live in an extremely poor country, [studies](https://thediplomat.com/2020/02/afghanistans-mineral-resources-are-a-lost-opportunity-and-a-threat/) have assessed that they sit atop $1 trillion to $3 trillion in a wide variety of minerals, including rare earths. Some [estimates](https://www.fraserinstitute.org/article/afghanistans-rare-earth-element-bonanza) put the rare-earth levels alone at 1.4 million metric tons.

But every time I tried to visit a mining facility, the answer I got from my security team was, “It’s too dangerous right now, admiral.” Unfortunately, despite a great deal of effort by the U.S. and NATO, those security challenges remain, deterring the large foreign-capital investments necessary to harvest the lodes. Which brings us back to Beijing.

China controls roughly 80% of the rare-earths market, between what it mines itself and processes in raw material from elsewhere. If it decided to wield the weapon of restricting the supply — something it has repeatedly [threatened](https://www.wsj.com/articles/china-trade-fight-raises-specter-of-rare-earth-shortage-11559304000) to do — it would create a significant challenge for manufacturers and a geopolitical predicament for the industrialized world.

It could happen. In 2010, Beijing threatened to cut off exports to Japan over the disputed Senkaku Islands. Two years ago, Beijing was reportedly considering restrictions on exports to the U.S. generally, as well as against specific companies (such as defense giant Lockheed Martin Corp.) that it deemed in violation of its policies against selling advanced weapons to Taiwan.

President Donald Trump’s administration issued an executive order to spur the production of rare earths domestically, and created an [Energy Resource Governance Initiative](https://www.state.gov/wp-content/uploads/2019/06/Energy-Resource-Governance-Initiative-ERGI-Fact-Sheet.pdf) to promote international mining. The European Union and Japan, among others, are also aggressively seeking newer sources of rare earths.

Given this tension, it was superficially surprising that China announced it would boost its mining quotas in the first quarter of 2021 by nearly 30%, reflecting a continuation in strong (and rising) demand. But the increase occurs under a shadow of uncertainty, as the Chinese Communist Party is undertaking a “review” of its policies concerning future sales of rare earths. In all probability, the tactics of the increase are temporary, and fit within a larger strategy.

China will go to great lengths to maintain overall control of the global rare-earths supply. This fits neatly within the geo-economic approach of the [One Belt, One Road](https://www.bloomberg.com/opinion/articles/2019-10-30/china-is-determined-to-reshape-the-globe) initiative, which seeks to use a variety of carrots and sticks — economic, trade, diplomatic and security — to create zones of influence globally. In terms of rare earths, the strategy seems to be allowing carefully calibrated access to the elements at a level that makes it economically less attractive for competitors to undertake costly exploration and mining operations. This is similar to the oil-market strategy used by Russia and the Organization of Petroleum Exporting Countries for decades.

Some free-market advocates believe that China will not take aggressive action choking off supply because that could [precipitate retaliation](https://www.bloomberg.com/opinion/articles/2021-02-22/china-weaponizing-rare-earths-technology-will-probably-backfire) or accelerate the search for alternate sources in global markets. What seems more likely is a series of targeted shutdowns directed against specific entities such as U.S. defense companies, Japanese consumer electronics makers, or European industrial concerns that have offended Beijing.

The path to rare-earth independence for the U.S. must include: Ensuring supply chains of rare earths necessary for national security; promoting the exploitation of the elements domestically (and removing barriers to responsibly doing so); mandating that defense contractors and other critical-infrastructure entities wean themselves off Chinese rare earths; sponsoring research and development to find alternative materials, especially for clean energy technology; and creating a substantial stockpile of the elements in case of a Chinese boycott.

This is a bipartisan agenda. The Trump administration’s [strategic assessment](https://www.commerce.gov/news/press-releases/2019/06/department-commerce-releases-report-critical-minerals) of what needs to be done (which goes beyond just 17 rare earths to include a total of 35 critical minerals) is thoughtful, and should serve as a basis for the Biden administration and Congress.

#### REM access key to military primacy and tech advancement – alternatives fail

Trigaux 12 (David, University Honors Program University of South Florida St. Petersburg) “The US, China and Rare Earth Metals: The Future Of Green Technology, Military Tech, and a Potential Achilles‟ Heel to American Hegemony,” USF St. Petersberg, May 2, 2012, <https://digital.stpetersburg.usf.edu/cgi/viewcontent.cgi?article=1132&context=honorstheses>] TDI

The implications of a rare earth shortage aren’t strictly related to the environment, and energy dependence, but have distinct military implications as well that could threaten the position of the United States world’s strongest military. The United States place in the world was assured by powerful and decisive deployments in World War One and World War Two. Our military expansion was built upon a large, powerful industrial base that created more, better weapons of war for our soldiers. During the World Wars, a well-organized draft that sent millions of men into battle in a short amount of time proved decisive, but as the war ended, and soldiers drafted into service returned to civilian life, the U.S. technological superiority over its opponents provided it with sustained dominance over its enemies, even as the numerical size of the army declined. New technologies, such as the use of the airplane in combat, rocket launched missiles, radar systems, and later, GPS, precision guided missiles, missile defense systems, high tech tanks, lasers, and other technologies now make the difference between victory and defeat.

The United States military now serves many important functions, deterring threats across the world. The United States projects its power internationally, through a network of bases and allied nations. Thus, the United States is a powerful player in all regions of the world, and often serves as a buffer against conflict in these regions. US military presence serves as a buffer against Chinese military modernization in Eastern Asia, against an increasingly nationalist Russia in Europe, and smaller regional actors, such as Venezuela in South America and Iran in the Middle East. The U.S. Navy is deployed all over the world, as the guarantor of international maritime trade routes. The US Navy leads action against challenges to its maritime sovereignty on the other side of the globe, such as current action against Somali piracy. Presence in regions across the world prevents escalation of potential crisis. These could result in either a larger power fighting a smaller nation or nations (Russia and Georgia, Taiwan and China), religious opponents (Israel and Iran), or traditional foes (Ethiopia and Eretria, Venezuela and Colombia, India and Pakistan). US projection is also key deterring emerging threats such as terrorism and nuclear proliferation. While not direct challenges to US primacy, both terrorism and nuclear proliferation can kill thousands.

The US Air Force has a commanding lead over the rest of the world, in terms of both numbers and capabilities. American ground forces have few peers, and are unmatched in their ability to deploy to anywhere in the world at an equally unmatched pace.

The only perceived challenge to the United States militarily comes from the People’s Republic of China.76 While the United States outspends all other nations in the world put together in terms of military spending, China follows as a close second, and has begun an extensive modernization program to boot.77 The Chinese military however, is several decades behind the United States in air power and nuclear capabilities.78 To compensate, China has begun the construction of access-denial technology, preventing the US from exercising its dominance in China’s sphere of influence.79 Chinese modernization efforts have a serious long-term advantage over the United States; access to rare earth metals, and a large concentration of rare earth chemists doing research.80 This advantage, coupled with the U.S. losing access to rare earth metals, will even the odds much quicker than policymakers had previously anticipated. 81

The largest example is US airpower. With every successive generation of military aircraft, the U.S. Air Force becomes more and more dependent on Rare Earth Metals.82 As planes get faster and faster, they have to get lighter and lighter, while adding weight from extra computers and other features on board.83 To lighten the weight of the plane, scandium is used to produce lightweight aluminum alloys for the body of the plane. Rare Earth metals are also useful in fighter jet engines, and fuel cells.84 For example, rare earths are required to producing miniaturized fins, and samarium is required to build the motors for the F-35 fighter jet.85 F-35 jets are the next generation fighter jet that works together to form the dual plane combination that cements U.S. dominance in air power over the Russian PAK FA.86

Rare earth shortages don’t just affect air power, also compromising the navigation system of Abrams Tanks, which need samarium cobalt magnets. The Abrams Tank is the primary offensive mechanized vehicle in the U.S. arsenal. The Aegis Spy 1 Radar also uses samarium.87 Many naval ships require neodymium. Hell Fire missiles, satellites, night vision goggles, avionics, and precision guided munitions all require rare earth metals. 88

American military superiority is based on technological advancement that outstrips the rest of the world. Command and control technology allows the U.S. to fight multiple wars at once and maintain readiness for other issues, as well as have overwhelming force against rising challengers. This technology helps the U.S. know who, where, and what is going to attack them, and respond effectively, regardless of the source of the threat.

Rare Earth Elements make this technological superiority possible.

To make matters worse, the defense industrial base is often a single market industry, dependent on government contracts for its business. If China tightens the export quotas further, major US defense contractors will be in trouble.89 Every sector of the defense industrial base is dependent on rare earth metals. Without rare earths, these contractors can’t build anything, which collapses the industry.90

Rare Earth shortages are actually already affecting our military, with shortages of lanthanum, cerium, europium and gadolinium happening in the status quo. This prevents us not only from building the next generation of high tech weaponry, but also from constructing more of the weapons and munitions that are needed in the status quo. As current weapon systems age and they can’t be replaced, the US primacy will be undermined. Of special concern is that U.S. domestic mining doesn’t produce “heavy” rare earth metals that are needed for many advanced components of military technologies. Given the nature of many military applications, substitutions aren’t possible. 91

#### Primacy and allied commitments solve arms races and great power war – unipolarity is sustainable, and prevents power vacuums and global escalation

Brands 18 [Hal, Henry Kissinger Distinguished Professor at Johns Hopkins University's School of Advanced International Studies and a senior fellow at the Center for Strategic and Budgetary Assessments." American Grand Strategy in the Age of Trump." Page 129-133]

Since World War II, the United States has had a military second to none. Since the Cold War, America has committed to having overwhelming military primacy. The idea, as George W. Bush declared in 2002, that America must possess “strengths beyond challenge” has featured in every major U.S. strategy document for a quarter century; it has also been reflected in concrete terms.6

From the early 1990s, for example, the United States consistently accounted for around 35 to 45 percent of world defense spending and maintained peerless global power-projection capabilities.7 Perhaps more important, U.S. primacy was also unrivaled in key overseas strategic regions—Europe, East Asia, the Middle East. From thrashing Saddam Hussein’s million-man Iraqi military during Operation Desert Storm, to deploying—with impunity—two carrier strike groups off Taiwan during the China-Taiwan crisis of 1995– 96, Washington has been able to project military power superior to anything a regional rival could employ even on its own geopolitical doorstep.

This military dominance has constituted the hard-power backbone of an ambitious global strategy. After the Cold War, U.S. policymakers committed to averting a return to the unstable multipolarity of earlier eras, and to perpetuating the more favorable unipolar order. They committed to building on the successes of the postwar era by further advancing liberal political values and an open international economy, and to suppressing international scourges such as rogue states, nuclear proliferation, and catastrophic terrorism. And because they recognized that military force remained the ultima ratio regum, they understood the centrality of military preponderance.

Washington would need the military power necessary to underwrite worldwide alliance commitments. It would have to preserve substantial overmatch versus any potential great-power rival. It must be able to answer the sharpest challenges to the international system, such as Saddam’s invasion of Kuwait in 1990 or jihadist extremism after 9/11. Finally, because prevailing global norms generally reflect hard-power realities, America would need the superiority to assure that its own values remained ascendant. It was impolitic to say that U.S. strategy and the international order required “strengths beyond challenge,” but it was not at all inaccurate.

American primacy, moreover, was eminently affordable. At the height of the Cold War, the United States spent over 12 percent of GDP on defense. Since the mid-1990s, the number has usually been between 3 and 4 percent.8 In a historically favorable international environment, Washington could enjoy primacy—and its geopolitical fruits—on the cheap.

Yet U.S. strategy also heeded, at least until recently, the fact that there was a limit to how cheaply that primacy could be had. The American military did shrink significantly during the 1990s, but U.S. officials understood that if Washington cut back too far, its primacy would erode to a point where it ceased to deliver its geopolitical benefits. Alliances would lose credibility; the stability of key regions would be eroded; rivals would be emboldened; international crises would go unaddressed. American primacy was thus like a reasonably priced insurance policy. It required nontrivial expenditures, but protected against far costlier outcomes.9 Washington paid its insurance premiums for two decades after the Cold War. But more recently American primacy and strategic solvency have been imperiled.

THE DARKENING HORIZON For most of the post–Cold War era, the international system was— by historical standards—remarkably benign. Dangers existed, and as the terrorist attacks of September 11, 2001, demonstrated, they could manifest with horrific effect. But for two decades after the Soviet collapse, the world was characterized by remarkably low levels of great-power competition, high levels of security in key theaters such as Europe and East Asia, and the comparative weakness of those “rogue” actors—Iran, Iraq, North Korea, al-Qaeda—who most aggressively challenged American power. During the 1990s, some observers even spoke of a “strategic pause,” the idea being that the end of the Cold War had afforded the United States a respite from normal levels of geopolitical danger and competition. Now, however, the strategic horizon is darkening, due to four factors.

First, great-power military competition is back. The world’s two leading authoritarian powers—China and Russia—are seeking regional hegemony, contesting global norms such as nonaggression and freedom of navigation, and developing the military punch to underwrite these ambitions. Notwithstanding severe economic and demographic problems, Russia has conducted a major military modernization emphasizing nuclear weapons, high-end conventional capabilities, and rapid-deployment and special operations forces— and utilized many of these capabilities in conflicts in Ukraine and Syria.10 China, meanwhile, has carried out a buildup of historic proportions, with constant-dollar defense outlays rising from US$26 billion in 1995 to US$226 billion in 2016.11 Ominously, these expenditures have funded development of power-projection and antiaccess/area denial (A2/AD) tools necessary to threaten China’s neighbors and complicate U.S. intervention on their behalf. Washington has grown accustomed to having a generational military lead; Russian and Chinese modernization efforts are now creating a far more competitive environment.

**Space dominance solves nuclear war. Hegemony de-escalates all conflict scenarios.**

**Yoo 18** [(Emanuel S. Heller Professor of Law at the University of California, Berkeley, and a visiting scholar at AEI since 2003. He served as a deputy assistant attorney general in the Office of the Legal Counsel of the U.S. Department of Justice from 2001 to 2003, where he worked on constitutional and national security matters, as General Counsel of the U.S. Senate Committee on the Judiciary from 1995-96, and as a law clerk to Justice Clarence Thomas of the U.S. Supreme Court (John, Winning the Space Race, October 15th, <http://www.aei.org/publication/winning-the-space-race/>)] \*edited for offensive language

President Donald Trump’s National Security Strategy set a new course by focusing on rebuilding the domestic economy as central to national security and aiming at “rival powers, Russia and China, that seek to challenge American influence, values, and wealth.” Critics observed that the White House seemed to reverse past presidents’ emphasis on advancing democracy and liberal values and elevating American sovereignty over international cooperation.1

Less noticed but perhaps equally revisionist, the Trump administration reversed its predecessor’s course on outer space. Even as American military and civilian networks increased their dependence on satellites, the Obama White House had deferred to European efforts to develop a space “Code of Conduct.” The Trump administration instead relies on unilateralism: “any harmful interference with or an attack upon critical components of our space architecture that directly affects this vital US interest will be met with a deliberate response at a time, place, manner, and domain of our choosing.” On June 18, 2018, President Trump announced a new branch of the military: the United States Space Force.

Control of space already underlies the United States’ predominance in nuclear and conventional warfare. Intercontinental and submarine launched ballistic missiles, the heart of the US nuclear deterrent, pass through space to reach their targets. Reconnaissance satellites monitor rival nations for missile launches, strategic deployments, and major troop movements. Communications satellites provide the high-speed data transfer that stitches the US Armed Forces together, from generals issuing commands to pilots controlling drones. With economic rivals such as China and India, and rogue states like Iran and North Korea developing space programs that pursue similar missions, the importance of space technology to US interests and international peace will only increase.

Space not only enhances military operations, but also exposes new vulnerabilities. Anti-satellite missiles can make an opponent’s space-based communication networks easier to disable than purely ground-based systems. Losing reconnaissance satellites could blind gut the US’s strategic monitoring and disabling the GPS system would degrade its operational and tactical abilities. Space invites asymmetric warfare because anti-satellite attacks could even the technological odds against western powers that have become dependent on information-enhanced operations. As the nation most dependent on space-based networks, **the United States may have the most to lose.**

Strategists divide competition in this emerging arena into four categories. First is space support, which refers to the launching and management of satellites in orbit. The second is force enhancement, which seeks to improve the effectiveness of terrestrial military operations. The importance of these basic missions is well-established. Indeed, the very first satellites performed a critical surveillance role in the strategic competition between the United States and the Soviet Union. Spy satellites replaced dangerous aerial reconnaissance flights in providing intelligence on rival nuclear missile arsenals. Later space-based systems provided the superpowers with early warnings of ballistic missile launches. These programs bolstered stability and aided progress in nuclear arms reduction talks. Satellites created “national technical means” of verification: the capability to detect compliance with arms control treaties without the need to intrude on territorial sovereignty. They reduced the chances of human miscalculation by increasing the information available to decision makers about the intentions of other nations.

The US has made the most progress in the second mission, force enhancement, by using space to boost conventional military abilities. GPS enables the exact deployment of units, the synchronization of combat maneuvers, clearer identification of friend and foe, and precision targeting. In its recent wars, the US has used satellite information to find the enemy, even to the level of individual leaders, deploy on-station air or ground forces, and fire precision-guided munitions to destroy targets with decreased risk of collateral damage. American military leaders have argued that continued integration of space and conventional strike capabilities will allow the US to handle the twenty-first century threats—**terrorism, rogue nations, asymmetric warfare, and regional challengers**—more effectively with less resources.

