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#### Counterplan:

#### Property rights for asteroids should be governed by the doctrine of appropriation. Private appropriation of non-asteroid celestial bodies should be prohibited.

* Resources mined should be distributed democratically as per 1ac levine

Reject moral

#### Solves the aff

Myers 16 -- Ross Myers (J.D. candidate at the University of Oregon Law School.), The Doctrine of Appropriation and Asteroid Mining: Incentivizing the Private Exploration and Development of Outer Space, 2016, Oregon Review of International Law, https://scholarsbank.uoregon.edu/xmlui/bitstream/handle/1794/19850/Meyers.pdf?sequence=1 WJ

Like water during the expansion of the American West, the exploration of space can be financed and incentivized by granting rights in resources to those who secure new resources and put them to beneficial use. Some legal scholars have suggested the traditional rule of capture be applied to asteroids,69 or that rights to asteroids be purchased directly from an international agency and owned as chattel.70 However, like water during America’s westward expansion, asteroids are not easily classified under traditional property regimes. Thus, a doctrine of appropriation would be more appropriate for asteroids than a traditional rule of capture or a chattel system, because a system based on the traditional rule of capture or chattel would result in waste, abstract claims, and complicated legal issues.

First, asteroid claims cannot be adjudicated under the traditional rule of capture, or as chattel, because such systems would be incredibly wasteful. As of now, scientists have observed approximately 450,000 asteroids in our solar system.71

But only a fraction of the observable bodies will be cost effective to mine. While it might one day be possible for a single entity to finance several mining missions at once, current costs associated with such a venture would limit almost any space-mining program to one or two asteroids, at least initially.72 The traditional rule of capture could allow an entity to quickly claim multiple asteroids merely by landing on them and planting a flag, without requiring the entity to show it can reasonably use the resources they have claimed.

Even worse would be a system where the same corporation could claim asteroids simply by discovering their existence and registering the claim. Allowing this type of unregulated claim would incentivize larger corporations capable of space travel to quickly claim reachable asteroids, but the claims could easily outpace those entities’ realistic expectations on what they could use. Under a traditional rule of capture system, the solar system could be divvied up long before the resources could conceivably be mined. A rule similar to the doctrine of appropriation used for water claims in the United States would alleviate this concern by limiting claims to those where a claimant can show a reasonable beneficial use for the resource.

Another concern posed by the traditional rule of capture or chattel system would be the creation of abstract claims. Some legal scholars have advocated for a system where asteroids would be categorized as chattel, and rights in asteroids would be granted to an entity that could identify an asteroid and register ownership of it with an international agency.73 The advantage of such a system would be that it would allow an international agency to keep track of asteroids, and it would allow for the mapping of the reachable solar system. The problem with this approach, however, is that it would result in abstract claims. If an entity could claim the rights to an asteroid without actual possession, there is nothing to prevent that company from claiming ownership long in advance of any real possibility of landing on it. One of the reasons for creating the doctrine of appropriation was to limit abstract claims over resources that were not being used in any reasonable way. Just as the plaintiffs in Hague had no recourse against the third party who wasted the natural gas reserve, there would be no cause of action against an entity that has the rights to an asteroid, but chooses not to exercise them.74 This may be particularly harmful to society because asteroids contain volatiles that may be essential to creating rocket fuel in space, which, in turn, may be crucial to deep space exploration.

Using asteroid-bound volatiles to make rocket fuel would reduce the cost and increase the range of space exploratory missions, possibly improving the human race’s ability to explore and develop space. Under a system were entities could claim asteroids without actual possession, those entities could exclude others from landing on the asteroids and using such resources, even when such resources are languishing unused in space. To prevent the creation of such abstract claims over asteroids, the doctrine of appropriation could be modified as to only grant rights only to entities who are able to demonstrate both actual possession and beneficial use. This would ensure that asteroids claims are limited to those where the resources are actually being used, thus, maximizing the utility of such celestial bodies to society.

Finally, asteroids cannot be adjudicated under the traditional rule of capture or a chattel system because their unique propensity to collide with other celestial bodies would result in vexing legal issues. Pop culture has popularized the notion of an asteroid crashing into the surface of Earth in movies and books, but interspace collisions may be a real concern. Asteroids are constantly moving through space, and they often crash into other asteroids or space debris, and sometimes onto the surface of planets. So real is the concern that space agencies regularly keep track of NEOs, or Near Earth Objects, which include around 10,000 asteroids large enough to be tracked in space.75 Imagine the scenario in the popular movie Armageddon, where society wrestles with the mechanics of destroying a huge asteroid that is headed straight for Earth.76 It would be strange, indeed, if the situation were further complicated by an entity owning the asteroid. Would the Earth have to compensate the company for the loss of resources, or would the company be forced to assume liability for the damage caused by the collision? What if the asteroid, rather than crashing into Earth, crashed instead into another asteroid owned by different entity? It makes sense that a company with actual possession of an asteroid should have a claim for actual mining equipment destroyed, but it seems unreasonable to treat the entire rock as the entity’s chattel. By limiting asteroid claims under a doctrine of appropriation-like system, society will be saved the headache of attempting to adjudicate such absurd situations.

Because the traditional rule of capture or a chattel system for the ownership of asteroids would result in waste, abstract claims, and absurd legal dilemmas, a modified doctrine of appropriation should replace existing outdated international space law relating to asteroids.’