The third and fourth space missions focus on space itself. Space control involves freely using space to one’s benefit while denying access to opponents. Conceptually akin to air superiority, space control begins with defense: hardening command, control, communications and reconnaissance facilities to prevent enemy interference. It includes shielding satellite components, giving them the ability to avoid collisions, disguising their location, and arming satellites to destroy attackers.2

Such forms of active defense can blend into the fourth mission: space force. Space force envisions weapons systems based in orbit that can strike targets on the ground, in the air, or in space. In an important respect, **space control and force application demand a greater exercise of power than air or naval superiority**. While air and naval superiority can be achieved through rapid deployment of assets for the duration of a conflict, dominance in space requires a broader geographic scope and longer-term duration—a constellation of space weapons would circle the globe for years.3It is in this realm that new weapons technologies are emerging, prompting questions of whether space-faring nations like the United States should treat space as another area for great power competition. “The reality of confrontation in space politics pervades the reality of the ideal of true cooperation and political unity in space, which has never been genuine, and in the near term seems unlikely,” argues Everett Dolman.4 The US certainly has taken such concerns to heart. In the decade ending in 2008, for example, the US increased its space budget from $33.7 billion to $43 billion in constant dollars. The entirety of this spending increase went to the Defense Department.

These weapons systems take several forms. Already operational, the US national missile defense system relies upon satellites to track ballistic missile launches and help guide ground-launched kill vehicles. Space-based lasers, like those in development by the US today, remain the only viable method to destroy ballistic missiles in their initial boost phase, when they are easiest to destroy.

American reliance on space-based intelligence and communication for its startling conventional military advantages has made its satellites a **target of potential rivals**. In 2007, for example, China tested a ground-launched missile to destroy a weather satellite in low earth orbit—the same region inhabited by commercial satellites. “For countries that can never win a war with the United States by using the methods of tanks and planes, attacking an American space system may be an irresistible and most tempting choice,” Chinese analyst Wang Hucheng has written, in a much-noticed comment.5

Though the 2007 ASAT (Anti-satellite weapon) test sparked international controversy, China had only followed the footsteps of the superpowers. The United States had carried out a primitive anti-satellite weapon test as early as 1959. During the Eisenhower, Kennedy, and Johnson administrations, the US continued to test anti-ballistic missile systems in an anti-satellite role. The Soviet Union followed suit. The superpowers temporarily dropped these programs with the signing of the Anti-Ballistic Missile Treaty of 1972, only to restart them in the 1990s. As rivals and rogue nations begin to mimic American development of force enhancement and space control abilities, the US will naturally develop anti-satellite weapons to restore its advantage and deter attacks. Such anti-satellite weapons may become even more common due to the vulnerability of satellites and the spread of ballistic missile technology.

Critics question whether the benefits of space weapons are worth the possibility of strategic instability. They argue that only arms control agreements and international institutions can head off a disastrous military race in space. But space will become an arena for pre-emptive deterrence. Every environment—land, air, water, and now space—has become an arena for combat. The US could deter destabilizing space threats from rivals by advancing its defensive capabilities. Some realist strategists argue not just in favor of protecting US space assets, but seeking US space supremacy. Because great power competition has already spread to space, the United States should capitalize on its early lead to control the ultimate high ground, that of outer space.

Criticisms of space weapons overlook the place of force in international politics. Advances in space technology can have greater humanitarian outcomes that outweigh concerns with space weapons themselves. Rather than increase the likelihood of war, space-based systems reduce the probability of destructive conflicts and limit both combatant and civilian casualties. Reconnaissance satellites reduce the chances that war will break out due to misunderstanding of a rival’s deployments or misperception of another nation’s intentions. Space-based communications support the location of targets for smart weapons on the battlefield, which lower harm to combatants and civilians. Space-based weapons may bring unparalleled speed and precision to the strategic use of force that could reduce the need for more harmful, less discriminate conventional weapons that spread greater destruction across a broader area. New weapons might bring war to a timely conclusion or even help nations **avoid armed conflict in the first place**. We do not argue that one nation’s overwhelming superiority in arms will prevent war from breaking out, though deterrence can have this effect. At the very least, space weapons, like other advanced military technologies, could help nations settle their disputes without resort to wider armed conflict, and hence bolster, rather than undermine, international security.

#### Counterplan solves warming—climate solutions rely on REMs

Arrobas et al 17 [(Daniele La Porta Arrobas is a senior mining specialist with the World Bank based in Washington DC and has degrees in Geoscience and Environmental Management, Kirsten Hund is a senior mining specialist with the Energy and Extractives Global Practice of the World Bank and holds a Master’s in IR from the University of Groningen in the Netherlands, Michael Stephen McCormick, Jagabanta Ningthoujam has an MA in international economics and international development from JHU and a BS in MechE from Natl University of Singapore, John Drexhage also works at the Intl Institute for Sustainable Development) “The Growing Role of Minerals and Metals for a Low Carbon Future,” World Bank, June 30, 2017, <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/207371500386458722/the-growing-role-of-minerals-and-metals-for-a-low-carbon-future>] TDI

* Full report - https://documents1.worldbank.org/curated/en/207371500386458722/pdf/117581-WP-P159838-PUBLIC-ClimateSmartMiningJuly.pdf

Climate and greenhouse gas (GHG) scenarios have typically paid scant attention to the metal implications necessary to realize a low/zero carbon future. The 2015 Paris Agreement on Climate Change indicates a global resolve to embark on development patterns that would significantly be less GHG intensive. One might assume that nonrenewable resource development and use will also need to decline in a carbon-constrained future. This report tests that assumption, identifies those commodities implicated in such a scenario and explores ramifications for relevant resource-rich developing countries. Using wind, solar, and energy storage batteries as proxies, the study examines which metals will likely rise in demand to be able to deliver on a carbon-constrained future. Metals which could see a growing market include aluminum (including its key constituent, bauxite), cobalt, copper, iron ore, lead, lithium, nickel, manganese, the platinum group of metals, rare earth metals including cadmium, molybdenum, neodymium, and indium—silver, steel, titanium and zinc. The report then maps production and reserve levels of relevant metals globally, focusing on implications for resource-rich developing countries. It concludes by identifying critical research gaps and suggestions for future work.

#### Hegemonic idealism is key to spur action – empirics. And the aff trades off.

Kagan, 14 – [Robert Kagan, PhD in American Diplomatic History from American University, Masters of Public Policy from Harvard’s Kennedy School of Government, Senior fellow at the Brookings Institution, 5-24-2014, New Republic, Superpowers Don't Get to Retire: What our tired country still owes the world, http://www.newrepublic.com/article/117859/allure-normalcy-what-america-still-owes-world] Jeong

Today, however, Americans seem overwhelmed by the difficulty and complexity of it all. They yearn to return to what Niebuhr called “the innocency of irresponsibility,” or at least to a normalcy in which the United States can limit the scope of its commitments. In this way America has perhaps returned to the mood of the 1920s. There is a difference, however. In the 1920s, it was not America’s world order that needed shoring up. Americans felt, mistakenly as it turned out, that it was Britain’s and Europe’s job to preserve the world order they had created. Today, it is America’s world order that needs propping up. Will Americans decide that it matters this time, when only they have the capacity to sustain it? You never miss the water ’til the well runs dry, or so the saying goes. One wonders whether Americans, including their representatives and their president, quite understand what is at stake. When President Obama first took office five years ago, Peter Baker of The New York Times reported that he intended to deal “with the world as it is rather than as it might be.” It is a standard realist refrain and has been repeated time and again by senior Obama officials as a way of explaining why he decided against pursuing some desirable but unreachable “ideal” in this place or that. What fewer and fewer seem to realize, however, is that the last 70 years have offered Americans and many others something of a reprieve from the world “as it is.” Periods of peace and prosperity can make people forget what the world “as it is” really looks like, and to conclude that the human race has simply ascended to some higher plateau of being. This was the common view in Europe in the first decade of the twentieth century. At a time when there had not been a war between great powers in 40 years, or a major Europe-wide war in a century, the air was filled with talk of a new millennium in which wars among civilized nations had become impossible. Three-quarters of a century and two world wars and a cold war later, millennial thoughts return. Studies cited by Fareed Zakaria purport to show that some “transformation of international relations” has occurred. “Changes of borders by force” have dropped dramatically “since 1946.” The nations of Western Europe, having been responsible for two new wars a year for 600 years, had not even started one “since 1945.” Steven Pinker observes that the number of deaths from war, ethnic conflict, and military coups has declined—since 1945—and concludes that the human race has become “socialized” to prefer peace and nonviolence. The dates when these changes supposedly began ought to be a tip-off. Is it a coincidence that these happy trends began when the American world order was established after World War II, or that they accelerated in the last two decades of the twentieth century, when America’s only serious competitor collapsed? Imagine strolling through Central Park and, after noting how much safer it had become, deciding that humanity must simply have become less violent—without thinking that perhaps the New York Police Department had something to do with it. In fact, the world “as it is” is a dangerous and often brutal place. There has been no transformation in human behavior or in international relations. In the twenty-first century, no less than in the nineteenth and twentieth centuries, force remains the ultima ratio. The question, today as in the past, is not whether nations are willing to resort to force but whether they believe they can get away with it when they do. If there has been less aggression, less ethnic cleansing, less territorial conquest over the past 70 years, it is because the United States and its allies have both punished and deterred aggression, have intervened, sometimes, to prevent ethnic cleansing, and have gone to war to reverse territorial conquest. The restraint showed by other nations has not been a sign of human progress, the strengthening of international institutions, or the triumph of the rule of law. It has been a response to a global configuration of power that, until recently, has made restraint seem the safer course. When Vladimir Putin failed to achieve his goals in Ukraine through political and economic means, he turned to force, because he believed that he could. He will continue to use force so long as he believes that the payoff exceeds the cost. Nor is he unique in this respect. What might China do were it not hemmed in by a ring of powerful nations backed by the United States? For that matter, what would Japan do if it were much more powerful and much less dependent on the United States for its security? We have not had to find out the answers to these questions, not yet, because American predominance, the American alliance system, and the economic, political, and institutional aspects of the present order, all ultimately dependent on power, have mostly kept the lid closed on this Pandora’s box. Nor have we had to find out yet what the world “as it is” would do to the remarkable spread of democracy. Skeptics of “democracy promotion” argue that the United States has often tried to plant democracy in infertile soil. They may be right. The widespread flowering of democracy around the world in recent decades may prove to have been artificial and therefore tenuous. As Michael Ignatieff once observed, it may be that “liberal civilization” itself “runs deeply against the human grain and is achieved and sustained only by the most unremitting struggle against human nature.” Perhaps this fragile democratic garden requires the protection of a liberal world order, with constant feeding, watering, weeding, and the fencing off of an ever-encroaching jungle. In the absence of such efforts, the weeds and the jungle may sooner or later come back to reclaim the land. One wonders if even the current economic order reflects the world “as it is.” A world in which autocracies make ever more ambitious attempts to control the flow of information, and in which autocratic kleptocracies use national wealth and resources to further their private interests, may prove less hospitable to the kind of free flow of commerce the world has come to appreciate in recent decades. In fact, from the time that Roosevelt and Truman first launched it, the whole project of promoting and defending a liberal world order has been a concerted effort not to accept the world “as it is.” The American project has aimed at shaping a world different from what had always been, taking advantage of America’s unique situation to do what no nation had ever been able to do. Today, however, because many Americans no longer recall what the world “as it is” really looks like, they cannot imagine it. They bemoan the burdens and failures inherent in the grand strategy but take for granted all the remarkable benefits. Nor do they realize, perhaps, how quickly it can all unravel. The international system is an elaborate web of power relationships, in which every nation, from the biggest to the smallest, is constantly feeling for shifts or disturbances. Since 1945, and especially since 1989, the web has been geared to respond primarily to the United States. Allies observe American behavior and calculate America’s reliability. Nations hemmed in or threatened by American power watch for signs of growing or diminishing power and will. When the United States appears to retrench, allies necessarily become anxious, while others look for opportunities. In recent years, the world has picked up unmistakable signals that Americans may no longer want to carry the burden of global responsibility. Others read the polls, read the president’s speeches calling for “nation-building at home,” see the declining defense budgets and defense capabilities, and note the extreme reticence, on the part of both American political parties, about using force. The world judges that, were it not for American war-weariness, the United States probably would by now have used force in Syria—just as it did in Kosovo, in Bosnia, and in Panama. President Obama himself recently acknowledged as much when he said, “It’s not that it’s not worth it. It’s that after a decade of war, you know, the United States has limits.” Such statements set the web vibrating. In East Asia, nations living in close proximity to an increasingly powerful China want to know whether Americans will make a similar kind of calculation when it comes to defending them; in the Middle East, nations worried about Iran wonder if they will be left to confront it alone; in Eastern Europe and the Baltic states, American security guarantees are meaningless unless Americans are able and willing to meet them. Are they? No one has taken a poll lately on whether the United States should come to the defense of its treaty allies in the event of a war between, say, China and Japan; or whether it should come to the defense of Estonia in a Ukraine-like conflict with Russia. The answers might prove interesting. Meanwhile, the signs of the global order breaking down are all around us. Russia’s invasion of Ukraine and seizure of Crimea was the first time since World War II that a nation in Europe had engaged in territorial conquest. If Iran manages to acquire a nuclear weapon, it will likely lead other powers in the region to do the same, effectively undoing the nonproliferation regime, which, along with American power, has managed to keep the number of nuclear-armed powers limited over the past half century. Iran, Saudi Arabia, and Russia are engaged in a proxy war in Syria that, in addition to the 150,000 dead and the millions displaced, has further destabilized a region that had already been in upheaval. In East Asia, nervousness about China’s rise, combined with uncertainty about America’s commitment, is exacerbating tensions. In recent years the number of democracies around the world has been steadily declining, while the number of autocracies grows. If these trends continue, in the near future we are likely to see increasing conflict, increasing wars over territory, greater ethnic and sectarian violence, and a shrinking world of democracies. How will Americans respond? If the test is once again to be “national interests” narrowly construed, then Americans may find all of this tolerable, or at least preferable to doing something to stop it. Could the United States survive if Syria remains under the control of Assad or, more likely, disintegrates into a chaos of territories, some of which will be controlled by jihadi terrorists? Could it survive if Iran acquires a nuclear weapon, and if in turn Saudi Arabia, Turkey, and Egypt acquire nuclear weapons? Or if North Korea launches a war on the South? Could it survive in a world where China dominates much of East Asia, or where China and Japan resume their old conflict? Could it survive in a world where Russia dominates Eastern Europe, including not only Ukraine but the Baltic states and perhaps even Poland? Of course it could. From the point of view of strict “necessity” and narrow national interest, the United States could survive all of this. It could trade with a dominant China and work out a modus vivendi with a restored Russian empire. Those alarmed by such developments will be hard-pressed, as Roosevelt was, to explain how each marginal setback would affect the parochial interests of the average American. As in the past, Americans will be among the last to suffer grievously from a breakdown of world order. And by the time they do feel the effects, it may be very late in the day. Looking back on the period before World War II, Robert Osgood, the most thoughtful of realist thinkers of the past century, discerned a critical element missing from the strategic analyses of the day. Mere rational calculations of the “national interest,” he argued, proved inadequate. Paradoxically, it was the “idealists,” those who were “most sensitive to the Fascist menace to Western culture and civilization,” who were “among the first to understand the necessity of undertaking revolutionary measures to sustain America’s first line of defense in Europe.” Idealism, he concluded, was “an indispensable spur to reason in leading ~~men~~ (people) to perceive and act upon the real imperatives of power politics.” This was Roosevelt’s message, too, when he asked Americans to defend “not their homes alone, but the tenets of faith and humanity on which their churches, their governments, and their very civilization are founded.” Perhaps Americans can be inspired in this way again, without the threat of a Hitler or an attack on their homeland. But this time they will not have 20 years to decide. The world will change much more quickly than they imagine. And there is no democratic superpower waiting in the wings to save the world if this democratic superpower falters.

#### Liberal order is really good – solves violence and poverty – stats.

Wyne, 3/16/15 [Ali, researcher at Harvard University’s Belfer Center for Science and International Affairs http://www.huffingtonpost.com/ali-wyne/the-world-is-becoming-saf\_b\_6878664.html]

There are plenty of reasons to despair about the state of the world: ISIL's depredations in the Middle East, Boko Haram's atrocities in Nigeria, and Russia's slow-drip incursion into Ukraine are just a few. These phenomena are more distressing when one considers that they're occurring against the backdrop of an eroding postwar order. Contrary to the oft-heard refrain, though, that the world is becoming more dangerous -- or, according to some observers, has never been more dangerous -- it has actually never been safer. Steven Pinker and Andrew Mack recently documented the declines in global rates of homicide, violence against women, genocide, and war, among other categories. We're also becoming more prosperous. According to the U.S. Department of Agriculture, real global GDP more than tripled between 1970 and 2010, and real global GDP per capita nearly doubled. Last month the Economist reported that the percent of the world's population living in "abject poverty" fell from 36 in 1990 to 18 in 2010 (translating to about 900 million people who escaped that condition). Finally, we're living longer, better lives. The University of Washington's Institute of Health Metrics and Evaluation found that "global life expectancy increased by 5.8 years for men and 6.6 years for women" between 1990 and 2013. According to the United Nations, moreover, the mortality rate for children under five fell from 90 per thousand births to 46 during that same period, while the percent of the world's population that is "clinically malnourished" fell more than seven points. It's no accident the world is becoming safer, wealthier and healthier: there are extraordinary people around the world who're trying to make it better. Too often, though, their names remain unknown; their contributions, unacknowledged. "What's Working" is a crucial platform for spotlighting them. When the news of the day feels overwhelming, I take comfort in three facts. First, the ingenuity of our minds has always scaled with the magnitude of our calling. There's no reason to believe it won't continue doing so. Second, we're pushing forward the frontiers of possibility every second, far more rapidly than we can comprehend. Before coming to MIT, I believed certain problems were simply too hard for human beings to address. In retrospect, though, my skepticism simply reflected my failure of imagination. I now assume that once a problem has been identified, folks will eventually solve it or find a way to manage it. The tipping point for me came six years ago, when MIT News ran an article discussing a new project Professor Angela Belcher and a few of her colleagues had undertaken. "For the first time," it explained, "MIT researchers have shown they can genetically engineer viruses to build both the positively and negatively charged ends of a lithium-ion battery." If we can figure out how to make batteries from viruses -- I never imagined I'd see those two words in the same sentence, and I still can't get my head around the idea -- what can't we do? Third, no matter what problem keeps you up at night, there are brilliant, passionate people around the world who're working on it. You may not hear about them amid **the daily barrage of depressing headlines**, but they're easy to find if you want to find them. Among the extraordinary individuals I've met, spoken to over e-mail, or reconnected with in recent months: Ruzwana Bashir, the cofounder and CEO of Peek, who's using her own experience of sexual abuse to help other victims find their voices; Pardis Sabeti, a professor of organismic and evolutionary biology at Harvard, who's developing treatments to fight Ebola; Donald Sadoway, a professor of materials chemistry at MIT, whose work on liquid-metal batteries could revolutionize electricity storage; Shiza Shahid, the cofounder of the Malala Fund, who's working to give young women around the world a chance at an education; and Wes Moore, author of The Other Wes Moore and The Work, who cofounded BridgeEdU to help at-risk youth in Baltimore graduate from college. There's an enormous amount of work to be done -- slowing the course of climate change, feeding a growing population and resettling tens of millions of refugees, to name but a few challenges -- but dwelling on everything that's wrong and fretting about **everything that could go wrong won't help. Let's spend less time lamenting the state of the world and more time supporting those who're making it better.**

#### Pursuit of heg is inevitable and good

Stokes 18 – Doug, Professor in International Security and Strategy in the Department of Politics at the University of Exeter. “Trump, American hegemony and the future of the liberal international order”, International Affairs, Volume 94, Issue1, pg. 133-150, https://doi.org/10.1093/ia/iix238, 01-01-2018

First, I sketch a nascent foreign policy world-view that **we see developing under Trump**: **an ‘America First’ bilateralism founded on cost–benefit calculations.** I then contrast this bilateralism with the longstanding US postwar globalism that, I argue, saw the hard-wiring of the American national interest into a systemsmaintaining role. Given the order maintenance costs of performing this role, why would the United States choose to do so (Trump’s ‘jerk test’)? **Drawing from hegemonic stability theory**, the article **identifies** three types of explanation, each focusing on **a particular type of hegemon**: the benign hegemon, which is happy to lead and absorb costs; **the coercive hegemon, which seeks to recover its costs from other states**; and the structurally advantaged hegemon, which recovers more than its costs without resort to coercion through its positional advantages.

Second, the article argues that **while system maintenance costs are rising, and the United States is in the throes of a slow relative decline, the US remains a structurally advantaged hegemon in a number of very important areas. These include** the continued use of the dollar as a global reserve currency; **the global security regimes** in which it predominates, which provide it with leverage over other states’ geopolitical and economic choices; **and** the still overwhelming **command capacity of the American economy**, most notably in its continued preponderance in global foreign direct investment (FDI). **As such, its postwar globalist grand strategy of deep engagement continues** to make rational sense, **not least as it gives the US leverage over the international regimes it underwrites.** A reversal of this grand strategy would undermine not only this leverage but also, I argue, the world economic order, which remains centred on America. **It is thus highly unlikely that the agency of Trump will overcome the deep structures and path dependencies that incline towards systemic maintenance.** Although it is hard to predict how far Trump will seek to deviate from the postwar norm, or how much damage his learning curve will inflict on US leadership, it is likely that **once his term is over**, America**n** elites **will** seek to **‘snap back’ to the status quo ante**, given the goods the United States still derives from its hegemony.

**Breaking down neoliberalism kills leadership**

**Duménil and Lévy 09**

[Gérard Duménil and Dominique Lévy, Directors of Research at the Centre National de la Recherche Scientifique in Paris, The Crisis of Neoliberalism and U.S. Hegemony, 2009, <http://www.beigewum.at/wordpress/wp-content/uploads/2009_2_006-13.pdf>]

Beginning the historical investigation at the end of the 19th and early 20th centuries in the United States, neoliberalism appears as the third such »social order«. A first **financial hegemony** prevailed from the beginning of the century, but it was **destabilized during the Great Depression** and the New Deal, a period of intense class struggle. The social order characteristic of the period that stretches from the New Deal to the late 1980s can be denoted as »social democratic« or »Keynesian«, with significant differences among countries. Its main social feature was a »compromise« between managerial and popular classes, paralleling the containment of capitalist interests. How neoliberalism was established historically lies beyond the limits of the present study. Conversely, the description of the methods used is rather straightforward. A new discipline was imposed on workers, with the control of their purchasing power, new labor conditions, and the decline of welfare. While, after World War II, a large percentage of profits were conserved within nonfinancial corporations to the end of investment, in neoliberalism, profits were lavishly distributed as dividends and, up to 2000s, a large fraction was paid out as interest. Policies aiming at price stability were substituted for macro policies tending to growth and employment. Financial regulations inherited from the Great Depression were gradually lifted. Restrictions to international trade were eliminated to the benefit of free trade, and the free international mobility of capital was imposed to most countries. Neoliberal globalization allowed for the deployment of transnational corporations worldwide. The United States emerged from the two world wars as the **leading international power**. While other imperialist countries, as France or the United Kingdom, were still involved in the defense of their traditional empire, the United States abandoned the first attempts at the constitutions of such an empire at the end of the 19th century, to the benefit of the Wilsonian vision of the informal **dominance of the most advanced among capitalist countries**, with the gradual imposition of the dollar as international currency. The Great Depression did not destabilize this hegemony, which was dramatically consolidated by the victorious participation of the country in World War II. The United States never accepted the new rules of the Bretton Woods agreements limiting international trade and the international movements of capital, and the dollar was confirmed as a substitute for a truly international currency. After World War II, the United States fought for the defense, in front of the Soviet Union, of the so-called »free world« and for their own dominance worldwide. Everywhere, corruption, subversion, and wars were used to these ends. The U.S. economy came to dominate the nonfinancial and financial world economy. The transnational corporations of the country were the most powerful, in particular financial institutions. In the 1970s, many analysts of global trends pointed, however, to a decline of U.S. hegemony and the formation of a »triad« (the United States, Europe, and Japan). Neoliberalism inverted these trends and **strengthened the preeminence of the U.S. economy**. As of the 2000s, the U.S. economy was presented to other major capitalist countries as a model to be emulated, and **the United States as a leader to be followed.**

## 2

#### Interpretation: the affirmative may only garner offense off the desirability of the hypothetical enactment of the resolution.

#### “Resolved:” refers to a legislative debate.

Louisiana State Legislature 16, “Glossary of Legislative Terms,” http://www.legis.state.la.us/glossary2.htm

Resolution: A legislative instrument that generally is used for making declarations, stating policies, and making decisions where some other form is not required. A bill includes the constitutionally required enacting clause; a resolution uses the term "resolved". Not subject to a time limit for introduction nor to governor's veto. (Const. Art. III, §17(B) and House Rules 8.11, 13.1, 6.8, and 7.4 and Senate Rules 10.9, 13.5 and 15.1)

#### Failing to defend topical action decimates the quality of debate for two reasons—

#### 1. Competitive equity—any alternative to our model of the topic as a baseline for discussion wrecks it—it’s impossible to negate alternative frameworks with the ground allocated to us by the parameters of the resolution—all 1AR defense to this claim will rely on concessionary ground which isn’t a stable basis for a year of debate.

#### 2. Truth testing—they moot the role of the negative which is to force the aff to defend their core assumptions—allowing affs to reframe the debate around their terms makes engagement impossible—outweighs and turns the aff because clash is the only way to translate anything debate gives us outside of the activity.

## Case

#### Top level – they can’t just tell you cap is bad they have to tell you what is better or else it’s try or die for capitalism – the 1AC dumps on cap bad but provides zero alternative. Simply saying capital is bad isn’t a solution—they need to defend what their world would look like.

#### [1] Sustainability: Capitalist growth is good for the environment, sustainable, and resolves inequality

Harry Saunders 16, Managing Director, Decision Processes Incorporated, “Does Capitalism Require Endless Growth?” Summer, https://thebreakthrough.org/index.php/journal/issue-6/does-capitalism-require-endless-growth

The modern notion that capitalism harbors the seeds of its own ecological destruction owes its provenance to a most unlikely duo of canonical economic thinkers. The Reverend Thomas Malthus claimed in the eighteenth century that a collision between the growing number of mouths to feed and the capacity to add productive agricultural land was inevitable. Karl Marx argued in the nineteenth century that technological change would bring with it falling wages, declining profits, and hence, ultimately, the collapse of capital formation. The argument of Malthus was famously resurrected in the early 1970s in the Club of Rome report The Limits to Growth.1 Around the same time, ecological economists Nicholas Georgescu-Rosen, Herman Daly, Robert Costanza, Robert Ayres, and others advanced the idea that all human economic activity fundamentally relies on a limited planetary endowment of what they call “natural capital.” On the other side, Marxist scholars like Paul Sweezy2, Fred Magdoff, and John Foster3 have extended Marx’s insight, directing our attention to what they call the “growth imperative of capitalism,” by which they mean the indispensable necessity of capitalism to continually accumulate capital and generate a reserve of unemployed workers if it is to remain viable. Without continual economic growth, they argue, capitalism will collapse. Or, as Giorgos Kallis recently so succinctly put it, “Growth is what capitalism needs, knows, and does.”4 Taken together, the dilemma is evident: An economic system that requires perpetual economic growth on a spherical planet with finite resources simply cannot last. Merging Marx and Malthus in this way has made Malthusian arguments accessible to elements of the global left that had historically rejected them. Capitalism and environmental sustainability simply could not be reconciled. Constraining the economy to keep it within a safe margin of ecological limits would only hasten capitalism’s collapse, while allowing capitalism to grow unconstrained would result in ecological collapse. Either way, the choice was clear: abandon capitalism or risk the end of the human project. But Marx and Malthus are not so easily reconciled. Marx’s central insight was that capitalism would collapse of its own contradictions, including rising inequality and immiseration of labor that would ultimately destroy the market for the goods that capitalists produced. As it turns out, the mechanism by which this would occur, technological change driving greater economic productivity, was precisely the mechanism that Malthus failed to anticipate when he predicted that food production would fail to keep up with population growth. In Marx’s crisis lay precisely the mechanism that would prevent Malthus’ prophecy. We see much evidence for this today. Improving technologies have driven a major expansion in food availability, along with continuing production efficiencies across the global economy more generally. The world faces no shortage of ecological challenges — species extinctions, collapsing fisheries, depleted aquifers, poisoned land, and, of course, the inexorable rise of global temperatures as atmospheric concentrations of greenhouse gases increase. And economists today concern themselves with the threat of “secular stagnation,” chronically low growth rates that threaten long-term prosperity. But it is important to distinguish these challenges from the sweeping claims made originally by Sweezy, Magdoff, and Foster and repeated today by prominent intellectuals and activists such as Naomi Klein and Bill McKibben. In the pages that follow, I will demonstrate that both neoclassical growth theory and empirical evidence suggest that capitalist economies do not require endless growth but are rather much more likely to evolve toward a steady state once consumption demands of the global population have been satisfied. Those demands demonstrably saturate once economies achieve a certain level of affluence. For these reasons, a capitalist economy is as likely as any other to see stable and declining demands on natural resources and ecological services. Indeed, with the right policies and institutions, capitalist economies are more likely to achieve high living standards and low environmental impacts than just about any other economic system. 1.From the window of his Manchester home in the mid-1840s, Marx’s colleague and contemporary Friedrich Engels looked out on a horrifying microcosm of what was happening in England and throughout the newly industrializing world — a stark imbalance between the luxurious wealth of capital owners and the miserable poverty of the workers they employed. Marx himself had witnessed firsthand this same imbalance, and over several decades of intense study came to propose that a core flaw of capitalism resides in excessive claims placed by privately owned capital as against labor on the economic value created by their combination. Herein lay the fundamental contradiction, in Marx’s view, which would bring an end to capitalism. As capitalists invested in ever-newer technologies, Marx predicted that their dependence on labor would decline. As this occurred, returns to labor in the form of earned wages would decline. If there were no return to households for their labor, there would be no income with which to consume goods produced by capital owners, nor savings that households might reinvest in new capital. An economic system in which declining returns to labor due to technological change immiserated most households was a system in which the market for goods sold by capital owners could not long survive.Notably, Marx did not dispute the necessity of capital for producing what households need, only who in society need control this resource. The problem, as Marx saw it, was that the surplus value created by labor was being unfairly conscripted by capital owners. In the first decades of the twenty-first century, a number of prominent analyses have suggested that Marx’s prophecy is perhaps coming true. MIT economists Erik Brynjolfsson and Andrew McAfee5 in recent years have suggested that continuing automation and rising labor productivity threaten mass unemployment, a problem foreseen by Keynes in 1930.6 Thomas Piketty, in his much-lauded book Capital in the Twenty-first Century7, finds that returns to capital have exceeded real economic growth in the industrialized world in recent decades, attributing that shift to ever-increasing concentration of limited capital in the hands of the few. The economist Robert Gordon8,9 finds that growth rates slow dramatically as societies become wealthier. The growth associated with the enormous rise in economic productivity and output associated with the transition from agrarian to industrial societies cannot be sustained as societies shift from industrial to post-industrial economies. Meanwhile, Paul Mason and others in the “post capitalism" movement contend that “an economy based on the full utilization of information cannot tolerate the free market.”10 His argument is that capitalist corporations will not prove capable of capturing value from the technology they deliver, value adequate to sustain them over time. Before considering whether these various challenges to advanced capitalist economies portend their collapse, it is important to note what none of these analyses suggest, which is that capitalism’s unquenchable demand for growth has run up against fundamental biophysical limits. If anything, these analyses suggest the opposite: that the limits to continuing growth in capitalist economies are social or technological, not biophysical. Brynjolfsson and McAfee, and Piketty, through technically different mechanisms, ultimately raise concerns that center around the immiseration of labor. Whether due to technological change, growing returns to capital, or both, all three centrally focus on declining wages and employment as the central challenge that threatens robust and equitable growth in capitalist economies. Mason, conversely, projects that technological change threatens returns to capital. The commodification of everything — material goods, knowledge, and information — ultimately brings with it an end to profits and hence both capital accumulation and capital reinvestment.11 Gordon, meanwhile, observes that there is simply no further techno-economic revolution that can replicate the one-time boost in economic productivity that comes with the shift from agrarian to industrial economies.12 If there is a common theme in these challenges to capitalist economies it is that all find their way, to one degree or another, back to Marx, not Malthus. The long-term challenge for capitalist economies, these analyses suggest, is too little growth, not too much. 2. The headwinds facing advanced industrial economies — stagnant growth and rising inequality — tell us something about the prospects for low- or zero-growth capitalist economies. Gordon’s analysis suggests that industrialized economies in relatively short order achieve a “satisficing” level of household consumption. Once that level is achieved, and once societies have built out the basic infrastructure of modernity — cities, roads, electrical grids, water and sewage systems, and the like — the growth rates characterized by the early stages of industrialization cannot be sustained by the knowledge and service sectors that increasingly dominate post-industrial societies. World Bank data clearly show this. Economic growth rates decline as countries become richer. Growth in GDP per capita in OECD countries slowed from an average of about 3 percent per year in the period 1961–1985 to about half of that in the period 1986–2014.13 Gordon’s analysis is supported not only by the long-term slowing of growth in industrialized economies but also by saturating household consumption in those economies. According to the World Bank, OECD growth in real household consumption per capita (consumption of both goods and services) has shown steady decline each decade from around 3 percent per year in the 1970s to around 1 percent per year since 2000.14 Brynjolfsson and McAfee, and Piketty, suggest that declining returns to households from their labor will drive worsening inequality and stagnant or declining wages. But that does not imply a declining material standard of living. The same technology gains and capital mobility that have eroded the power of labor in developed world labor markets have also persistently reduced the real prices of goods and services, making them ever more affordable.Even as nominal wage growth has slowed or stagnated in the US and other advanced developed economies, households are able to buy more with less of their incomes. This is because the cost of goods and services has grown even more anemically, inflation nearly disappearing in these countries over the same time period, meaning wages have grown in real terms. OECD data show that real wages OECD-wide have grown by about 1 percent per year between 2000 and 2014, including real growth in the United States, the United Kingdom, France, and Germany.15 Growth in the Scandinavian economies (Norway, Denmark, Sweden, and Finland) has exceeded this.16 This is true even at the bottom of the income distribution. Virtually all low-income homes in the United States today boast a refrigerator, modern heating and cooling, and electricity. Large majorities have dishwashers, washers and dryers, computers, cable television, and large-screen displays. Consumer goods and services once considered luxuries in the United States and other developed countries are today widely available and utilized by all citizens. That is mostly because home appliances and other goods today cost a small fraction, measured in the work time necessary to purchase them, of what they did thirty years ago.17,18 Of course, rising economic inequality raises a range of concerns beyond those related to access to goods and services. Higher rates of inequality may threaten social mobility, social cohesion, and perhaps even democratic governance. Even so, inequality appears to decline as nations industrialize and become wealthier. In rich Scandinavian countries (Sweden, Denmark), inequality has essentially halved since World War II.19 Declines recently are less impressive in the United States, United Kingdom, and other parts of Europe20, but, nonetheless, inequality remains reliably lower than in most developing economies21, where aggressive but still insufficient capital formation in the presence of large labor forces tends to result in higher levels of inequality. Moreover, increased capital mobility has driven declining inequality between countries, even as it may be worsening inequality within them. Thanks to global trade and international supply chains, firms have become increasingly able to locate production facilities in the developing world, where labor with the requisite skills can be employed at lower wages. As might be expected, labor in industrialized countries is not happy with this turn of events. But the result has been a long-term convergence of wages between producing and consuming countries, declining inequality globally, and a dramatic decline in absolute levels of poverty. The ILO reports that between 2000 and 2011, real average wages approximately doubled in Asia.22 In Latin America, the Caribbean, and Africa they also rose substantially, well above the developed world average23, while in developed economies they increased by only about 5 percent, far below the world average24, leading to what leading ILO observer Patrick Belser has dubbed “the great convergence”25 — a dynamic that was incidentally predicted many decades ago on theoretical grounds by famed economist Paul Samuelson.26 Meanwhile, according to the World Bank, the global share of people living on less than $1.90 per day (the World Bank definition of extreme poverty) fell from 44 percent in 1981 to 13 percent in 2012.27 Taken together, then, the dynamics transforming the global economy, while not without challenges, paint an interesting picture of slowing growth, converging global incomes, falling cost, and saturating demand for goods and services. Should these dynamics hold, it is not hard to imagine a future in which the global economy gravitates toward a prosperous and equitable zero-growth economy placing relatively modest demands on the biocapacity of the planet. But getting from here to there will require a number of further conditions.