#### Public sector space innovation falls continues to fall short – . The private sector is key to space research/innovation. (Redistribution)

Follett 21 [Andrew Follett- previously space and science reporter for Daily Caller News Foundation, researcher for the Congressional Committee on Science, Space and Technology, the National Aeronautics and Space Administration, the Cato Institute, and the Competitive Enterprise Institute. currently conducts research analysis for nonprofit in Washington, D.C., area.. “Private Firms Are the Key to Space Exploration.” 8/21/21. National Review. https://www.nationalreview.com/2021/08/private-firms-are-the-key-to-space-exploration/]

America’s public-sector space program recently had a rough couple of weeks that perfectly exemplify why it desperately needs a free-market overhaul. On July 29, the International Space Station (ISS) suffered a serious loss of control after a Russian spacecraft docked with it, accidentally causing the station to make a full 540-degree rotation and a half before coming to a stop upside down, when the astronauts got it under control. Like most NASA programs, the ISS is massively over budget. Costs were initially projected at $12.2 billion, but the bill ultimately reached a stunning $150 billion. American taxpayers paid around 84 percent of that. What happened to the American dream of human space exploration? Put simply, the government happened. NASA devolved into a jobs program to bring home the space bacon. Then, on August 10, NASA’s inspector general released a report deeming plans to send astronauts back to the moon in 2024 unfeasible because of significant delays in developing the mission’s spacesuits. Right now the suits are being built by 27 different companies that successfully lobbied the government for a piece of the action. SpaceX’s Elon Musk has rightly noted that NASA has “too many cooks in the kitchen.” The difference between NASA’s cumbersome designed-by-committee suits and SpaceX’s suits — created by a single contractor — is remarkable, even to the naked eye. The report unconvincingly blames NASA’s failure to develop a new spacesuit over the last 14 years solely on shifting technical requirements. It recommends “ensuring technical requirements for the next-generation suits are solidified before selecting the acquisition strategy to procure suits for the ISS and Artemis programs.” Instead of dealing with the problem, the Biden administration is trying to distract attention from the space agency’s mismanagement by announcing plans to land the first person of color on the moon . . . even though NASA has been incapable of sending astronauts of any color into space under its own power since July 2011. NASA has been reduced to begging the Russians for a ride. The agency’s troubled Constellation program, meant to replace the Space Shuttle fleet, was canceled after tens of billions of dollars had already been spent. But NASA’s troubles are, depressingly, likely to get even worse. In November the James Webb Space Telescope (JWST) will finally launch, after taxpayers have forked over $9.7 billion. It was originally supposed to launch in 2007 on a budget of $500 million. That means the project is over a decade behind schedule and costing almost 20 times its initial budget. Perhaps the telescope, meant to locate potentially habitable planets around other stars and perhaps even extraterrestrial life, could instead search for a calendar . . . or fiscal sanity . . . in the stars? JWST isn’t the first NASA space telescope to suffer cost overruns and setbacks. The Hubble Space Telescope (HST) was originally intended to launch in 1983, but technical issues delayed the launch until 1990 because the main mirror was incorrectly manufactured. JWST is very likely to fail because it is supposed to unfold itself “origami style” in space in an extremely technically complicated process. If difficulties arise, JWST lacks HST’s generous margin for error because of its location far beyond earth’s orbit at the Sun-Earth L2 LaGrange point. NASA currently lacks the capability to send a team of astronauts out that far to fix any problems. Even if NASA could get out to JWST, the telescope doesn’t have a grappling ring for an astronaut to grab onto and thus could potentially kill astronauts attempting to fix it. It is hard to imagine a better example of the private sector’s amazing ability to outcompete government bureaucracy and mismanagement than NASA’s planned Shuttle replacement, the Space Launch System. It is estimated to cost more than $2 billion per flight. That’s on top of the $20 billion and nine years the agency has already spent developing the vehicle. Contrast that with the comparatively inexpensive $300 million spent by SpaceX to develop the Falcon 9 in a little over four years, and the fact that each Falcon 9 costs around $62 million. One SLS launch could pay for over 32 SpaceX launches. Private ventures such as SpaceX are more efficient because they have a lot more incentive to avoid excessive costs and focus on solutions: Their own money is at stake, and people spend their own money more carefully than they spend taxpayer dollars collected from others. Multiple private American space firms are currently pursuing accomplishments beyond those of NASA, and they are more advanced and ambitious than the entire government space programs of China and the European Union combined. So one possible solution to NASA’s woes would be to greatly increase its reliance on commercial launch providers. And one way to do that would be to return to the system that made civil aviation great: prizes to reward private-sector innovation

#### Property rights on aseteorid k2 deep space travel

Myers 16 -- Ross Myers (J.D. candidate at the University of Oregon Law School.), The Doctrine of Appropriation and Asteroid Mining: Incentivizing the Private Exploration and Development of Outer Space, 2016, Oregon Review of International Law, https://scholarsbank.uoregon.edu/xmlui/bitstream/handle/1794/19850/Meyers.pdf?sequence=1 WJ

Asteroids are “metallic, rocky bodies without atmospheres that orbit the sun and are too small to be classified as planets.”33 Like water, asteroids are limited resources that are unconnected to any form of real property. Asteroids vary greatly in size, and are believed to consist primarily of metals and water, sometimes in staggering quantities.34 As such, asteroids may contain significant resources that would help serve to incentivize and facilitate the exploration of space.

Asteroids can be divided into classes, the three most commercially relevant being C-type, M-type, and S-type.35 C-type asteroids (carbonaceous) are the most common variety, and approximately half of the near Earth asteroids that are at least 1km large are C-type asteroids.36 These asteroids have a high content of water, hydrogen, and methane, all of which could potentially be mined to create rocket fuel on-site.37 Rocket fuel storage provides a limit on how far space vessels can be sent into deep space, so the creation of rocket fuel on asteroids would allow missions to probe deeper into space without having to bring enough fuel for a return trip. This could reduce the cost and difficulty of such endeavors significantly, allowing for more efficient exploration and development of deep space.

M-type asteroids (metallic) have the high radar reflectivity characteristic of metals,38 and are probably the most economically attractive targets for mining missions because of the commercial value of the metals in an Earth market. S-type asteroids (stony) are rocky mixtures of silicates, sulphides, and metals,39 but the metals they contain may not be as valuable as those found in M-type asteroids, so they will probably not be the target of initial space mining missions.

Recent scientific reports have suggested a single asteroid may contain staggering quantities of rare metals.40 One report estimated that a moderately sized (1 km) M-type asteroid with a fair enrichment in platinum group metals may contain twice the tonnage of platinum group metals already harvested on Earth combined with economically viable platinum group metal resources still in the ground.41 Put simply, it is believed a single asteroid could contain more platinum than has ever been mined or ever will be mined on Earth. While the economic gain from a mining mission on such an asteroid would be offset by the huge initial cost of reaching the asteroid and capturing the metals, this figure suggests mining missions to asteroids could be extremely profitable. Planetary Resources, a fledgling asteroid mining company, has already targeted a metallic asteroid for a possible future mining mission.42 According to Planetary Resources, this single asteroid may contain more platinum than has ever been mined on Earth.43

Scientific reports have also suggested asteroids may contain large quantities of volatiles, such as hydrogen and methane, which could potentially be broken down and used to synthesize rocket fuel and transport spacecraft between space environments.44 Several companies are already researching how to successfully mine the metals contained in asteroids by using frozen water contained in the asteroid to produce rocket fuel for a return journey.45

Asteroids are similar to water in many respects: both have economic and practical importance and limited availability; both exist as floating objects unconnected to land; and both are practically and commercially important to society and many different industries both in the context of space travel, and in the context of natural resource acquisition. However, unlike water, under the current international treaties regarding space, claims by either private or government entities on celestial objects are prohibited.46

#### Space mining is the only way to solve climate change

Duran 21, (Paloma Duran is a journalist and industry analyst at Mexico Business News, “Is Space Mining the Best Option to Face Climate Change?”), 11-03-21, Mexico Business News, https://mexicobusiness.news/mining/news/space-mining-best-option-face-climate-change // MNHS NL

Going to net zero means that more mining is needed. Experts have said that the current supply cannot support the necessary metals demand for the green transition. As a result, new mining alternatives have gained greater relevance, among them is space mining. Several countries, including Mexico, have shown their interest in this alternative, creating a new space race. “The solar system can support a billion times greater industry than we have on Earth. When you go to vastly larger scales of civilization, beyond the scale that a planet can support, then the types of things that civilization can do are incomprehensible to us … We would be able to promote healthy societies all over the world at the same time that we would be reducing the environmental burden on the Earth,” said Dr. Phil Metzger, Planetary Scientist at the University of Central Florida. Currently, there are several attempts to address global warming and transition to a net zero carbon economy. There has been an increasing interest in renewable energy and infrastructure, which has increased demand for various minerals, especially lithium, cobalt, nickel, copper and rare earth elements. However, according to experts, the world is close to entering a metals supercycle, where demand will exceed available supply, causing prices to skyrocket. Consequently, the mining industry has sought alternatives to achieve the required supply. Options include recycling and improved mine waste management, sea mining and space mining. The latter is considered one of the alternatives with the greatest potential. However, a regulatory framework is still lacking and there is almost no experience in this regard. Despite the lack of knowledge regarding space mining, it has become a very attractive option since the planet is running out of resources. While some people believe that land-based mining is cheaper than space mining, experts believe this may change in the long term. Furthermore, within the solar system there are countless bodies rich in minerals, ores and elements that will accelerate the fight against climate change. “There will come a point when there is nothing left to mine on the surface, prompting mines to reach even further below. But even those resources are destined to run out and so we will aim toward ocean mining, which already has specific technologies that are being developed. Nevertheless, even those mines are limited as well. The mine of the future, which today may seem unlikely, will no longer be on our planet. There will be a time when space mining will be as common as an open leach mine,” Eder Lugo, Minerals Head at Siemens, told MBN. More than 150 million asteroids measuring approximately 100m are believed to be in the inner solar system alone. In addition, astronomers have also identified abundant minerals near the Earth’s space and the Main Asteroid Belt. There are three main groups into which asteroids are divided: C- type, S- type, and M- type. The last two groups are the most abundant in minerals such as gold, platinum, cobalt, zinc, tin, lead, indium, silver, copper and rare earth metals. "Energy is limited here. Within just a few hundred years, you will have to cover all of the landmass of Earth in solar cells. So, what are you going to do? Well, what I think you are going to do is you are going to move out in space … all of our heavy industry will be moved off-planet and Earth will be zoned residential and light-industrial,” said Jeff Bezos, Founder of Amazon and the Space Launch Provider Blue Origin.

#### Warming causes extinction

Yangyang Xu 17, Assistant Professor of Atmospheric Sciences at Texas A&M University; and Veerabhadran Ramanathan, Distinguished Professor of Atmospheric and Climate Sciences at the Scripps Institution of Oceanography, University of California, San Diego, 9/26/17, “Well below 2 °C: Mitigation strategies for avoiding dangerous to catastrophic climate changes,” Proceedings of the National Academy of Sciences of the United States of America, Vol. 114, No. 39, p. 10315-10323

We are proposing the following extension to the DAI risk categorization: warming greater than 1.5 °C as “dangerous”; warming greater than 3 °C as “catastrophic?”; and warming in excess of 5 °C as “unknown??,” with the understanding that changes of this magnitude, not experienced in the last 20+ million years, pose existential threats to a majority of the population. The question mark denotes the subjective nature of our deduction and the fact that catastrophe can strike at even lower warming levels. The justifications for the proposed extension to risk categorization are given below.

From the IPCC burning embers diagram and from the language of the Paris Agreement, we infer that the DAI begins at warming greater than 1.5 °C. Our criteria for extending the risk category beyond DAI include the potential risks of climate change to the physical climate system, the ecosystem, human health, and species extinction. Let us first consider the category of catastrophic (3 to 5 °C warming). The first major concern is the issue of tipping points. Several studies (48, 49) have concluded that 3 to 5 °C global warming is likely to be the threshold for tipping points such as the collapse of the western Antarctic ice sheet, shutdown of deep water circulation in the North Atlantic, dieback of Amazon rainforests as well as boreal forests, and collapse of the West African monsoon, among others. While natural scientists refer to these as abrupt and irreversible climate changes, economists refer to them as catastrophic events (49).

Warming of such magnitudes also has catastrophic human health effects. Many recent studies (50, 51) have focused on the direct influence of extreme events such as heat waves on public health by evaluating exposure to heat stress and hyperthermia. It has been estimated that the likelihood of extreme events (defined as 3-sigma events), including heat waves, has increased 10-fold in the recent decades (52). Human beings are extremely sensitive to heat stress. For example, the 2013 European heat wave led to about 70,000 premature mortalities (53). The major finding of a recent study (51) is that, currently, about 13.6% of land area with a population of 30.6% is exposed to deadly heat. The authors of that study defined deadly heat as exceeding a threshold of temperature as well as humidity. The thresholds were determined from numerous heat wave events and data for mortalities attributed to heat waves. According to this study, a 2 °C warming would double the land area subject to deadly heat and expose 48% of the population. A 4 °C warming by 2100 would subject 47% of the land area and almost 74% of the world population to deadly heat, which could pose existential risks to humans and mammals alike unless massive adaptation measures are implemented, such as providing air conditioning to the entire population or a massive relocation of most of the population to safer climates.