#### [2] War: Multilateral economic ties forged through capitalism are key to interdependence which sets a cap on conflict – Robust models prove

Jackson and Nei 15 – Matthew O. Jackson, William D. Eberle Professor of Economics at Stanford, and PhD in economics from Stanford Graduate School of Business, Stephen Nei, Economics PhD candidate at Stanford University (“Networks of military alliances, wars, and international trade,” *Proceedings of the National Academies of Science of the United States*, December 15th, 112(50), pp. 15277–15284, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4687585/)

We provided a model of networks of military alliances and the interactions of those with international trade. We showed that regardless of military technologies and asymmetries among countries, nonempty stable networks fail to exist unless trade considerations are substantial. Moreover, the network perspective gives us an understanding of how trade might prevent conflict, by discouraging countries from turning against their allies and encouraging countries to defend their trade partners. Although this points to trade as a necessary condition for stability, whether it is sufficient for stability depends on size of the costs and benefits of war. In closing, we comment on several other features of international relations that are part of the larger picture of interstate war. A notable change in alliances during the Cold-War period was from a “multipolar” to a “bipolar” structure, something which has been extensively discussed in the Cold-War literature (e.g., see ref. 12 for references). Although this lasted for part of the postwar period, and was characterized by a stalemate between the Eastern and Western blocs, such a system of two competing cliques of alliances is only war-stable if there are sufficient trade benefits between members of a clique, as shown in our second theorem. Moreover, it is more of a historical observation than a theory, and it does not account at all for the continued peace that has ensued over the last several decades. Thus, this fits well within the scope of the model and does not account for the overall trend in peace. Another institutional observation regarding the post-WWII calm is that institutions have allowed for coordination of countries onto a peaceful “collective security” equilibrium where any country disrupting international peace is punished by all other countries, so that war against one is war against all. However, as shown by ref. 34, this equilibrium is in some sense “weak”: It relies heavily upon the assurance that a country tempted to join an attacking coalition will refuse and that all countries will follow through on their punishment commitments, so that far-sighted expectations of off-equilibrium behavior are correct. Given that various small conflicts since WWII did not precipitate a global response, such doubts of some countries’ commitment to follow through on punishments seem reasonable.§§§§ Although collective security does not seem to explain the lasting peace, it nonetheless does suggest an interesting avenue for extension of our model: taking a repeated games approach to networked conflict and trade. One more relevant observation regarding changes in patterns of conflict is the so-called democratic peace: Democracies rarely go to war with each other. This coupled with a large growth of democracies might be thought to explain the increase in peace. However, once one brings trade back into the picture, it seems that much of the democratic peace may be due to the fact that well-established democracies tend to be better-developed and trade more. Indeed, studies (38, 39) indicate that poor democracies are actually significantly more likely to fight each other than other countries, and that paired democracy is only significantly correlated with peace when the countries involved have high levels of economic development, which is consistent with trade’s playing the major role rather than the government structure. Our model abstracts from political considerations, which still could be significant, and so this suggests another avenue for further extension.

#### [3] Space colonization: Capitalism is key to drive private investment and research

Spring 16 (Todd, 6/3/16, The Policy, “A Case for Capitalism, In Regards to Space Travel,” https://thepolicy.us/a-case-for-capitalism-in-regards-to-space-travel-d77e50f8116e#.q49v6pqm2, 9/7/16, SM)

As of now, N.A.S.A. does not plan on sending a ~~manned~~ mission to Mars until the 2030s — assuming, of course, they get the government funding they need to undertake such a massive project. Considering the recent cuts to deep space exploration, down nearly $300 million from 2016, I am not certain what the condition of the program will look like in another two years…much less the gap between now and the 2030s. Where, then — if the government and its agencies will not provide us with the money for exploration — will we turn to slake our thirst for cosmic space travel? SpaceX. Private corporations. Capitalism. Seeing this article in the news, reading day after day the story of budget cuts to N.A.S.A. in regards to deep-space exploration and other related programs, got me thinking about just how important it will be for private companies and corporations to undertake these projects…such as Elon Musk’s SpaceX, and countless others (read the full list here). The problem is that we have gotten it into our heads that Capitalism is the root cause of our economic woes in the United States, perhaps failing to understand that such policies are something like a double-edged sword: they could also be our salvation. This article provides a great list of the pro’s and con’s of Capitalism. I would recommend you take the short passing of time it requires to read it through-and-through before continuing. Now then. I have never been for fully-unhindered Capitalism. I do not believe that the government should stay out of economic affairs entirely, for as provided in the article many of the con’s relate to improper regulation (monopolization) as opposed to something fundamentally wrong, but I do not believe that any government should be going about shoving their claws into every economic affair either. There must be a healthy balance, especially if Capitalism is to work as it is supposed to work. The same goes for any policy. The government should be there to bolster competition between businesses…not favor one or bail-out the other. The more regulation, the more interference or amendment, the less it works…but this mix of regulation and free market must fall in the “goldilocks zone” if the citizens of said society are to reap its full benefit. If not, like planets about a star, the society shall either burn or freeze. One of those benefits is highlighted by Elon Musk’s SpaceX: the intervention of privately-funded companies to do things that a traditional government agency cannot. Namely, the exploration and eventual colonization of Mars in a reasonable, step-by-step timeframe…unlike the “we will get to it eventually” mindset plaguing the bowels of the United States government. Were not the policies in place to foster the growth of private companies, our best chance at getting people out of Earth-orbit — the Bush-approved, now-cancelled, insanely-expensive Constellation program — would have gone the way of promises and well-wishes. It is my hope that Elon Musk and space entrepreneurs like him are not simply blowing steam, and that one day — perhaps even within my lifetime — I could be on my way to a space hotel on the Moon, flying aboard a space airliner with the name of a private company plastered across the side. Regardless, if we humans are to truly become a multi-planet species we must not hinder economic growth with narrow thoughts. We must not become confused that the “problems down here” and the “problem of getting out there” must be in conflict; they do not need to, and we must not suppose they should. They are two separate issues with two unique sets of problems, and thus this policy of taking resources from one to give to the other will only ensure that neither issue is given that which it needs, or enough to fix what must be solved. Therefore I propose that we support these pioneers of space travel in any way that we are able. Let us not forget that solving the issue of “how do we get there” might just lead to the end of our “problems down here”.

#### Space privatization is good—it prevents war and ensures sustainably-sourced space projects for public good.

Frankowski 17 [(Paweł, assistant Professor at the Chair of International Relations and Foreign Policy, Institute of Political Science and International Relations, Jagiellonian University) “Outer Space and Private Companies: Consequences for Global Security,” 2017, pg. 144-145] TDI

In the terms of privatization and space security, space remains relatively untapped, but commercial and military benefits from space exploration/exploitation could even lead to ‘privatization of space’. Such privatization will result from growing pressure on spacefaring countries to defect from cooperation, since is less viable with good number of multiple actors who entered the space.36 However, space policy and space research are characterized by very high costs, which are rather impossible to bear by private companies, limited by economic calculation. As pointed out earlier, under-investment in technological development by private companies it is related to the fact that these actors are not focused on profits of a social nature, such as improving the quality of life of the recipient of the product.37 This makes some technology, potentially beneficial to society, not developed or introduced into use, because the profit margin is too small to make this viable for commercial players.

To conclude, privatization of space security can develop in unexpected way, but in today’s space environment private actors would rather play the role of security regulators than security providers. When investment in space technologies is less profitable than other areas of economy, private actors would focus on soft law and conflict prevention in space, and new private initiatives will appear. For example, apart from important space companies, as SpaceX or Blue Origin active in outer space, other private actors as Secure World Foundation (SWF), who focus on space sustainability, will play more important role in crafting international guidelines for space activities.38 This path the way for future solutions and projects, as cleaning the space debris, extracting resources from asteroids and planetoids, refuelling satellites, providing payload capabili-ties for governmental entities on market-based logic, will be based on activity non-state actors, providing soft law and regulatory solutions, where space faring states are unable to find any compromise. Therefore private companies will be in fact global (or space) regulators, as part of UNCOPUS, being involved in space activities.39

The last argument for private involvement in space security comes from an approach based on common good and resilience of space assets, emphasized by the Project Ploughshares, as an important part of space security. As of 2017 there are more than 700,000 man-made objects on the Earth’s orbit bigger than 1 cm, while 17,000 of them are bigger than 10 cm.40 Some of them are traced by SSA systems, both American and European, but these systems are public-military owned, and private operators are not granted any access to this data. Any collision of space object with space debris, even with small particles, might result in a chain reaction, called Kessler’s syndrome, and not only private but public, and military assets will be destroyed or impaired. In such conditions, a reluctant cooperation between the public and private sector, and unwillingness to share vulnerable data by public actors seem to confirm that private space activity is more than necessary. This is an apparent case when logic of mistrust between state powers must be overcome by private actors, perhaps by suggesting common preferences for debris mitigation, and space situational awareness. In the case of space debris, Space Data Association, an initiative supported by private sector, with its main aim to enhance data sharing between commercial satellite operators, could be an example of nascent public good provided by private actors for the sake of global security.

#### Capitalism leads to successful space operations—4 reasons

Zimmerman 17 - Robert Zimmerman, award-winning independent science journalist and historian who has written four books and innumerable articles on science, engineering, and the history of space exploration and technology for Science, Air & Space, Sky & Telescope, Astronomy, The Wall Street Journal, USA Today, and a host of other publications. He also reports on space, science, and culture on his website, http://behindtheblack.com. He does not work for any aerospace company and has never received any money from NASA for his reporting. His books include Leaving Earth: Space Stations, Rival Superpowers, and the Quest for Interplanetary Travel (Joseph Henry Press), which won the American Astronautical Society’s Eugene M. Emme Astronautical Literature Award in 2003 as that year’s best space history for the general public. He also has written Genesis: The Story of Apollo 8 (Mountain Lake Press) and The Universe in a Mirror: The Saga of the Hubble Space Telescope and the Visionaries Who Built It (Princeton University Press). In 2000 he was co-winner of the David N. Schramm Award, given by the High Energy Astrophysics Division of the American Astronomical Society for Science Journalism, for his essay in The Sciences, “There She Blows,” on the 35-year-old astronomical mystery of gamma ray bursts, 17 ("Capitalism in Space," CNAS, 3-10-2017, Available Online at https://www.cnas.org/publications/reports/capitalism-in-space, Accessed on 7-9-2017 //JJ)

It is essential for any nation that wishes to thrive and compete on the world stage to have a successful and flourishing aerospace industry, centered on the capability of putting humans and payloads into space affordably and frequently. This is a bipartisan position held by elected officials from both American political parties since the Soviet launch of the Sputnik satellite in 1957.

The reasons for this are straightforward:

Military strength: For strategic reasons, the military must have the capability of launching satellites into orbit for the purpose of surveillance and reconnaissance. In addition, the country’s missile technology must be state-of-the-art to make this data gathering as effective as possible. A healthy aerospace industry is the only way to achieve both.

Natural resources: The resources in space – raw materials from asteroids and the planets as well as energy from the Sun – are there for the taking. Other nations are striving to obtain those resources and the wealth those assets will provide for their citizens. Without direct access to those resources, American society will have less opportunity for growth and prosperity, and the country will eventually fall behind as a major power.

Economic growth: A thriving aerospace industry helps fuel the U.S. economy. It develops cutting-edge technology in fields such as computer design, materials research, and miniaturization that drives innovation and invention in every other field.

National prestige: Even if the previous three reasons did not exist, the prestige of the United States requires that we remain competitive in the increasingly global race to explore and settle the solar system. If the United States doesn’t compete in this effort, future generations of Americans will be left behind as China, Russia, Europe, India, and an increasing number of other nations establish operations in space and permanent colonies on the Moon, Mars, and the asteroids.

#### Effective private Aerospace industry is essential to resolve resource issues

Zimmerman 17 – Robert Zimmerman, Award Winning Space Historian. [“**Capitalism in Space**”, *CNAS*, March 10th, <https://www.cnas.org/publications/reports/capitalism-in-space>, AZ]

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All of these **goals require a prosperous U.S. aerospace industry**, which in turn requires abOVe all a viable space-launch industry, capable of placing payloads, both unmanned and manned, into orbit cheaply and efficiently.

Unfortunately, since the beginning of the 21st century the U.S. government has struggled to create and maintain a viable launch industry. Even as the government terminated the Space Shuttle program, with its ability to place and return humans and large cargoes to and from orbit, NASA’s many repeated efforts since the mid-1980s to generate a replacement have come up empty.1

In addition, in the 1990s the Department of Defense instituted a new program, the Evolved Expendable Launch Vehicle (EELV), to guarantee itself launch services that – though successful in procuring those services – have done so at a very high cost, so high, in fact, that the expense now significantly limits the military’s future options for maintaining its access to, and assets in, space.

Even as the federal government struggled with this problem, a fledgling crop of new American private launch companies have emerged in the past decade, funded initially by the vast profits produced by the newly born internet industry. These new companies have not been motivated by national prestige, military strength, or any of the traditional national political goals of the federal government. Instead, these private entities have been driven by **profit, competition**, and in some cases the ideas of the visionary individuals running the companies, resulting in some remarkable success, achieved with relatively **little money** and in an astonishingly short period of time.

Because of these differing approaches – the government on one hand and the **private sector** on the other – policymakers have an opportunity to compare both and use that knowledge to **create the most successful American space effort possible**.