Climate risks can vary markedly depending on the socioeconomic status and culture of the population, and so we must take up the question of “dangerous to whom?” (54). Our discussion in this study is focused more on people and not on the ecosystem, and even with this limited scope, there are multitudes of categories of people. We will focus on the poorest 3 billion people living mostly in tropical rural areas, who are still relying on 18th-century technologies for meeting basic needs such as cooking and heating. Their contribution to CO2 pollution is roughly 5% compared with the 50% contribution by the wealthiest 1 billion (55). This bottom 3 billion population comprises mostly subsistent farmers, whose livelihood will be severely impacted, if not destroyed, with a one- to five-year megadrought, heat waves, or heavy floods; for those among the bottom 3 billion of the world’s population who are living in coastal areas, a 1- to 2-m rise in sea level (likely with a warming in excess of 3 °C) poses existential threat if they do not relocate or migrate. It has been estimated that several hundred million people would be subject to famine with warming in excess of 4 °C (54). However, there has essentially been no discussion on warming beyond 5 °C.

Climate change-induced species extinction is one major concern with warming of such large magnitudes (>5 °C). The current rate of loss of species is ∼1,000-fold the historical rate, due largely to habitat destruction. At this rate, about 25% of species are in danger of extinction in the coming decades (56). Global warming of 6 °C or more (accompanied by increase in ocean acidity due to increased CO2) can act as a major force multiplier and expose as much as 90% of species to the dangers of extinction (57).The bodily harms combined with climate change-forced species destruction, biodiversity loss, and threats to water and food security, as summarized recently (58), motivated us to categorize warming beyond 5 °C as unknown??, implying the possibility of existential threats. Fig. 2 displays these three risk

#### Delaying space colonization by even a second is worth 100 trillion lives -- most conservative estimate

Bostrom 3 -- Nick Bostrom (Needs no further introduction), Astronomical Waste: The Opportunity Cost of Delayed Technological Development, Utilitas Vol. 15, No. 3 (2003): pp. 308-314, https://www.nickbostrom.com/astronomical/waste.html WJ

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 10^29 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]

## Case

## AT Cap Terminally Unsustainable

#### Tech innovation undergirded by profit motives are driving the Second Machine Age, which dematerializes capitalism and makes growth a sustainable necessity.

McAfee 19—cofounder and codirector of the MIT Initiative on the Digital Economy at the MIT Sloan School of Management, former professor at Harvard Business School and fellow at Harvard’s Berkman Center for Internet and Society (Andrew, “Looking Ahead: The World Cleanses Itself This Way,” *More from Less: The Surprising Story of How We Learned to Prosper Using Fewer Resources—and What Happens Next*, Chapter 14, pg 278-292, Kindle, dml)