#### Every delay to space col kills trillions of humans

Bostrom 3 – Department of Philosophy, Yale University, Director of the Future of Humanity Institute at Oxford University, 2002 (Nick, “Astronomical Waste: The Opportunity Cost of Delayed Technological Development,” Preprint, Utilitas Vol. 15, No. 3, pp. 308-314, http://www.nickbostrom.com/astronomical/waste.html)

As I write these words, suns are illuminating and heating empty rooms, unused energy is being flushed down black holes, and our great common endowment of negentropy is being irreversibly degraded into entropy on a cosmic scale. These are resources that an advanced civilization could have used to create value-structures, such as sentient beings living worthwhile lives. The rate of this loss boggles the mind. One recent paper speculates, using loose theoretical considerations based on the rate of increase of entropy, that the loss of potential human lives in our own galactic supercluster is at least ~10^46 per century of delayed colonization.[1] This estimate assumes that all the lost entropy could have been used for productive purposes, although no currently known technological mechanisms are even remotely capable of doing that. Since the estimate is meant to be a lower bound, this radically unconservative assumption is undesirable. We can, however, get a lower bound more straightforwardly by simply counting the number or stars in our galactic supercluster and multiplying this number with the amount of computing power that the resources of each star could be used to generate using technologies for whose feasibility a strong case has already been made. We can then divide this total with the estimated amount of computing power needed to simulate one human life. As a rough approximation, let us say the Virgo Supercluster contains 10^13 stars. One estimate of the computing power extractable from a star and with an associated planet-sized computational structure, using advanced molecular nanotechnology[2], is 10^42 operations per second.[3] A typical estimate of the human brain’s processing power is roughly 10^17 operations per second or less.[4] Not much more seems to be needed to simulate the relevant parts of the environment in sufficient detail to enable the simulated minds to have experiences indistinguishable from typical current human experiences.[5] Given these estimates, it follows that the potential for approximately 10^38 human lives is lost every century that colonization of our local supercluster is delayed; or equivalently, about 10^31 potential human lives per second. While this estimate is conservative in that it assumes only computational mechanisms whose implementation has been at least outlined in the literature, it is useful to have an even more conservative estimate that does not assume a non-biological instantiation of the potential persons. Suppose that about 10^10 biological humans could be sustained around an average star. Then the Virgo Supercluster could contain 10^23 biological humans. This corresponds to a loss of potential equal to about 10^14 potential human lives per second of delayed colonization. What matters for present purposes is not the exact numbers but the fact that they are huge. Even with the most conservative estimate, assuming a biological implementation of all persons, the potential for one hundred trillion potential human beings is lost for every second of postponement of colonization of our supercluster.[6]

#### [4] Environment: Capitalism fosters growth and trade that reduce CO2 emissions – It also facilitates the transition to renewables – We cite the most conclusive studies

Ozturk et al 15 – Ilhan Ozturk, senior lecturer in the Faculty of Business and Economics at Cag University, Slim Ben Youssef, Manouba University, ESC de Tunis, Mehdi Ben Jebli, Amen Bank, Kef Agency, Tunisia, 2015 (“Testing environmental Kuznets curve hypothesis: The role of renewable and non-renewable energy consumption and trade in OECD countries,” *Ecological Indicators*, September 2nd, Available To Subscribing Institutions Through Science Direct)

For both models we show that increasing renewable energy consumption reduces CO2 emissions in the long-run. Thus, encouraging renewable energy use by granting research and development (R&D) programs, reinforcing regulatory framework, etc. is a good policy for OECD countries to combat global warming. This result is consistent with that of Ben Jebli and Ben Youssef (2015a) for the export model. However, our result is not similar to that of Apergis et al. (2010) as they show that more renewable energy consumption increases CO2 emissions for the panel of 19 developed and developing countries they consider. We show that increasing exports or imports reduces CO2 emissions. This result could be explained by the fact that most countries of our considered panel are developed countries. Since trade has a positive effect on per capita GDP and knowing that the inverted U-shaped EKC hypothesis is verified for this panel of OECD countries, the increase in per capita trade leads to a reduction in per capita CO2 emissions in the long-run. This result is similar to that of Shahbaz et al. (2014) who show that the EKC hypothesis is verified in UAE and that increasing exports in UAE reduces CO2 emissions in the long-run. This result is contrary to that found by Ben Jebli and Ben Youssef (2015a) as they show that increasing trade increases CO2 emissions. Their result is due to the fact that the inverted U-shaped EKC hypothesis is not verified in Tunisia considered as a developing country. In addition, our result differs from that of Halicioglu (2009) showing that increasing the trade openness ratio in turkey increases per capita CO2 emissions in the long-run, whereas the EKC hypothesis is verified analytically but not graphically. It is evident from these empirical studies that when the EKC hypothesis is verified, there is a great chance that trade has a beneficial and reducing impact on CO2 emissions. 4. Conclusion and policy implications In this paper, we use panel cointegration techniques to investigate the short and long-run causal nexus between per capita carbon dioxide emissions, economic growth, renewable and non-renewable energy consumption and trade (exports or imports) for a panel of 25 OECD countries over the period 1980–2010. We also try to test the validity of the inverted U-shaped EKC hypothesis for this panel of countries. Our short-run Granger causality tests show the existence of a unidirectional causality running from trade to CO2 emissions, a unidirectional causality running from exports to renewable energy consumption, bidirectional causality between imports and renewable energy consumption, and bidirectional causality between renewable and non-renewable energy consumption. This last causality is indicative of short-run substitutability between the two energy sources. In the long-run however, there is evidence of bidirectional causal relationships between per capita CO2 emissions, real GDP, renewable and non-renewable energy consumption, real exports (or imports). The FMOLS and DOLS long-run estimates support the inverted U-shaped EKC hypothesis between per capita CO2 emissions and GDP. This result is not surprising as most of the considered countries in our panel are developed countries. As expected, increasing non-renewable energy consumption increases CO2 emissions in the long-run. However, increasing renewable energy consumption reduces CO2 emissions in the long-run. Therefore, and because of the substitutability between non-renewable and renewable energy, increasing the consumption of renewable energy leads to a reduction in CO2 emissions and may reduce the dependency of these OECD countries on fossil energy. Long-run estimates show also that increasing trade reduces CO2 emissions. Thus, increasing international commercial exchanges, which has been shown to be increasing economic growth in most empirical studies, is actually helping in combating global warming for this panel of OECD countries.

#### Regulated innovation solves climate.

Cohen 21 [(Steve, is the Senior Vice Dean of Columbia’s School of Professional Studies and a Professor in the Practice of Public Affairs at Columbia University’s School of International and Public Affairs)"Kerry Was Correct: Decarbonization Will Require New Technology," 5-24-2021, https://news.climate.columbia.edu/2021/05/24/kerry-was-correct-decarbonization-will-require-new-technology/] TDI

It’s useful sometimes to ground analysis in fact. One environmental fact is that overall, the air and water in the United States are cleaner today than they were in 1970. America consumes more today and pollutes less than it did 50 years ago. How did that happen? In the case of air, regulation of motor vehicles and power plants resulted in new stack scrubbing technology, fuel switching and the mass adoption of the catalytic converter. Due to fuel milage standards, cars became lighter, more energy-efficient and cleaner. Power generation and vehicles (not heavy industry) have always been the largest sources of air pollution, and we use more cars and electricity today than we used 50 years ago. Technological innovation coupled with strong regulation resulted in improved air quality. We see similar results with sewage treatment and with the management of non-point sources of water pollution.

The technology of air, water and waste management has advanced dramatically since we created the EPA back in 1970. I believe that decarbonization is in the early stages of the same process. The technology we have now can get us started, but if it was really where it needed to be, it would already be in use. Electric cars are a good example. Yes, we need more charging stations and public policy should do even more to encourage early adoption. But what we really need is a battery so good that it can deliver a charge for 500 or 1,000 miles. We need an electric vehicle that costs less than today’s internal combustion vehicles. Those electric vehicles will require technological innovation that I am certain we will see but is not yet available. Those technologies will make the internal combustion engine obsolete. We are close. In fact, Ford recently announced the electronic version of its best-selling truck. According to Ford’s press release:

“The truck of the future is here. The F-150 Lightning is the smartest, most innovative truck Ford has ever built. From near instant torque to intelligent towing, seamless connectivity to software updates, plus power for your home, a power frunk and a digital screen that’s larger than any currently offered on a full-size truck – F-150 Lightning is a driving and ownership experience unlike any other.”

With federal tax incentives, the cost of the truck is competitive with the gasoline-powered version. The Ford F-150 is an indicator of technological process, and we will soon learn if it is able to win over truck-buyers.

Solar technology is also improving, but current technology is expensive, toxic, and large. Smaller, less toxic, and cheaper solar cells are now being invented. During the debate after John Kerry’s recent interview on BBC One’s Andrew Marr show, I kept hearing from climate experts and advocates that we have the technology we need and the search for new technology is just an excuse for inaction. I’m reminded of the pictures of people with the first cell phones in the 1980s. They were the size of a brick, cost about $10,000 (in 1980 dollars) and had very limited battery life. In 2004 we got the flip phone with seven hours of battery life, and a few years later, Apple invented the iPhone, which led to the small computers we keep in our pockets today. Sure, we had cell phones 40 years ago, but they were not ready for prime time. The need for additional research and the development of new technology is not an excuse for inaction today but an argument for a broader set of actions than simply using off-the-shelf technology. A key action is research leading to new technologies.

The transition to renewable energy and electronic vehicles has begun, but additional technological innovation and infrastructure investment will be needed to succeed. The larger problem will be the greenhouse gases produced when we manufacture steel, cement, and food. These industrial processes must also reduce their production of greenhouse gasses and developing the technology needed for these changes will be a massive national undertaking. As Ula Chrobak observed in a recent issue of Popular Science:

“… making electricity is only about a third of global emissions and a quarter of US emissions, explains Zeke Hausfather, director of climate and energy at the Breakthrough Institute. There are other energy-intensive sectors that can’t readily switch to sustainable alternatives. Industrial processes—including steel, cement, and chemical production—are not straightforward to clean up. One reason is that many rely on temperatures of around 1,000°C, which can be easily produced through a fossil-powered furnace, but doing the same with an electric heater requires a prohibitively expensive amount of energy. The process of turning atmospheric nitrogen into fertilizer, for instance, produces 1.4 percent of all global CO2 emissions. For these industries, hydrogen and carbon capture technologies may be needed to help remove all emissions.”

#### Solves warming – key to tech innovation in the short term

Parenti 13 (Christian Parenti, Christian Parenti is a Puffin Foundation Writing Fellow, contributing editor at The Nation and a visiting professor at Brooklyn College, CUNY, “A Radical Approach to the Climate Crisis” [http://www.dissentmagazine.org/article/a-radical-approach-to-the-climate-crisis] Summer //mtc)