The decreases in resource use, pollution, and other exploitations of the earth cataloged in the preceding chapters are great news. But are they going to last? It could be that we're just living in a pleasant interlude between the Industrial Era and another rapacious period during which we massively increase our footprint on our planet and eventually cause a giant Malthusian crash. It could be, but I don't think so. Instead, I think we're going to take better care of our planet from now on. I'm confident that the Second Machine Age will mark the time in our history when we started to progressively and permanently tread more lightly on the earth, taking less from it and generally caring for it better, even as we humans continue to become more numerous and prosperous. The work of Paul Romer, who shared the 2018 Nobel Prize in economics, is one of the sources of this confidence. Growth Mindset Romer's largest contribution to economics was to show that it's best not to think of new technologies as something that companies buy and bring in from the outside, but instead as something they create themselves (the title of his most famous paper, published in 1990, is "Endogenous Technological Change"). These technologies are like designs or recipes; as Romer put it, they’re "the instructions that we follow for combining raw materials." This is close to the definitions of technology presented in chapter 7. Why do companies invent and improve technologies? Simply, to generate profits. They come up with instructions, recipes, and blueprints that will let them grow revenues or shrink costs. As we saw repeatedly in chapter 7, capitalism provides ample incentive for this kind of tech progress. So far, all this seems like a pretty standard argument for how the first two horsemen work together. Romer's brilliance was to highlight the importance of two key attributes of the technological ideas companies come up with as they pursue profits. The first is that they're nonrival, meaning that they can be used by more than one person or company at a time, and that they don't get used up. This is obviously not the case for most resources made out of atoms—I can't also use the pound of steel that you've just incorporated into the engine of a car—but it is the case for ideas and instructions. The Pythagorean theorem, a design for a steam engine, and a recipe for delicious chocolate chip cookies aren't ever going to get "used up" no matter how much they're used. The second important aspect of corporate technologies is that they're partially excludable. This means that companies can kind of prevent others from using them. They do this by keeping the technologies secret (such as the exact recipe for Coca-Cola), filing for patents and other intellectual-property protection, and so on. However, none of these measures is perfect (hence the words partially and kind of). Trade secrets leak. Patents expire, and even before they expire, they must describe the invention they're claiming and so let others study it. Partial excludability is a beautiful thing. It provides strong incentives for companies to create useful, profit-enhancing new technologies that they alone can benefit from for a time, yet it also ensures that the new techs will eventually "spill over"—that with time they’ll diffuse and get adopted by more and more companies, even if that's not what their originators want. Romer equated tech progress to the production by companies of nonrivalrous, partially excludable ideas and showed that these ideas cause an economy to grow. What's more, he also demonstrated that this idea-fueled growth doesn't have to slow down with time. It's not constrained by the size of the labor force, the amount of natural resources, or other such factors. Instead, economic growth is limited only by the idea-generating capacity of the people within a market. Romer called this capacity "human capital" and said at the end of his 1990 paper, "The most interesting positive implication of the model is that an economy with a larger total stock of human capital will experience faster growth." This notion, which has come to be called "increasing returns to scale," is as powerful as it is counterintuitive. Most formal models of economic growth, as well as the informal mental ones most of us walk around with, feature decreasing returns—growth slows down as the overall economy gets bigger. This makes intuitive sense; it just feels like it would be easier to experience 5 percent growth in a $1 billion economy than a $1 trillion one. But Romer showed that as long as that economy continued to add to its human capital—the overall ability of its people to come up with new technologies and put them to use—it could actually grow faster even as it grew bigger. This is because the stock of useful, nonrivalrous, nonexcludable ideas would keep growing. As Romer convincingly showed, economies run and grow on ideas. The Machinery of Prosperity Romer's ideas should leave us optimistic about the planetary benefits of digital tools—hardware, software, and networks—for three main reasons. First, countless examples show us how good these tools are at fulfilling the central role of technology, which is to provide "instructions that we follow for combining raw materials." Since raw materials cost money, profit-maximizing companies are particularly keen to find ways to use fewer of them. So they use digital tools to come up with beer cans that use less aluminum, car engines that use less steel and less gas, mapping software that removes the need for paper atlases, and so on and so on. None of this is done solely for the good of the earth—it's done for the pursuit of profit that's at the heart of capitalism—yet it benefits the planet by, as we've seen, causing us to take less from it. Digital tools are technologies for creating technologies, the most prolific and versatile ones we've ever come up with. They're machines for coming up with ideas. Lots of them. The same piece of computer-aided design software can be used to create a thinner aluminum can or a lighter and more fuel-efficient engine. A drone can be used to scan farmland to see if more irrigation is needed, or to substitute for a helicopter when filming a movie. A smartphone can be used to read the news, listen to music, and pay for things, all without consuming a single extra molecule. In the Second Machine Age, the global stock of digital tools is increasing much more quickly than ever before. It's being used in countless ways by profit-hungry companies to combine raw materials in ways that use fewer of them. In advanced economies such as America's, the cumulative impact of this combination of capitalism and tech progress is clear: absolute dematerialization of the economy and society, and thus a smaller footprint on our planet. The second way Romer's ideas about technology and growth are showing up at present is via decreased excludability. Pervasive digital tools are making it much easier for good designs and recipes to spread around the world. While this is often not what a company wants—it wants to exclude others from its great cost-saving idea— excludability is not as easy as it used to be. This isn't because of weaker patent protection, but instead because of stronger digital tools. Once one company shows what's possible, others use hardware, software, and networks to catch up to the leader. Even if they can't copy exactly because of intellectual-property restrictions, they can use digital tools to explore other means to the same end. So, many farmers learn to get higher yields while using less water and fertilizer, even though they combine these raw materials in different ways. Steve Jobs would certainly have preferred for Apple to be the only provider of smartphones after it developed the iPhone, but he couldn't maintain the monopoly no matter how many patents and lawsuits he filed. Other companies found ways to combine processors, memory, sensors, a touch screen, and software into phones that satisfied billions of customers around the world. The operating system that powers most non-Apple smartphones is Android, which is both free to use and freely modifiable. Google's parent company, Alphabet, developed and released Android without even trying to make it excludable; the explicit goal was to make it as widely imitable as possible. This is an example of the broad trend across digital industries of giving away valuable technologies for free. The Linux operating system, of which Android is a descendant, is probably the best-known example of free and open-source software, but there are many others. The online software repository GitHub maintains that it's "the largest open source community in the world" and hosts millions of projects. The Arduino community does something similar for electronic hardware, and the Instructables website contains detailed instructions for making equipment ranging from air-particle counters to machine tools, all with no intellectual-property protection. Contributors to efforts such as these have a range of motivations (Alphabet's goals with Android were far from purely altruistic—among other things, the parent of Google wanted to achieve a quantum leap in mobile phone users around the world, who would avail themselves of Google Search and services such as YouTube), but they're all part of the trend of technology without excludability, which is great news for growth. As we saw in chapter 10, smartphone use and access to the Internet are increasing quickly across the planet. This means that people no longer need to be near a decent library or school to gain knowledge and improve their abilities. Globally, people are taking advantage of the skill-building opportunities of new technologies. This is the third reason that the spread of digital tools should make us optimistic about future growth: these tools are helping human capital grow quickly. The free Duolingo app, for example, is now the world's most popular way to learn a second language. Of the nearly 15 billion Wikipedia page views during July of 2018, half were in languages other than English. Google's chief economist, Hal Varian, points out that hundreds of millions of how-to videos are viewed every day on YouTube, saying, "We never had a technology before that could educate such a broad group of people anytime on an as-needed basis for free." Romer's work leaves me hopeful because it shows that it's our ability to build human capital, rather than chop down forests, dig mines, or burn fossil fuels that drives growth and prosperity. His model of how economies grow also reinforces how well capitalism and tech progress work together, which is a central point of this book. The surest way to boost profits is to cut costs, and modern technologies, especially digital ones, offer unlimited ways to combine and recombine materials—to swap, slim, optimize, and evaporate—in cost-reducing ways. There's no reason to expect that the two horsemen of capitalism and tech progress will stop riding together anytime soon. Quite the contrary. Romer's insights reveal that they're likely to gallop faster and farther as economies grow. Our Brighter, Lighter Future The world still has billions of desperately poor people, but they won't remain that way. All available evidence strongly suggests that most will become much wealthier in the years and decades ahead. As they earn more and consume more, what will be the impact on the planet? The