Several strands of green thinking maintain that capitalism is incapable of a sustainable relationship with non-human nature because, as an economic system, capitalism has a growth imperative while the earth is finite. One finds versions of this argument in the literature of eco-socialism, deep ecology, eco-anarchism, and even among many mainstream greens who, though typically declining to actually name the economic system, are fixated on the dangers of “growth.”¶ All this may be true. Capitalism, a system in which privately owned firms must continuously out-produce and out-sell their competitors, may be incapable of accommodating itself to the limits of the natural world. However, that is not the same question as whether capitalism can solve the more immediate climate crisis.¶ Because of its magnitude, the climate crisis can appear as the sum total of all environmental problems—deforestation, Over-fishing, freshwater depletion, soil erosion, loss of biodiversity, chemical contamination. But halting greenhouse gas emissions is a much more specific problem, the most pressing subset of the larger apocalyptic panorama.¶ And the very bad news is, time has run out. As I write this, news arrives of an ice-free arctic summer by 2050. Scientists once assumed that would not happen for hundreds of years.¶ Dealing with climate change by first achieving radical social transformation—be it a socialist or anarchist or deep-ecological/neo-primitive revolution, or a nostalgia-based localista conversion back to a mythical small-town capitalism—would be a very long and drawn-out, maybe even multigenerational, struggle. It would be marked by years of mass education and organizing of a scale and intensity not seen in most core capitalist states since the 1960s or even the 1930s.¶ Nor is there any guarantee that the new system would not also degrade the soil, lay waste to the forests, despoil bodies of water, and find itself still addicted to coal and oil. Look at the history of “actually existing socialism” before its collapse in 1991. To put it mildly, the economy was not at peace with nature. Or consider the vexing complexities facing the left social democracies of Latin America. Bolivia, and Ecuador, states run by socialists who are beholden to very powerful, autonomous grassroots mOVements, are still very dependent on petroleum revenue.¶ A more radical approach to the crisis of climate change begins not with a long-term vision of an alternate society but with an honest engagement with the very compressed timeframe that current climate science implies. In the age of climate change, these are the real parameters of politics.¶ Hard Facts¶ The scientific consensus, expressed in peer-reviewed and professionally vetted and published scientific literature, runs as follows: For the last 650,000 years atmospheric levels of CO2—the primary heat-trapping gas—have hOvered at around 280 parts per million (ppm). At no point in the preindustrial era did CO2 concentrations go abOVe 300 ppm. By 1959, they had reached 316 ppm and are now Over 400 ppm. And the rate of emissions is accelerating. Since 2000, the world has pumped almost 100 billion tons of carbon into the atmosphere—about a quarter of all CO2 emissions since 1750. At current rates, CO2 levels will double by mid-century.¶ Climate scientists believe that any increase in average global temperatures beyond 2 degrees Celsius abOVe preindustrial levels will lead to dangerous climate change, causing large-scale desertification, crop failure, inundation of coastal cities, mass migration to higher and cooler ground, widespread extinctions of flora and fauna, proliferating disease, and possible social collapse. Furthermore, scientists now understand that the earth’s climate system has not evolved in a smooth linear fashion. Paleoclimatology has uncOvered evidence of sudden shifts in the earth’s climate regimes. Ice ages have stopped and started not in a matter of centuries, but decades. Sea levels (which are actually uneven across the globe) have risen and fallen more rapidly than was once believed.¶ Throughout the climate system, there exist dangerous positive-feedback loops and tipping points. A positive-feedback loop is a dynamic in which effects compound, accelerate, or amplify the original cause. Tipping points in the climate system reflect the fact that causes can build up while effects lag. Then, when the effects kick in, they do so all at once, causing the relatively sudden shift from one climate regime to another.¶ Thus, the UN’s Intergovernmental Panel on Climate Change says rich countries like the United States must cut emissions 25 percent to 40 percent below 1990 levels by 2020—only seven years away—and thereafter make precipitous cuts to 90 percent below 1990 levels by 2050. This would require global targets of 10 percent reductions in emissions per annum, starting now. Those sorts of emissions reductions have only occurred during economic depressions. Russia’s near total economic collapse in the early 1990s saw a 37 percent decrease in CO2 emissions from 1990 to 1995, under conditions that nobody wants to experience. ¶ The political implications of all this are mind-bending. As daunting as it may sound, it means that it is this society and these institutions that must cut emissions. That means, in the short-term, realistic climate politics are reformist politics, even if they are conceived of as part of a longer-term anti-capitalist project of totally economic re-organization.¶ Dreaming the Rational¶ Of course, successful reformism often involves radical means and revolutionary demands. What other sort of political pressure would force the transnational ruling classes to see the scientific truth of the situation? But let us assume for a second that political elites faced enough pressure to force them to act. What would be the rational first steps to stave off climate chaos?¶ The watchwords of the climate discussion are mitigation and adaptation—that is, we must mitigate the causes of climate change while adapting to its effects. Mitigation means drastically cutting our production of CO2 and other greenhouse gases, such as methane and chlorofluorocarbons, that prevent the sun’s heat from radiating back out to space.¶ Mitigation means mOVing toward clean energy sources, such as wind, solar, geothermal, and tidal kinetic power. It means closing coal-fired power plants, weaning our economy off fossil fuels, building a smart electrical grid, and making massive investments in carbon-capture and -sequestration technologies. (That last bit of techno-intervention would have to be used not as a justification to keep burning coal, as is its current function, but to strip out atmospheric CO2 rapidly and get back to 350 ppm and away from the dangerous tipping points.)¶ Adaptation, on the other hand, means preparing to live with the effects of climatic changes, some of which are already underway and some of which are inevitable. Adaptation is both a technical and a political challenge.¶ Technical adaptation means transforming our relationship to non-human nature as nature transforms. Examples include building seawalls around vulnerable coastal cities, giving land back to mangrOVes and everglades so they can act to break tidal surges during giant storms, opening wildlife migration corridors so species can mOVe away from the equator as the climate warms, and developing sustainable forms of agriculture that can function on an industrial scale even as weather patterns gyrate wildly.¶ Political adaptation, on the other hand, means transforming social relations: devising new ways to contain, avoid, and deescalate the violence that climate change is fueling and will continue to fuel. That will require progressive economic redistribution and more sustainable forms of development. It will also require a new diplomacy of peace building.¶ Unfortunately, another type of political adaptation is already under way—that of the armed lifeboat. This adaptation responds to climate change by arming, excluding, forgetting, repressing, policing, and killing. The question then becomes how to conceive of adaptation and mitigation as a project of radical reform—reforms that achieve qualitative change in the balance of power between the classes.¶ The core problem in the international effort to cut emissions is fundamentally the intransigence of the United States: it failed to ratify the Kyoto Protocol and has played an obstructionist role at subsequent negotiations. Domestically, progress has been just as frustratingly slow. We have no carbon tax, nor any program of robust investment in clean technology. Even the minimal production tax credit for clean energy generated by solar, wind, and hydro power has not been locked in as a long-term commitment. This creates uncertainty about prices, and, as a result, private investment in clean tech is stalling.¶ China, on the other hand, though now the world’s second-largest economy and largest greenhouse gas polluter, is mOVing ahead with a fast-growing clean-tech industry—that is to say, with mitigation. The Chinese wind sector has grown steadily since 2001. “According to new statistics from the China Electricity Council,” reported American Progress senior fellow Joseph Romm, “China’s wind power production actually increased more than coal power production for the first time ever in 2012.” This growth is the result, in part, of robust government support: China has invested $200.8 billion in stimulus funding for clean tech. Estimates of U.S. stimulus funding for clean technology range from $50 to $80 billion.¶ The European Union is also mOVing forward to create a €1 trillion regional supergrid. Germany and Portugal in particular are mOVing aggressively to expand their already quite large clean-tech sectors. Action in the core industrial economies is essential because only they have the infrastructure that can propel the clean-tech revolution and transform the world economy.¶ A De Facto Carbon Tax¶ Environmental economists tend to agree that the single most important thing the United States could do to accelerate the shift to clean energy would be to impose a carbon tax. Despite our political sclerosis and fossil fuel fundamentalism, the means to do that already exist.¶ First and foremost, there is the Environmental Protection Agency, which could achieve significant and immediate emissions reductions using nothing more than existing laws and current technologies. According to Kassie Siegel at the Center for Biological Diversity, “The Clean Air Act can achieve everything we need: a 40 percent reduction of greenhouse gas emissions Over 1990 levels by 2020.”¶ Rather boring in tone and dense with legalistic detail, the ongoing fight Over EPA¶ rulemaking is probably the most important environmental battle in a generation. Since 2007, thanks to the pressure and lawsuits of green activists, the EPA has had enormous—but under-utilized—power. That was the year when the Supreme Court ruled, in Massachusetts v. Environmental Protection Agency, that the agency should determine whether greenhouse gases threaten human health. In December 2010, the EPA published a science-based “endangerment finding,” which found that CO2 and five other greenhouse gases are, in fact, dangerous to human life because they cause global warming.¶ Once the EPA issues an endangerment finding, it is legally bound to promulgate regulations to address the problem. The first of these post–Massachusetts v. EPA “tailoring rules” were for “mobile sources.” Between 2011 and 2012, regulations for cars and for trucks went into effect. Then the EPA set strict limits for new power plants in 2012. But other major sources of greenhouse gas pollution—like existing electric power plants (which pump out roughly 40 percent of the nation’s total GHG emissions), oil refineries, cement plants, steel mills, and shipping—have yet to be properly regulated pursuant to Massachusetts v. EPA.¶ If the EPA were to use the Clean Air Act—and do so “with extreme prejudice”—it could impose a de facto carbon tax. Industries would still be free to burn dirty fossil fuels, but they would have to use very expensive, and in some cases nonexistent, new technology to meet emission standards. Or they would have to pay very steep and mounting fines for their emissions. Such penalties could reach thousands of dollars per day, per violation. Thus, a de facto carbon tax. Then cheap fossil fuel energy would become expensive, driving investment toward carbon-neutral forms of clean energy like wind and solar. For extra measure we could end fossil fuel subsidies. Before long, it would be more profitable to invest in clean energy sources than dangerous and filthy ones.¶ Big Green Buy and U.S. “Shadow Socialism”¶ According to clean-tech experts, innovation is now less important than rapid, large-scale implementation. In other words, developing a clean-energy economy is not about new gadgets but about new policies. Most of the energy technologies we need already exist. You know what they are: wind farms, concentrated solar power plants, geothermal and tidal power, all feeding an efficient smart grid that, in turn, powers electric vehicles and radically more energy-efficient buildings.¶ But leading clean technologies remain slightly more expensive than the old dirty-tech alternatives. This “price gap” is holding back the mass application of clean technology. The simple fact is that capitalist economies will not switch to clean energy until it is cheaper than fossil fuel. The fastest way to close the price gap is to build large clean-tech markets that allow for economies of scale. But what is the fastest way to build those markets? More research grants? More tax credits? More clumsy pilot programs?¶ Government procurement is one of the hidden tools of American capitalism’s “shadow socialism.”¶ No. The fastest, simplest way to do it is to reorient government procurement away from fossil fuel energy and toward clean energy and technology—to use the government’s vast spending power to create a market for green energy. Elsewhere, I have called this the Big Green Buy. Consider this: federal, state, and local government constitute more than 38 percent of our GDP. In more concrete terms, Uncle Sam owns or leases more than 430,000 buildings (mostly large office buildings) and 650,000 vehicles. (Add state and local government activity, and all those numbers grow by about a third again.) The federal government is the world’s largest consumer of energy and vehicles, and the nation’s largest greenhouse gas emitter.¶ Government procurement is one of the hidden tools of American capitalism’s “shadow socialism.” By shadow socialism I refer to the massively important but often Overlooked role of government planning, investment, subsidy, procurement, and ownership in the economic development of American capitalism. A detailed account of that history is offered in Michael Lind’s book Land of Promise. From railroads, to telecommunications, and aviation and all the attendant sub-industries of these sectors, government has provided the capital and conditions for fledging industries to grow large. For example, government didn’t just fund the invention of the microprocessor; it was also the first major consumer of the device. Throughout the 1950s, more than half of IBM’s revenue came from government contracts. Along with money, these contracts provided a guaranteed market and stability for IBM and its suppliers, and thus attracted private investment—all of which helped create the modern computer industry.¶ Now consider the scale of the problem: our asphalt transportation arteries are clogged with 250 million gasoline-powered vehicles sucking down an annual $200 to $300 billion worth of fuel from more than 121,000 filling stations. Add to that the cost of heating and cooling buildings, jet travel, shipping, powering industry, and the energy-gobbling servers and mainframes that are the Internet, and the U.S. energy economy reaches a spectacular annual tab of 1.2 trillion dollars.¶ A redirection of government purchasing would create massive markets for clean power, electric vehicles, and efficient buildings, as well as for more sustainably produced furniture, paper, cleaning supplies, uniforms, food, and services. If government bought green, it would drive down marketplace prices sufficiently that the momentum toward green tech would become self-reinforcing and spread to the private sector.¶ Executive Order 13514, which Obama signed in 2009, directed all federal agencies to¶ increase energy efficiency; measure, report, and reduce their greenhouse gas emissions from direct and indirect activities; conserve and protect water resources through efficiency, reuse, and storm water management; eliminate waste, recycle, and prevent pollution; leverage agency acquisitions to foster markets for sustainable technologies and environmentally preferable materials, products, and services; design, construct, maintain, and operate high performance sustainable buildings in sustainable locations.¶ The executive order also stipulates that federal agencies immediately start purchasing 95 percent through green-certified programs and achieve a 28 percent greenhouse gas reduction by 2020. But it has not been robustly implemented.¶ Government has tremendous latitude to leverage green procurement because it requires no new taxes, programs, or spending, nor is it hostage to the holy grail of sixty votes in the Senate. It is simply a matter of changing how the government buys its energy, vehicles, and services. Yes, in many cases clean tech costs more up front, but in most cases, savings arrive soon afterward. And government—because of its size—is a market mOver that can leverage money-saving deals if it wishes to. ¶ Protest and the “Relative Autonomy” of the State¶ Why would the capitalist state mOVe to euthanize the fossil fuel industry, that most powerful fraction of the capitalist class? Or put another way, how can the state regain some of its “relative autonomy” from capital? History indicates that massive, crisis-producing protest is one of the most common reasons a modern state will act against the interests of specific entrenched elites and for the “general interest” of society. When the crisis of protest is bad enough, entrenched elites are forced to take a loss as the state imposes ameliorative action for the greater good of society.¶ Clearly, we need to build a well-organized, broadly supported, yet tactically and strategically radical mOVement to demand proper climate policy. For such a mOVement to be effective it must use myriad tactics, from lawsuits and lobbying to direct action such as tree-sits, road blockades, and occupations aimed at the infrastructure of the fossil fuel industry. Only by disrupting the working of the political and economic system as a whole can we forge a consensus that ending the fossil fuel sector is essential. (The work of Francis Fox Piven and Richard Cloward is, in my opinion, still among the best in tracing the dynamic of this process of rebellion and reform.)¶ At question, then, is not just the state’s capacity to evolve, but the capacity of the American people to organize and mobilize on a massive scale. Far be it from me to say exactly how such mOVements could or should be built, other than the way they always have been: by trial and error and with good leadership. MOVement building is a mass and organic process.¶ The Rebellion of Nature¶ Along with protest, a more organic source of crisis is already underway and may also help scare political elites into confronting big carbon. Climate change is a “rebellion of nature,” by which I mean the disruption caused by ecological breakdown. The history of environmental regulation in the West is, in many ways, the story of protest and advocacy combining with the rebellion of nature at the local (urban) scale. Together, they have forced rudimentary regulation in the name of health and sanitation.¶ By the 1830s, America’s industrial cities had become perfect incubators of epidemic disease, particularly cholera and yellow fever. Like climate change today, these diseases hit the poor hardest, but they also sickened and killed the wealthy. Class privilege offered some protection, but it was not a guarantee of safety. And so it was that middle-class “goo-goos” and “mugwumps” began a series of reforms that contained and eventually defeated the urban epidemics.¶ First, garbage-eating hogs were banned from city streets, then public sanitation programs of refuse collection began, sewers were built, safe public water provided, and housing codes were developed and enforced. Eventually, the epidemics of cholera stopped. Soon other infectious diseases, such as pulmonary tuberculosis, typhus, and typhoid, were largely eliminated. At the scale of the urban, capitalist society solved an environmental crisis through planning and public investment.¶ Climate change is a problem of an entirely different order of magnitude, but these past solutions to smaller environmental crises offer lessons. Ultimately, solving the climate crisis—like the nineteenth-century victory Over urban squalor and epidemic contagions—will require a re-legitimation of the state’s role in the economy.¶ The modern story of local air pollution offers another example of the “rebellion of nature.” As Jim McNeil outlines in Something New Under The Sun, smog inundations in industrial cities of the United States and Europe used to kill many people. In 1879–1880 smog killed 3,000 Londoners, and in Glasgow a 1909 inversion—where cold air filled with smoke from burning coal was trapped near the ground—killed 1,063. As late as 1952, a pattern of cold and still air killed 4,000 people in London, according to McNeil, and even more according to others. By 1956, the Britons had passed a clean air act that drOVe coal out of the major cities. In the United States there was a similar process. In 1953, smog in New York killed between 170 and 260 people, and as late as 1966 a smog inversion killed 169 New Yorkers. All of this helped generate pressure for the Clean Air Act of 1970.¶ Today, a similar process is underway in China. Local air quality is so bad that it is forcing changes to Chinese energy policy. A major World Bank study has estimated that “the combined health and non-health cost of outdoor air and water pollution for China’s economy comes to around $US 100 billion a year (or about 5.8% of the country’s GDP).” People across China are protesting pollution. Foreign executives are turning down positions in Beijing because of the toxic atmospheric stew that western visitors have taken to calling “airpocalypse.” The film director Chen Kaige, who won the Palme d’Or for his 1993 film Farewell My Concubine, told the world he couldn’t think or make films because of the Chinese capital’s appallingly bad air.¶ These local pressures are a large part of what is driving Chinese investment in renewable energy. Last year China added more energy capacity from wind than from the coal sector.¶ Capitalism vs. Nature?¶ Some of the first thinkers to note a conflict between capitalism and non-human nature were Karl Marx and Friedrich Engels. They came to their ecology through examining the local problem of relations between town and country—expressed simultaneously as urban pollution and rural soil depletion. In exploring this question they relied on the pioneering work of soil chemist Justus von Liebig. And from this small-scale problem, they developed the idea of capitalism creating a rift in the metabolism of natural processes.¶ Here is how Marx explained the dilemma:¶ Capitalist production collects the population together in great centers, and causes the urban population to achieve an ever-growing preponderance. This has two results. On the one hand it concentrates the historical motive force of society; on the other hand, it disturbs the metabolic interaction between man and the earth, i.e., it prevents the return to the soil of its constituent elements consumed by man in the form of food and clothing; hence it hinders the operation of the eternal natural condition for the lasting fertility of the soil….All progress in capitalist agriculture is a progress in the art, not only of robbing the worker, but of robbing the soil.¶ And as with “soil robbing,” so too concentrations of atmospheric CO2: the natural systems are out of sync; their elements are being rearranged and redistributed, ending up as garbage and pollution.¶ It may well be true that capitalism is incapable of accommodating itself to the limits of the natural world. But that is not the same question as whether or not capitalism can solve the climate crisis. Climate mitigation and adaptation are merely an effort to buy time to address the other larger set of problems that is the whole ecological crisis.¶ This is both a pessimistic and an optimistic view. Although capitalism has not Overcome the fundamental conflict between its infinite growth potential and the finite parameters of the planet’s pollution sinks, it has, in the past, addressed specific environmental crises.¶ Anyone who thinks the existing economic system must be totally transformed before we can deal with the impending climate crisis is delusional or in willful denial of the very clear findings of climate science. If the climate system unravels, all bets are off. The many progressive visions born of the Enlightenment will be swallowed and forgotten by the rising seas or smashed to pieces by the wrathful storms of climate chaos.

#### Any alternative to capitalism is terrible for the environment – Leads to inefficiencies, deforestation, increased land use and more emissions

Phillips 15 (Leigh Phillips is a science writer and European Union affairs journalist. Writing for Nature, the Guardian, the Daily Telegraph, the New Statesman, Jacobin, Scientific American, amongst other outlets, “Austerity Ecology & the Collapse-porn Addicts A defence of growth, progress, industry and stuff” ebook) DAH

But the Kool-Aid of the cult of localism is not just being drunk by Rob and Tony and Naomi. Localism is pushed by Bill McKibben—the ex-New Yorker journalist, initiator of the 400,000-strong People’s Climate March outside the UN climate talks in New York in the fall of 2014, and supremo of international climate-change activist group 350.org—in his latest book, Eaarth: Making a Life on a Tough New Planet (yes, that’s spelt correctly—McKibben added an extra ‘a’). Localism is the focus of novelist Barbara Kingsolver’s Animal, Vegetable, Miracle, a memoir of her family’s efforts to eat only food that they had grown themselves or obtain locally for a full year; as it is of The 100-Mile Diet by Alisa Smith and James MacKinnon, and most of food writer Michael Pollan’s oeuvre. There’s Local: The New Face of Food and Farming in America by Douglas Gayeton; The Locavore’s Handbook by Leda Meredith and Sandor Ellix Katz; cookbooks like Local Flavors: Cooking and Eating from America’s Farmers’ Markets by Deborah Madison. Twee little signs hand-calligraphed or rubber-stamp-printed on moss-green parchment and lavender-blush vellum card-stock in cafes, farmers’ markets and high-end grocery stores declare the localist virtue and upstandingness of their muffins, cranberry horseradish and herbal alternatives to deodorant. Busybody Facebook commissars enforce localist doctrine criticising the consumer choices of their friends (when they’re not judging their parenting choices). The local food movement has achieved such ubiquity that it became the mocking subject of satirical comedy series Portlandia in a sketch called ‘Is it Local?’, in which a pair of ethical restaurant-goers grill their waitress about the sustainable pedigree of the dish they are thinking of ordering, which involves a woodland-raised, heritage-breed chicken that has been fed a diet of sheep’s milk, soy and hazelnuts, from 30 miles south of Portland, and is named Colin. It seems so simple: food (or anything else) produced locally will not require the carbon-spewing transportation of such items via cargo ship or truck or plane from far away. It appears to be an easy rule of thumb enabling consumers to do the right thing. But the reality is a great deal more complicated. Instead of the crude heuristic of ‘food miles’, if we are genuinely concerned about greenhouse gas emissions, we need to make sure we are actually doing good, not just feeling good. That means that we need to base such decisions on full life-cycle assessment (LCA) studies—a method of analysis that takes into account all aspects of the production and distribution of a product. And when we do look at LCAs, for some products, it turns out that yes, indeed, it does make sense to relocalise production, but for many, many other items, the economies of scale involved make the amount of energy employed and thus greenhouse-gas emissions per item far less than an item that is locally produced, despite the thousands of ‘food-miles’. According to a 2005 UK Department of Environment, Food and Rural Affairs analysis,64 tomato farmers in sunny Spain produce less CO2 than tomato farmers in frequently overcast Britain employing heated greenhouses (630 kg of CO2 vs 2,394 kg of CO2 per tonne). The same is true of Kenyan versus Dutch rose growers, with the former producing six tonnes of CO2 per 12,000 roses cut, and the latter producing 35 tonnes of CO2 for the same amount.65 It is the production of food that that has the largest energy appetite, rather than transportation. Again, it is simply more efficient to have the roses grown where flower production depends almost entirely on the warmth of the sun in equatorial Kenya rather than on the heating and lighting systems of the temperate Netherlands. A similar investigation in 2008 by Carnegie Mellon researchers Christopher Weber and Scott Matthews,66 covering the American situation, found that 83 percent of an average household’s carbon footprint came from emissions during the production phase, with just four percent of full life-cycle greenhouse gas emissions coming from transport from producer to retailer. Weber and Matthews found that due to the different carbon-intensity of the production and distribution of different items, with red meat on average roughly 150 percent more carbon-intensive than chicken or fish, a far more effective rule of thumb than “buying local” would be a dietary shift away from beef and milk. “Shifting less than one day per week’s worth of calories from red meat and dairy products to chicken, fish, eggs or a vegetable-based diet achieves a greater greenhouse gas reduction than buying all locally sourced food,” they conclude. In a similar fashion, in terms of the amount of water used, it can be far more sensible to produce food in areas with heavy precipitation than in arid zones, reducing the need for irrigation, disruption of natural river flows, and piercing of aquifers. Some 70 percent of our freshwater use occurs in agriculture, so this should be a key concern of the localist eco-defenders. Geographer Pierre Desrochers and public policy analyst Hiroko Shimizu describe how agriculture that is local, small-scale, less-technology-intensive—and crucially, by definition, low in productivity—is necessarily more extensive, that is, it uses up much more land for the same amount of food. There is a very simple reason for this. Not every plot of land, with its particular climate, soil type, geology, topography and so on—its terroir, if you will (and I use that term fully aware of the irony of its presence in an essay arguing against localism)—is equally well suited to all types of plant and animal. Specialisation and a division of labour between different regions that are better at growing different items is thus a more efficient use of land: you’ll get more calories produced per hectare.67 The inverse of this process—disintensification, which localism requires—means turning more forest, wetlands and grasslands into agricultural space, releasing vast quantities of carbon in the immediate term and, in the future, eliminating the carbon sinks that forests would have represented. This process of indirect land-use change is essentially why biofuels have proven to be no climate solution. The defenders of localism are in thus little different to the biofuels industry, clinging to a particular agricultural practice long after the evidence has shown it to actually exacerbate climate change. A focus on local seasonality fails for the same reason. If we say: Buy as seasonally as possible, the first question that must be asked in response is: Which region’s seasonality are we talking about? New Zealand’s apple harvest season happens when it’s winter in the UK, making it more sensible to ship fresh granny smiths all the way from the Antipodes to Europe than to keep British apples in cold storage for six months. The same goes for New Zealand lamb, dairy products and onions, according to a trio of researchers at Wellington’s Lincoln University.68 Meanwhile another 2003 study from German researchers Elmar Schlich and Ulla Fleissner69 found via a full life-cycle assessment that large-scale Brazilian orange juice producers shipping their product around the world had lower per-unit energy demands than small-scale German apple juice squeezers driving their truck just ten kilometres to market. If the advice instead is not local seasonality, but ‘global seasonality’, picking things to eat when they’re in season wherever they come from, then yes, in principle, you may see some carbon emission reductions due to shorter storage periods. But in the modern era, most food items are always in season somewhere in the world. This isn’t true for all items, and for such products, a preference for their seasonality might make sense, but then again, this should be assessed on a case-by-case basis, using an LCA to take into account all the other variables related to carbon emissions. To do this would require something like a very detailed spreadsheet comparing all the different products and their component inputs, transport, storage requirements and packaging rather than the clumsy heuristic of “Buy seasonal!”, which, as demonstrated, in a number of cases is actually detrimental in terms of mitigating climate change. Such Excel Hell might make sense for more rational agricultural planning, but as far as an individual consumer is concerned, it would be far more effective to expend one’s time fighting for clean energy infrastructure than on this sort of faff.

#### [5] Living Conditions: Globalization and capitalism have empirically reduced inequality and drastically improved living conditions

Economist 16 —[“Why they’re wrong,” *The Economist*, 2016, http://www.economist.com/news/leaders/21707926-globalisations-critics-say-it-benefits-only-elite-fact-less-open-world-would-hurt, accessed 4 Dec 2016]

The backlash against trade is just one symptom of a pervasive anxiety about the effects of open economies. Britain’s Brexit vote reflected concerns about the impact of unfettered migration on public services, jobs and culture. Big businesses are slammed for using foreign boltholes to dodge taxes. Such critiques contain some truth: more must be done to help those who lose out from openness. But there is a world of difference between improving globalisation and reversing it. The idea that globalisation is a scam that benefits only corporations and the rich could scarcely be more wrong. The real pro-poor policy Exhibit A is the vast improvement in global living standards in the decades after the second world war, which was underpinned by an explosion in world trade. Exports of goods rose from 8% of world GDP in 1950 to almost 20% a half-century later. Export-led growth and foreign investment have dragged hundreds of millions out of poverty in China, and transformed economies from Ireland to South Korea. Plainly, Western voters are not much comforted by this extraordinary transformation in the fortunes of emerging markets. But at home, too, the overall benefits of free trade are unarguable. Exporting firms are more productive and pay higher wages than those that serve only the domestic market. Half of America’s exports go to countries with which it has a free-trade deal, even though their economies account for less than a tenth of global GDP. Protectionism, by contrast, hurts consumers and does little for workers. The worst-off benefit far more from trade than the rich. A study of 40 countries found that the richest consumers would lose 28 [percent] of their purchasing power if cross-border trade ended; but those in the bottom tenth would lose 63 [percent]. The annual cost to American consumers of switching to non-Chinese tyres after Barack Obama slapped on anti-dumping tariffs in 2009 was around $1.1 billion, according to the Peterson Institute for International Economics. That amounts to over $900,000 for each of the 1,200 jobs that were “saved”. Openness delivers other benefits. Migrants improve not just their own lives but the economies of host countries: European immigrants who arrived in Britain since 2000 have been net contributors to the exchequer, adding more than £20 billion ($34 billion) to the public finances between 2001 and 2011. Foreign direct investment delivers competition, technology, management know-how and jobs, which is why China’s overly cautious moves to encourage FDI disappoint (see article). What have you done for me lately? None of this is to deny that globalisation has its flaws. Since the 1840s advocates of free trade have known that, though the great majority benefit, some lose out. Too little has been done to help these people. Perhaps a fifth of the 6m or so net job losses in American manufacturing between 1999 and 2011 stemmed from Chinese competition; many of those who lost jobs did not find new ones. With hindsight, politicians in Britain were too blithe about the pressures that migration from new EU member states in eastern Europe brought to bear on public services. And although there are no street protests about the speed and fickleness in the tides of short-term capital, its ebb and flow across borders have often proved damaging, not least in the euro zone’s debt-ridden countries. As our special report this week argues, more must be done to tackle these downsides. America spends a paltry 0.1% of its GDP, one-sixth of the rich-country average, on policies to retrain workers and help them find new jobs. In this context, it is lamentable that neither Mr Trump nor Mrs Clinton offers policies to help those whose jobs have been affected by trade or cheaper technology. On migration, it makes sense to follow the example of Denmark and link local-government revenues to the number of incomers, so that strains on schools, hospitals and housing can be eased. Many see the rules that bind signatories to trade pacts as an affront to democracy. But there are ways that shared rules can enhance national autonomy. Harmonising norms on how multinational firms are taxed would give countries greater command over their public finances. A co-ordinated approach to curbing volatile capital flows would restore mastery over national monetary policy. These are the sensible responses to the peddlers of protectionism and nativism. The worst answer would be for countries to turn their backs on globalisation. The case for openness remains much the same as it did when this newspaper was founded to support the repeal of the Corn Laws. There are more—and more varied—opportunities in open economies than in closed ones. And, in general, greater opportunity makes people better off. Since the 1840s, free-traders have believed that closed economies favour the powerful and hurt the labouring classes. They were right then. They are right now.

#### The world is getting better because of capitalism – violence, genocide, and war are down and poverty has been drastically reduced

**Wyne**, MA contributing analyst at Wikistrat and a Global Fellow at PS21, **2015** (Ali, “The World Is Becoming Safer, Wealthier and Healthier”, Huffington Post, March 16, 2015, http://www.huffingtonpost.com/ali-wyne/the-world-is-becoming-saf\_b\_6878664.html)

There are plenty of reasons to despair about the state of the world: ISIL's depredations in the Middle East, Boko Haram's atrocities in Nigeria, and Russia's slow-drip incursion into Ukraine are just a few. These phenomena are more distressing when one considers that they're occurring against the backdrop of an eroding postwar order. Contrary to the oft-heard refrain, though, that the world is becoming more dangerous -- or, according to some observers, has never been more dangerous -- it has actually never been safer. Steven Pinker and Andrew Mack recently documented the declines in global rates of homicide, violence against women, genocide, and war, among other categories. We're also becoming more prosperous. According to the U.S. Department of Agriculture, real global GDP more than tripled between 1970 and 2010, and real global GDP per capita nearly doubled. Last month the Economist reported that the percent of the world's population living in "abject poverty" fell from 36 in 1990 to 18 in 2010 (translating to about 900 million people who escaped that condition). Finally, we're living longer, better lives. The University of Washington's Institute of Health Metrics and Evaluation found that "global life expectancy increased by 5.8 years for men and 6.6 years for women" between 1990 and 2013. According to the United Nations, moreover, the mortality rate for children under five fell from 90 per thousand births to 46 during that same period, while the percent of the world's population that is "clinically malnourished" fell more than seven points. It's no accident the world is becoming safer, wealthier and healthier: there are extraordinary people around the world who're trying to make it better. Too often, though, their names remain unknown; their contributions, unacknowledged. "What's Working" is a crucial platform for spotlighting them. When the news of the day feels overwhelming, I take comfort in three facts. First, the ingenuity of our minds has always scaled with the magnitude of our calling. There's no reason to believe it won't continue doing so. Second, we're pushing forward the frontiers of possibility every second, far more rapidly than we can comprehend. Before coming to MIT, I believed certain problems were simply too hard for human beings to address. In retrospect, though, my skepticism simply reflected my failure of imagination. I now assume that once a problem has been identified, folks will eventually solve it or find a way to manage it. The tipping point for me came six years ago, when MIT News ran an article discussing a new project Professor Angela Belcher and a few of her colleagues had undertaken. "For the first time," it explained, "MIT researchers have shown they can genetically engineer viruses to build both the positively and negatively charged ends of a lithium-ion battery." If we can figure out how to make batteries from viruses -- I never imagined I'd see those two words in the same sentence, and I still can't get my head around the idea -- what can't we do? Third, no matter what problem keeps you up at night, there are brilliant, passionate people around the world who're working on it. You may not hear about them amid the daily barrage of depressing headlines, but they're easy to find if you want to find them. Among the extraordinary individuals I've met, spoken to over e-mail, or reconnected with in recent months: Ruzwana Bashir, the cofounder and CEO of Peek, who's using her own experience of sexual abuse to help other victims find their voices; Pardis Sabeti, a professor of organismic and evolutionary biology at Harvard, who's developing treatments to fight Ebola; Donald Sadoway, a professor of materials chemistry at MIT, whose work on liquid-metal batteries could revolutionize electricity storage; Shiza Shahid, the cofounder of the Malala Fund, who's working to give young women around the world a chance at an education; and Wes Moore, author of The Other Wes Moore and The Work, who cofounded BridgeEdU to help at-risk youth in Baltimore graduate from college. There's an enormous amount of work to be done -- slowing the course of climate change, feeding a growing population and resettling tens of millions of refugees, to name but a few challenges -- but dwelling on everything that's wrong and fretting about everything that could go wrong won't help. Let's spend less time lamenting the state of the world and more time supporting those who're making it better.

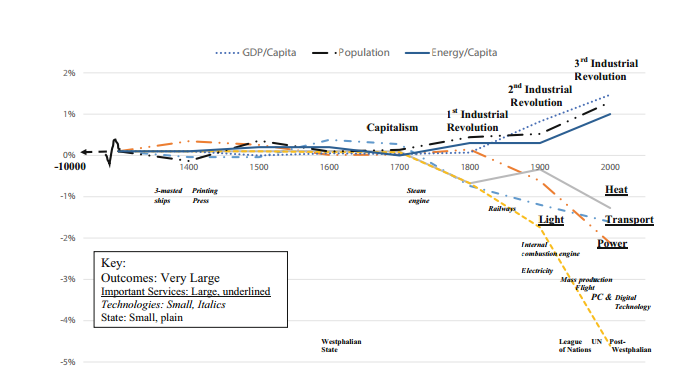
#### Capitalism is responsible for a massive improvement in material quality of life for people around the world – policies that enhance the functioning of free markets are consistent with distributive energy justice and sufficiently adaptable to produce sustainable growth.

Cooper 16 – (2016, Mark, “Energy Justice in Theory and Practice: Building a Pragmatic, Progressive Road Map,” T. Van de Graaf et al. (eds.), The Palgrave Handbook of the International Political Economy of Energy, pp. 687-92)

\*\*\*Long = Blue+Green \*\*\*Short = Green

The Immense Leap in Material Well-Being

Global Energy Justice provides important data on several key energy-intensive activities that deeply affect daily life (heat, light, power and transportation). In Fig. 28.1 , I augment that data with measures on population, income and total energy consumption, as well as technological change and developments in the state. Figure 28.1 identifies rates of growth in key activities that define the material conditions in which people live. I use a 100-year view to calculate the rate of improvement, which is consistent with eff orts to analyze distributive justice.



*\*\* Fig. 28.1 Indicators of progress in human material conditions ( Sources : Based on data from: Benjamin, K. and Michael H. Dworkin, Global Energy Justice (Cambridge University Press, 2014, pp. 48, 312), heat, light transportation, power; Douglas North, Understanding the Process of Economic Change (Princeton, Princeton University Press, 2005), p. 89 US Bureau of the Census, https://www.census.gov/ populaton/international/data/worldpop/table\_history.php , UN 1999 where available, average of lower and upper summary elsewhere. Wikipedia for 2000, https://en.wikipedia.org/wiki/World\_population\_estimates ; J. Bradford De Long, Estimates of World GDP, One Million BC–Present, Standard Chartered, Technology: Reshaping the Global Economy, January 19, 2015, p. 11, technologies. https:// en.wikipedia.org/wiki/Westphalian\_sovereignty )*

Lighting, heating, power and transportation are energy-intensive activities that receive a great deal of attention in the discussion of energy poverty and justice. Light, heat and power are central to defining the standard of living and, hence, the energy justice analysis. The direct link between energy consumption and income is also central to that discussion. Starting with the emergence of capitalism and accelerating in the industrial era, these four services exhibited a dramatic decline in cost, which made them affordable for an ever increasing number of people.

I include three measures of the Overall outcome of the economic development process—population growth, output per capita and energy consumption per capita. North ( 2005 , p. 89) points to population for an obvious reason:

Statistical data … can get us part way in describing the magnitude of changes in the landscape. They provide dramatic evidence of the **revolutionary changes in the human condition**. Man’s subjugation of the uncertainties related to the physical environment is most clearly manifested in the explosive increases in population since the beginning of the modern age in the eighteenth century …. [T]his dramatic change along with major development in knowledge, technological progress, and scientifi c breakthroughs that contributed to this explosive development.

The close correlation between GDP per capita and population is clear. GDP per capita and its growth have been the primary focal point of the analysis of economic growth and development for quite some time. The close correlation between GDP per capita and energy consumption per capita has also been a focal point of analysis. 12

The graph also identifi es several technologies that are widely seen as ushering in fundamental shifts in economic activity. An important and obvious point to be made is that these involve power and transportation technologies. Three of the recent examples involve energy—steam, internal combustion engine and electricity. Substituting mechanical power for human and animal power constitutes a major leap. The shift to electricity, considered a General Purpose Technology (JOVanOVic and Rousseau 2005 ), 13 was one of the key factors in the second industrial revolution. Finally, at the bottom, the graph shows key developments in the structure of policy making. The nation-state was a key development that enabled the process of economic growth to gain traction (Acemoglu and Robinson 2012 , Figure 5). **The Westphalian state was** a **key** development. Eff orts to organize relations between states were the subject of a stream of treaties, but the graph shows the major eff orts to organize multilateral relations in the twentieth century.

It is important to keep in mind that the graph is truncated. Prior to the year 1400, the rate of growth in the factors that affect material well-being was virtually nil. The data underscore the immense progress made in the material condition of society in the past three centuries. The dramatic change in the rates of progress is coincident with the emergence of capitalism and, in particular, the industrial revolution. **The key message** for the purpose of this analysis **is strikingly clear**. If we accept the proposition that human civilization dates back about 12 millennia, then the capitalist era is about 4% of human history. The industrial era covers the second half of that period. Measured by population, per capita income, heat, power, transportation, lighting, about 90 % of human progress has taken place in the most recent 2 % of human history, the very short period of capitalist industrialization. 14

The Virtuous Cycle of Progress and the Potential for Justice

The progressive capitalist frame for a theory of justice launches from this dramatic change in the human condition. Obviously, it postdates much of the thinking of the ancient philosophers and early modern (preindustrial) political theorists who naturally make up a large part of the intellectual and cultural heritage of the Western concept of justice, as discussed at length the Global Energy Justice . There has been a dramatic transformation of the terrain of justice in three ways.

• The capitalist industrial revolution has not only produced a **dramatic improvement in the human condition**, it has also created the possibility/ hope/expectation that there will be a massive and continuing improvement in the **material well-being of people**. Mankind has been freed from endless poverty and expects continuous economic growth and improvement in material conditions.

• The improvement in material well-being comes with (and **is in part dependent on**) an increasing interdependence of economic activity (a refined division of labor and globalization).

• Increasing wealth and improvements in communications (which are made possible by changes in energy technology, i.e. electrifi cation) have allowed more and more people to engage and participate more directly and forcefully in self-governance.

In the capitalist industrial era we **no longer have to treat human history as a kind of zero-sum, depleting resource story**. The current generation **should not be chastised for overconsuming** scarce resources as long as it produces the means to maintain and improve the prospects of future generations. For the past quarter of a millennium, the groundwork for a much higher standard of living has been laid by each successive generation. Perez ( 2002 ) argues that capitalist development needs to be progressive in the sense I use the term.

Technology is the fuel of the capitalist engine (Perez 2002 , p. 155).

The potential for production and productivity grow this considerable. What is needed for its realization is a new space for the unhindered expansion of markets, favoring economics of scale and fostering a new wave of investment. **this essentially means that adequate regulation** … has to be established and an **institutional framework favoring the real economy over the paper economy** needs to be put in place … So the rhythm of potential grow this modulated by the qualitative dynamics of eff ective demand (Perez 2002 , pp. 114–116).

Since market saturation is one of the main limits encountered in deploying the growth potential of a technology revolution, ensuring consistent extension of markets is the way to facilitate the pursuit of those goals. Consequently, it is progressive distribution and worldwide advances in development that can best guarantee a continued expansion of demand (Perez 2002 , p. 124).

The impact of progressive capitalism on the terrain of justice involves more than simple progress. It also reflects the structure and process by which capitalism creates progress. Two key processes are involved. A discussion of these broad issues is beyond the scope of this chapter and has been off ered elsewhere (Cooper 2015 ). Here I emphasize two points that are central to the discussion of energy justice.

• First, the explanation asserts that **capitalism has given birth to recursive feedback loops, virtuous circles and cycles**, of creative destruction and construction that creates a spiral of progress.

• Second, the division of labor advances relentlessly, which ultimately **increases human capital and promotes democratic equality**.

The stark contrast between the twenty-fi rst-century digital mode of production that is emerging and the twentieth-century mode of production described by Perez ( 2004 , 2009 ) underscores this process in several ways. First, the mass market production of the twentieth century was very much driven by fossil fuel consumption. The digital mode of production is much more dependent on electricity. Second, technologies are emerging to power more and more activity with electricity. Third, the heterogeneity of products creates niche markets. Fourth, the new division of labor is much more global and complex, shifting a great deal of activity and autonomy to the edge of the networks.