history and economics of the Industrial Era lead to pessimism on this important question. Resource use increased in lockstep with economic growth throughout the two centuries between James Watt's demonstration of his steam engine and the first Earth Day. Malthus and Jevons seemed to be right, and it was just a question of when, not if, we'd run up against the hard planetary limits to growth. But in America and other rich countries something strange, unexpected, and wonderful happened: we started getting more from less. We decoupled population and economic growth from resource consumption, pollution, and other environmental harms. Malthus's and Jevons's ideas gave way to Romer's, and the world will never be the same. This means that instead of worrying about the world's poor becoming richer, we should instead be helping them upgrade economically as much and as quickly as possible. Not only is it the morally correct thing to do, it's also the smart move for our planet. As today’s poor countries get richer, their institutions will improve and most will eventually go through what Ricardo Hausmann calls "the capitalist makeover of production." This makeover doesn't enslave people, nor does it befoul the earth. As today’s poor get richer, they'll consume more, but they'll also consume much differently from earlier generations. They won't read physical newspapers and magazines. They'll get a great deal of their power from renewables and (one hopes) nuclear because these energy sources will be the cheapest. They’ll live in cities, as we saw in chapter 12; in fact, they already are. They'll be less likely to own cars because a variety of transportation options will be only a few taps away. Most important, they'll come up with ideas that keep the growth going, and that benefit both humanity and the planet we live on. Predicting exactly how technological progress will unfold is much like predicting the weather: feasible in the short term, but impossible over a longer time. Great uncertainty and complexity prevent precise forecasts about, for example, the computing devices we’ll be using thirty years from now or the dominant types of artificial intelligence in 2050 and beyond. But even though we can't predict the weather long term, we can accurately forecast the climate. We know how much warmer and sunnier it will be on average in August than in January, for example, and we know that global average temperatures will rise as we keep adding greenhouse gases to the atmosphere. Similarly, we can predict the "climate" of future technological progress by starting from the knowledge that it will be heavily applied in the areas where it can affect capitalism the most. As we've seen over and over, tech progress supplies opportunities to trim costs (and improve performance) via dematerialization, and capitalism provides the motive to do so. As a result, the Second Enlightenment will continue as we move deeper into the twenty-first century. I'm confident that it will accelerate as digital technologies continue to improve and multiply and global competition continues to increase. We’ll see some of the most striking examples of slim, swap, evaporate, and optimize in exactly the places where the opportunities are biggest. Here are a few broad predictions, spanning humanity's biggest industries. Manufacturing. Complex parts will be made not by the techniques developed during the Industrial Era, but instead by three- dimensional printing. This is already the case for some rocket engines and other extremely expensive items. As 3-D printing improves and becomes cheaper, it will spread to automobile engine blocks, manifolds and other complicated arrangements of pipes, airplane struts and wings, and countless other parts. Because 3-D printing generates virtually no waste and doesn't require massive molds, it accelerates dematerialization. We'll also be building things out of very different materials from what we're using today. We're rapidly improving our ability to use machine learning and massive amounts of computing power to screen the huge number of molecules available in the world. Well use this ability to determine which substances would be best for making flexible solar panels, more efficient batteries, and other important equipment. Our search for the right materials to use has so far been slow and laborious. That's about to change. So is our ability to understand nature's proteins, and to generate new ones. All living things are made out of the large biomolecules known as proteins, as are wondrous materials such as spiders' silk. The cells in our bodies are assembly lines for proteins, but we currently understand little about how these assembly lines work—how they fold a two-dimensional string of amino acids into a complicated 3-D protein. But thanks to digital tools, we're learning quickly. In 2018, as part of a contest, the AlphaFold software developed by Google DeepMind correctly guessed the structure of twenty-five out of forty-three proteins it was shown; the second-place finisher guessed correctly three times. DeepMind cofounder Demis Hassabis says, "We [haven't] solved the protein-folding problem, this is just a first step... but we have a good system and we have a ton of ideas we haven't implemented yet." As these good ideas accumulate, they might well let us make spider-strength materials. Energy. One of humanity's most urgent tasks in the twenty-first century is to reduce greenhouse gas emissions. Two ways to do this are to become more efficient in using energy and, when generating it, to shift away from carbon-emitting fossil fuels. Digital tools will help greatly with both. Several groups have recently shown that they can combine machine learning and other techniques to increase the energy efficiency of data centers by as much as 30 percent. This large improvement matters for two reasons. First, data centers are heavy users of energy, accounting for about 1 percent of global electricity demand. So efficiencies in these facilities help. Second, and more important, these gains indicate how much the energy use of all our other complicated infrastructures— everything from electricity grids to chemical plants to steel mills—can be trimmed. All are a great deal less energy efficient than they could be. We have both ample opportunity and ample incentive now to improve them. Both wind and solar power are becoming much cheaper, so much so that in many parts of the world they're now the most cost-effective options, even without government subsidies, for new electrical generators. These energy sources use virtually no resources once they're up and running and generate no greenhouse gases; they're among the world champions of dematerialization. In the decades to come they might well be joined by nuclear fusion, the astonishingly powerful process that takes place inside the sun and other stars. Harnessing fusion has been tantalizingly out of reach for more than half a century—the old joke is that it's twenty years away and always will be. A big part of the problem is that it's hard to control the fusion reaction inside any human- made vessel, but massive improvements in sensors and computing power are boosting hope that fusion power might truly be only a generation away. Transportation. Our current transportation systems are chronically inefficient. Most vehicles aren't used much of the time, and even when they’re in use, they're not nearly full. Now that we have technologies that let us know where every driver, passenger, piece of cargo, and vehicle is at all times, we can greatly increase the utilization and efficiency of every element of transportation. Renting instead of owning transportation is a likely consequence of this shift. Instead of owning cars, which typically sit idle more than 90 percent of the time, more people will choose to access transportation as needed. We're already seeing this with car-hailing companies such as Uber and Lyft. These services are quickly spreading around the world, and expanding to cover more modes of transportation, from motorbikes to bicycles to electric scooters. They're also moving into commercial applications such as long- and short-haul trucking. As this shift continues, we’ll need fewer tons of steel, aluminum, plastic, gasoline, and other resources to move the world's people and goods around. We might also experience less congestion and gridlock as we try to get around. Bikes and scooters take up little space compared to cars, so streets can accommodate many more of them. Technology also gives us the ability to implement many forms of "congestion pricing," which has been shown to reduce gridlock by making car access to busy streets expensive enough that people use other options. The most intriguing future transportation platform of all might be the sky. The same technologies that power today's small drones can be scaled up to build "air taxis" with as many as eight propellers and no pilot. Such contraptions sound like science fiction today, but they might be carrying us around by midcentury. Agriculture. As we saw in chapter 5, leading farms have demonstrated an ability to increase their tonnage of output year after year while decreasing their use of inputs such as land, water, and fertilizer. This trend toward optimization will continue thanks to a set of innovations under the label precision agriculture. The precision comes from many sources, including better sensors of plant and animal health, soil quality and moisture, and so on; the ability to deliver fertilizer, pesticides, and water just where they're needed; and machinery that adapts itself to each plant or animal. All these varieties of precision will combine to allow traditional farms to generate more from less. So will changes to the genomes of plants and animals. DNA modifications will increase disease and drought tolerance, expand where crops can be grown, and allow us to get more of what we want from each crop or herd. As we saw in chapter 9, they'll also allow us to take better care of vulnerable populations such as infants in poor countries by creating golden rice and other nutrition enhancers. We'll also be able to make much more precise and targeted genetic modifications thanks to a new crop of gene-editing tools that are large improvements over their more scattershot predecessors. Opposition to genetically modified organisms is fierce in some quarters, but isn't based on reason or science. This opposition will, one hopes, fade. Throughout human history, just about all farming has been done in fields. For some crops, this is now changing. Agriculture has moved indoors, where parameters such as light, humidity, fertilizer, and even the composition of the atmosphere can be precisely monitored and controlled. In everything from urban buildings to shipping containers, crops are now being grown with progressively less labor and fewer material inputs. These completely contained farms will spread and help reduce the planetary footprint of our agriculture. These examples aren't intended to be comprehensive, and I don't have precise estimates of how likely each innovation is, or when it's most likely to occur. I offer them only to indicate how broad and exciting are the possibilities offered by the two horsemen of capitalism and technological progress, and how they’ll continue to dematerialize our consumption and let us increase our prosperity while treading more lightly on our planet.