The virtuous cycles of economic progress are interconnected in the sense that they tend to produce the key ingredients to solve the next great challenge that faces the economic system. Perez builds this into her model of capitalism by linking Schumpeter’s concept of creative destruction to the equally powerful process of creative construction. The result is a spiral of development. While analysis of this process is also beyond the scope of this chapter, one aspect of the current phase of development is critical to the discussion of energy justice. Industrial revolutions produce the ingredients necessary to solve the challenges that they faced.

^his is certainly true of the third industrial revolution in the energy sector, the electricity sector in particular. Dynamic technological development has produced the tools for the transformation of the energy sector that can solve the problem of climate change, while dealing with the challenge of energy justice. The central station model of base-load facilities combined with high cost peaking power and massive amounts of pollution, including greenhouse gas emissions, has been undercut by dramatically declining cost for distributed renewables and storage. The Information and Communications Technologies revolution has now made it possible to integrate and manage demand and supply rather than build central station, fossil-fuel-based powered facilities that passively follow load. Economic analyses of the cost of addressing energy justice that were off ered as it became a topic of increasing attention a decade ago are obsolete as a result of dramatic innovation and competition (Cooper 2014b ). An electricity sector centered on smaller scale, more flexible resources should facilitate and lower the cost of addressing both energy poverty and climate change. this technological revolution not only delivers aff ordable electricity, but it also does so in a manner that utilizes local resources and fosters local autonomy.

As has always been the case, however, there is a struggle between the incumbent and the new entrant technologies over the speed and ultimate confi guration of the new system and which values will be expressed by the system. In short, **the energy sector**, in general, and the electricity sector, in particular, **are at the “turning point”** (Perez 2002 ) **or “critical juncture”** (Robinson and Acemoglu 2012 ) of the “quarter-life crisis of the digital mode of production” (Cooper 2013b ). **Political economy is about driving the economy in the right direction with policy**. While the outcome is uncertain, the technological progress suggests that prospects are good for a **successful deployment of the third industrial revolution**.

3 A Broad Frame for Justice

Building on the intense discussion of energy justice presented in the two books noted in the introduction, the theory of distributive justice off ered below is intended to provide a framework that makes the inclusion of progressive values and the policies that address energy poverty more compelling in the process of institutional recomposition that is taking place. Needless to say, this was the purpose of the Encyclical on climate change.

The analysis makes several basic points that **lead to an important conclusion**— **distributive justice is not an afterthought to a dynamic economic system, it is an indispensable, core ingredient of success**:

• **Markets have a critical role as the driver of progress**.

• **The state plays an equally critical role** with policies to guide the economy toward a stable growth trajectory and in a progressive direction by placing constraints on property and the accumulation of power.

• Egalitarian relationships are consistent with the need to advance the division of labor.

• Autonomy and choice for individuals plays a critical role in promoting effi ciency and democracy.

• The **convergence and synergy between an inclusive market and an inclusive state is necessary for progress to continue**.

#### [6] Epistemology DA to all of their scholarship - they don’t get offense - their evidence is futile and biased intellectual pride

**Saunders 7** (Peter, Adjunct Professor at the [Australian Graduate School of Management](http://en.wikipedia.org/wiki/Australian_Graduate_School_of_Management), Why Capitalism is Good for the Soul, <http://www.cis.org.au/POLICY/summer%2007-08/saunders_summer07.html> //shree)

Andrew Norton notes that disaffected **intellectuals** since Rousseau **have been attacking capitalism** for its failure to meet ‘true human needs.’[(26)](http://www.cis.org.au/POLICY/summer%2007-08/saunders_summer07.html#26) **The claim is unfounded**, so what is it about capitalism that so upsets them?  Joseph Schumpeter offered part of the answer. He observed that **capitalism has brought into being an educated class that** has no responsibility for practical affairs, and that this class can only make a mark by criticising the system that feeds them.[(27)](http://www.cis.org.au/POLICY/summer%2007-08/saunders_summer07.html#27) Intellectuals **attack capitalism because that is how the**y sell books and **build careers**.   More recently, Robert Nozick has noted that **intellectuals spend their childhoods excelling** at school, where they occupy the top positions in the hierarchy, **only to find later in life that their market value is** much **lower than they believe they are worth**. Seeing ‘mere traders’ enjoying higher pay than them is unbearable, and it generates irreconcilable disaffection with the market system.[(28)](http://www.cis.org.au/POLICY/summer%2007-08/saunders_summer07.html#28)  But the best explanation for the intellectuals’ distaste for capitalism was offered by Friedrich Hayek in The Fatal Conceit.[(29)](http://www.cis.org.au/POLICY/summer%2007-08/saunders_summer07.html#29) Hayek understood that **capitalism offends intellectual pride, while socialism flatters it**. Humans like to believe they can design better systems than those that tradition or evolution have bequeathed. **We distrust evolved systems, like markets**, which seem to work without intelligent direction according to laws and dynamics that no one fully understands.   **Nobody planned the global capitalist system**, nobody **runs it, and** nobody really **comprehends it**. **This** particularly **offends intellectuals**, for capitalism renders them redundant. It gets on perfectly well without them. It does not need them to make it run, to coordinate it, or to redesign it. The intellectual critics of capitalism believe they know what is good for us, but millions of people interacting in the marketplace keep rebuffing them. This, ultimately, is why they believe capitalism is ‘bad for the soul’: it fulfils human needs without first seeking their moral approval.

#### 7] Disease- Free markets key to solve disease cures

Jackson 16. Kerry, Pacific Research Institute; 12/19/16; Free Market Policies Needed To Incentivize Creation Of New Life-Saving Treatments; https://www.pacificresearch.org/article/free-market-policies-needed-to-incentivize-creation-of-new-life-saving-treatments/

“Our strongest antibiotics don’t work and patients are left with potentially untreatable infections,” Director Dr. Tom Frieden said when the CDC issued its warning. He asked doctors, hospitals and public health officials to “work together” to “stop these infections from spreading.” The 2014 Report to the President expressed a similar concern: “The evolution of antibiotic resistance is now occurring at an alarming rate and is outpacing the development of new countermeasures capable of thwarting infections in humans. This situation threatens patient care, economic growth, public health, agriculture, economic security and national security.” For those thinking this sort of thing shouldn’t be happening when medical science is more advanced than can almost be conceived, be assured that it is. And unless there are public policy interventions, it’s likely to get worse. “More and more microorganisms will continue to gain resistance to the current drug therapies because (antimicrobial resistance, or AMR) is basic evolution,” Wayne Winegarden writes in the Pacific Research Institute’s newly-released report “Incenting the Development of Antimicrobial Medicines to Address the Problem of Drug-Resistant Infections.” The International Federation of Pharmaceutical Manufacturers says the problem is caused by “a dearth of new antibiotic medicines.” At the same time that there’s been an increase in AMR, there has been “a sharp decline in the development of new antibiotic medicines.” The group reports that only two new classes of antibiotics have been discovered in the last three decades compared to 11 in the previous 50 years. The answers to many medical problems are still not within reach of researchers. But the hazards of AMR can be diminished. Winegarden suggests we begin with public health campaigns that encourage handwashing, which he calls a highly effective and low-cost way to reduce the spread of infection. He further recommends policy that would address the problem of antibiotic overuse and greater use of vaccines to cut the incidents of infection. But Winegarden’s primary concern is establishing the correct incentives for developing new antimicrobial medicines that would be effective against AMR microorganisms. He’s specifically referring to policies “based on a thorough understanding of the disincentives that are currently inhibiting their development.” “These disincentives are well-recognized,” he writes. “Despite the medical need, and despite the generally strong return on investment for many other drug classes, the return on investment for developing new antimicrobial medicines (particularly antibiotics) is too low.” Producing a new drug is a grinding and expensive endeavor. It can take 10 to 15 years to develop a single prescription drug that is introduced to the market, and a company can spend as much as $5.5 billion on research and development for each medication that is eventually approved and prescribed. Less than 2 percent of all projects launched to create new drugs succeed. This is not an environment in which pharmaceutical companies can get too amped up about pursuing new treatments. Yet new drug approvals increased over the last decade. Don’t look for a surge of antimicrobial drugs in that pipeline, though. Winegarden says that particular drug class is among several that “face unique impediments” that serve as disincentives for innovation. To overcome the steep hill that impedes the development of new AMR drugs, lawmakers must implement policies that unleash the incentives of the free market. Policymakers also should look at the 1983 federal Orphan Drug Act and its market-oriented reforms that increased the number of drugs developed to treat rare diseases. More than 400 have been introduced to the market since the law was enacted, compared to fewer than 10 in the 1970s. Put another way, government needs to remove its anchors from the process and let the market do what it does so well. In this case, that’s restoring patients’ health, enriching innovative companies that create jobs, and inspiring biotech start-ups such as the group of Stanford undergraduates that has been capitalized to develop new antibiotics. If the proper incentives are in place, the needed treatments will follow.

#### 8] Transition Wars—Rejection of capitalism causes massive transition wars

Harris 03. Lee, Analyst – Hoover Institution and Author of The Suicide of Reason, “The Intellectual Origins of America-Bashing”, Policy Review, January, http://www.hoover.org/publications/policyreview/3458371.html

This is the immiserization thesis of Marx. And it is central to revolutionary Marxism, since if capitalism produces no widespread misery, then it also produces no fatal internal contradiction: If everyone is getting better off through capitalism, who will dream of struggling to Overthrow it? Only genuine misery on the part of the workers would be sufficient to Overturn the whole apparatus of the capitalist state, simply because, as Marx insisted, the capitalist class could not be realistically expected to relinquish control of the state apparatus and, with it, the monopoly of force. In this, Marx was absolutely correct. No capitalist society has ever willingly liquidated itself, and it is utopian to think that any ever will. Therefore, in order to achieve the goal of socialism, nothing short of a complete revolution would do; and this means, in point of fact, a full-fledged civil war not just within one society, but across the globe. Without this catastrophic upheaval, capitalism would remain completely in control of the social order and all socialist schemes would be reduced to pipe dreams.

#### Extinction

Nyquist 5. J.R. renowned expert in geopolitics and international relations, WorldNetDaily contributing editor, “The Political Consequences of a Financial Crash,” February 4, www.financialsense.com/stormw...2005/0204.html

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.

#### Turns their impact – the transition magnifies every flaw of capitalism

Gurbud 97. Mark Avrum, Graduate Research Assistant – Center for Superconductivity Research at the University of Maryland, “Nanotechnology and International Security”, http://www.foresight.org/Conferences/MNT05/Papers/Gubrud/)

With molecular manufacturing, international trade in both raw materials and finished goods can be replaced by decentralized production for local consumption, using locally available materials. The decline of international trade will undermine a powerful source of common interest. Further, artificial intelligence will displace skilled as well as unskilled labor. A world system based on wage labor, transnational capitalism and global markets will necessarily give way. We imagine that a golden age is possible, but we don’t know how to organize one. As global capitalism retreats, it will leave behind a world dominated by politics, and possibly feudal concentrations of wealth and power. Economic insecurity, and fears for the material and moral future of humankind may lead to the rise of demagogic and intemperate national leaders. With almost two hundred sOvereign nations, each struggling to create a new economic and social order, perhaps the most predictable outcome is chaos: shifting alignments, displaced populations, power struggles, ethnic conflicts inflamed by demagogues, class conflicts, land disputes, etc. Small and underdeveloped nations will be more than ever dependent on the major powers for access to technology, and more than ever vulnerable to sophisticated forms of control or subversion, or to outright domination. Competition among the leading technological powers for the political loyalty of clients might imply reversion to some form of nationalistic imperialism.

#### Their condemnation of privatization stands in the way of transhumanism—we should fear government control of technology, not corporations

Bailey 5 [(Ronald, the science correspondent for Reason) 5-11-2005 Trans-Human Expressway Reason https://reason.com/2005/05/11/trans-human-expressway/] TDI

Where Hughes goes wrong is in fetishizing democratic decision-making. He fails to recognize that the Enlightenment project that spawned modern liberal democracies began by trying to keep certain questions about the transcendent out of the public sphere. Questions about the ultimate meaning and destiny of humanity are private concerns. Worries about biotechnological progress must not to be used as excuses to breach the Enlightenment understanding of what belongs in the private sphere and what belongs in the public. Technologies dealing with the birth, death and the meaning of life need protection from meddling—even democratic meddling—by others who want to control them as a way to force their visions of right and wrong on the rest of us. Your fellow citizens shouldn't get to vote on whom you have sex with, what recreational drugs you ingest, what you read and watch on TV and so forth. Hughes understands that democratic authoritarianism is possible, but discounts the possibility that the majority may well vote to ban the technologies that promise a better world.

However, even as he extols social democracy as the best guarantor of our future biotechnological liberty, Hughes ignores that it is precisely those social democracies he praises, Germany, France, Sweden, and Britain, which now, not in the future, outlaw germinal choice, genetic modification, reproductive and therapeutic cloning, and stem cell research. For example, Germany, Austria and Norway ban the creation of human embryonic stem cell lines. Britain outlaws various types of pre-implantation genetic diagnosis to enable parents to choose among embryos. (Despite worrisome bioconservative agitation against this type of biotech research, in the United States, private research in these areas remains legal.)

Hughes also favors not only social democracy but global governance centered on the United Nations with the "authority to tax corporations and nations," and a "permanent standing international army," and with UN agencies "expanded into a global infrastructure of technological and industrial regulation capable of controlling the health and environmental risks from new technologies." This is the same UN that just voted for an ambiguous resolution calling on nations to ban all forms of human cloning which are incompatible with human dignity and the protection of human life. Fortunately, the resolution leaves some wiggle, but the next time the UN makes one of these democratic decisions, transhumanists may not like the result.

Furthermore, Hughes's analysis is largely free of economics—he simply ignores the processes by which wealth is created and gets busy redistributing the wealth through government health care and government subsidized eugenics. After reading Citizen Cyborg, you might come away thinking that Hughes believes that corporations exist primarily to oppress people. While acknowledging that the last US government involvement in eugenics—a project that involved sterilizing tens of thousands of people—was a bad idea, Hughes fails to underscore that it was democratically elected representatives, not corporations, who ordered women's tubes tied and men's testicles snipped.

#### The aff is bad politics—technological progress is the route to liberation, not boring Luddism.

Hughes 4 [(James, Executive Director of the Institute for Ethics and Emerging Technologies at Trinity College in Hartford, Connecticut in the United States. Citizen cyborg: Why democratic societies must respond to the redesigned human of the future. Basic Books, 2004.] TDI

Luddism is a political dead-end for progressive politics. Left-wing Luddism is boring and depressing, and has no energy to inspire people to create a new and better society. The Left was built by people inspired by millennial visions, not by people who saw only a hopeless future of futile existential protest against the juggernaut of fascist Progress. If there is to be a future for progressive politics it has to come from a rebirth of a sexy, high-tech vision of a radically democratic future, a rediscovery of the utopian imagination. As Russell Jacoby says in The End of Utopia, “in an era of political resignation and fatigue the utopian spirit remains more necessary than ever. It evokes neither prisons nor programs, but an idea of human solidarity and happiness. . . . Something is missing. A light has gone out. The world stripped of anticipation turns cold and grey.” What is missing, the light that has gone out for the Left, is the idea that the human condition can be radically transformed, that we can accomplish more than a defense of the status quo against a capitalist version of the future. To rekindle a progressive utopianism, the Next Left, the twenty-first-century Left, needs visionary projects worthy of a united transhuman world, projects like guaranteeing health, intelligence and longevity for all, building world government, eliminating work and colonizing the Solar System.

Luddism is also bad political sociology. Left Luddites inappropriately equate technologies with the power relations around those technologies, and try to fight capitalism or patriarchy or hierarchy by fighting technologies instead of by liberating the technologies for free and equal use. Technologies may make certain kinds of power more likely than others, but they do not determine power relations. Each new technology creates a new terrain for organizing and democratic struggle, new possibilities for expanded liberty and equality, or for oppression and exploitation. Technological innovation needs to be democratically regulated and guided, not fought or forbidden.

Progressives need to reembrace the Enlightenment insight that liberating each individual’s potential requires not only political liberation, but also technological liberation from nature. Marx referred to technological progress as the move from the realm of necessity to the realm of freedom. The more powerful our technology, and our political and economic empowerment, the more we are freed from the necessity of labor.

Democratic transhumanism combines this old strain of progressive optimism about reason, science and technology with a strong defense of individual liberty. The assertion of individual liberty was also a central cause of the radical democrats, and only became identified with the libertarian Right because of the rise of communism. By embracing the right of each person to control their body and mind and freely use technology to realize their fullest potential, the Next Left can decisively break all associations with authoritarianism.

A political movement based on both technological progress and individual liberty will then see ways that democratically regulated and distributed, freely exercised technology can create a more equal, empowered and united world. One way is by reducing the biological bases of social inequality. Contrary to the vacuous assertions of Francis Fukuyama and Bill McKibben that we are all biological equals, a lot of social inequality is built on a biological foundation, and enhancement technology makes it possible to redress that source of inequality. FM–2030 wrote in Optimism One that transhumans are no longer content simply striving for social, economic, and political equality. What do these rights mean so long as people are born biologically unequal? So long as some are born strong others weak, some healthy others sickly, some beautiful others ungainly, some tall others short, some brilliant others dumb—in other words so long as we do not have biological equality—all social equalities mean very little. We will settle for nothing less than [the conquest of] this basic biological inequality which is at the very root of all human inequalities.