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#### Transition is impossible – lack of support, consumption habits, and elite power domination

Burch-Hansen 18

(Hubert Buch-Hansen, Department of Business and Politics, Copenhagen Business School, “The Prerequisites for a Degrowth Paradigm Shift: Insights from Critical Political Economy,” Ecological Economics, Volume 146, April 2018, pp. 157-163)

Political projects do not become hegemonic just because they embody good ideas. For a project to become hegemonic, (organic) intellectuals first need to develop the project and a constellation of social forces with sufficient power and resources to implement it then needs to find it appealing and struggle for it. In this context, it is worth noting that degrowth, as a social movement, has been gaining momentum for some time, not least in Southern Europe. Countless grassroots' initiatives (e.g., D'Alisa et al., 2013) are the most visible manifestations that degrowth is on the rise. Intellectuals – including founders of ecological economics such as Nicholas Georgescu-Roegen and Herman Daly, and more recently degrowth scholars such as Serge Latouche and Giorgos Kallis – have played a major role in developing and disseminating the ideas underpinning the project. A growing interest in degrowth in academia, as well as well-attended biennial international degrowth conferences, also indicate that an increasing number of people embrace such ideas.

Still, the degrowth project is nowhere near enjoying the degree and type of support it needs if its policies are to be implemented through democratic processes. The number of political parties, labour unions, business associations and international organisations that have so far embraced degrowth is modest to say the least. Economic and political elites, including social democratic parties and most of the trade union movement, are united in the belief that economic growth is necessary and desirable. This consensus finds support in the prevailing type of economic theory and underpins the main contenders in the neoliberal project, such as centre-left and nationalist projects. In spite of the world's multidimensional crisis, a pro-growth discourse in other words continues to be hegemonic: it is widely considered a matter of common sense that continued economic growth is required.

It is also noteworthy that economic and political elites, to a large extent, continue to support the neoliberal project, even in the face of its evident shortcomings. Indeed, the 2008 financial crisis did not result in the weakening of transnational financial capital that could have paved the way for a paradigm shift. Instead of coming to an end, neoliberal capitalism has arguably entered a more authoritarian phase (Bruff, 2014). The main reason the power of the pre-crisis coalition remains intact is that governments stepped in and saved the dominant fraction by means of massive bailouts. It is a foregone conclusion that this fraction and the wider coalition behind the neoliberal paradigm (transnational industrial capital, the middle classes and segments of organized labour) will consider the degrowth paradigm unattractive and that such social forces will vehemently oppose the implementation of degrowth policies (see also Rees, 2014: 97).

While degrowth advocates envision a future in which market forces play a less prominent role than they do today, degrowth is not an anti-market project. As such, it can attract support from certain types of market actors. In particular, it is worth noting that social enterprises, such as cooperatives (Restakis, 2010), play a major role in the degrowth vision. Such enterprises are defined by being ‘organisations involved at least to some extent in the market, with a clear social, cultural and/or environmental purpose, rooted in and serving primarily the local community and ideally having a local and/or democratic ownership structure’ (Johanisova et al., 2013: 11). Social enterprises currently exist at the margins of a system, in which the dominant type of business entity is profit-oriented, shareholder-owned corporations. The further dissemination of social enterprises, which is crucial to the transitions to degrowth societies, is – in many cases – blocked or delayed as a result of the centrifugal forces of global competition (Wigger and Buch-Hansen, 2013). Overall, social enterprises thus (still) constitute a social force with modest power.

Ougaard (2016: 467) notes that one of the major dividing lines in the contemporary transnational capitalist class is between capitalists who have a material interest in the carbon-based economy and capitalists who have a material interest in decarbonisation. The latter group, for instance, includes manufacturers of equipment for the production of renewable energy (ibid.: 467). As mentioned above, degrowth advocates have singled out renewable energy as one of the sectors that needs to grow in the future. As such, it seems likely that the owners of national and transnational companies operating in this sector would be more positively inclined towards the degrowth project than would capitalists with a stake in the carbon-based economy. Still, the prospect of the “green sector” emerging as a driving force behind degrowth currently appears meagre. Being under the control of transnational capital (Harris, 2010), such companies generally embrace the “green growth” discourse, which ‘is deeply embedded in neoliberal capitalism’ and indeed serves to adjust this form of capitalism ‘to crises arising from contradictions within itself’ (Wanner, 2015: 23).

In addition to support from the social forces engendered by the production process, a political project ‘also needs the political ability to mobilize majorities in parliamentary democracies, and a sufficient measure of at least passive consent’ (van Apeldoorn and Overbeek, 2012: 5–6) if it is to become hegemonic. As mentioned, degrowth enjoys little support in parliaments, and certainly the pro-growth discourse is hegemonic among parties in government.5 With capital accumulation being the most important driving force in capitalist societies, political decision-makers are generally eager to create conditions conducive to production and the accumulation of capital (Lindblom, 1977: 172). Capitalist states and international organisations are thus “programmed” to facilitate capital accumulation, and do as such constitute a strategically selective terrain that works to the disadvantage of the degrowth project.

The main advocates of the degrowth project are grassroots, small fractions of left-wing parties and labour unions as well as academics and other citizens who are concerned about social injustice and the environmentally unsustainable nature of societies in the rich parts of the world. The project is thus ideationally driven in the sense that support for it is not so much rooted in the material circumstances or short-term self-interests of specific groups or classes as it is rooted in the conviction that degrowth is necessary if current and future generations across the globe are to be able to lead a good life. While there is no shortage of enthusiasts and creative ideas in the degrowth movement, it has only modest resources compared to other political projects. To put it bluntly, the advocates of degrowth do not possess instruments that enable them to force political decision-makers to listen to – let alone comply with – their views. As such, they are in a weaker position than the labour union movement was in its heyday, and they are in a far weaker position than the owners and managers of large corporations are today (on the structural power of transnational corporations, see Gill and Law, 1989).

6. Consent It is also safe to say that degrowth enjoys no “passive consent” from the majority of the population. For the time being, degrowth remains unknown to most people. Yet, if it were to become generally known, most people would probably not find the vision of a smaller economic system appealing. This is not just a matter of degrowth being ‘a missile word that backfires’ because it triggers negative feelings in people when they first hear it (Drews and Antal, 2016). It is also a matter of the actual content of the degrowth project.

Two issues in particular should be mentioned in this context. First, for many, the anti-capitalist sentiments embodied in the degrowth project will inevitably be a difficult pill to swallow. Today, the vast majority of people find it almost impossible to conceive of a world without capitalism. There is a ‘widespread sense that not only is capitalism the only viable political and economic system, but also that it is now impossible to even imagine a coherent alternative to it’ (Fisher, 2009: 2). As Jameson (2003) famously observed, it is, in a sense, easier to imagine the end of the world than it is to imagine the end of capitalism. However, not only is degrowth – like other anti-capitalist projects – up against the challenge that most people consider capitalism the only system that can function; it is also up against the additional challenge that it speaks against economic growth in a world where the desirability of growth is considered common sense.

Second, degrowth is incompatible with the lifestyles to which many of us who live in rich countries have become accustomed. Economic growth in the Western world is, to no small extent, premised on the existence of consumer societies and an associated consumer culture most of us find it difficult to completely escape. In this culture, social status, happiness, well-being and identity are linked to consumption (Jackson, 2009). Indeed, it is widely considered a natural right to lead an environmentally unsustainable lifestyle – a lifestyle that includes car ownership, air travel, spacious accommodations, fashionable clothing, an omnivorous diet and all sorts of electronic gadgets. This Western norm of consumption has increasingly been exported to other parts of the world, the result being that never before have so many people taken part in consumption patterns that used to be reserved for elites (Koch, 2012). If degrowth were to be institutionalised, many citizens in the rich countries would have to adapt to a materially lower standard of living. That is, while the basic needs of the global population can be met in a non-growing economy, not all wants and preferences can be fulfilled (Koch et al., 2017). Undoubtedly, many people in the rich countries would experience various limitations on their consumption opportunities as a violent encroachment on their personal freedom. Indeed, whereas many recognize that contemporary consumer societies are environmentally unsustainable, fewer are prepared to actually change their own lifestyles to reverse/address this.

At present, then, the degrowth project is in its “deconstructive phase”, i.e., the phase in which its advocates are able to present a powerful critique of the prevailing neoliberal project and point to alternative solutions to crisis. At this stage, not enough support has been mobilised behind the degrowth project for it to be elevated to the phases of “construction” and “consolidation”. It is conceivable that at some point, enough people will become sufficiently discontent with the existing economic system and push for something radically different. Reasons for doing so could be the failure of the system to satisfy human needs and/or its inability to resolve the multidimensional crisis confronting humanity. Yet, various material and ideational path-dependencies currently stand in the way of such a development, particularly in countries with large middle-classes. Even if it were to happen that the majority wanted a break with the current system, it is far from given that a system based on the ideas of degrowth is what they would demand.

#### Cap key to peace – prefer 40 years of empirics . THEY DON’T HAVE A SYSEM TO REPLACE CAPITALISM

Mousseau 2009 [Michael, associate professor of International Relations at Koc University in Istanbul, “The Social Market Roots of Democratic Peace,” International Security Vol 33 No 4, Spring, Muse]

One of the most important achievements in the study of international security has been the arrival and broad acceptance of the “democratic peace,” that is, the statistically significant absence of war between democracies. This discovery has produced a broader acceptance of domestic factors in the study of international conflict. It has also influenced public policy: since the early 1990s, U.S. policymakers have widely embraced democracy as a cause of peace. The extent to which scholars and practitioners can be convinced that democracy causes peace, however, depends on how confident they are in explaining it. Numerous studies have identified democracy as a cause of democratic peace, but none have yielded much meaningful, clear-cut, and nontrivial predictive power—achievements that lie at the heart of scientifically identifying causality. On the contrary, it appears increasingly likely that existing explanations for how democracy causes peace may be incomplete. Several studies have shown that the impact of democracy on peace may depend on the level of economic development.1 No compelling challenges to these findings have been offered, and some scholars who once confirmed the democratic peace now acknowledge the role played by economic conditionality.2 It follows that [End Page 52] democracy, alone, may not be the cause of the peace. Instead, some factor related to economic development either causes the peace or qualifies the impact of democracy on peace. This article advances the understanding of the democratic peace by demonstrating how a particular kind of economic development, contract-intensive development, appears to account for this peace. The economic conditionality of the democratic peace was originally predicted by economic norms theory, which identifies how liberal values may be rooted in the decisionmaking heuristics of a social market economy—that is, one where most people have the opportunity to choose, as individuals in the market, their sources of income and where to spend it.3 In this economy, sometimes called “advanced capitalism,” individuals habitually trust strangers in making contracts and depend on the state to enforce them impartially. They learn to prefer free choice and the equal application of law, and they expect their government to behave accordingly in foreign affairs. As a consequence, contract-intensive societies tend to agree on the preservation of the Westphalian order of sovereign states and the primacy of international law over power politics, and they are in natural alliance against any entity—state or nonstate—that seeks to challenge this order. This study demonstrates that from 1961 to 2001 not a single fatal conflict occurred among nations with contract-intensive economies. In contrast, democracies without contract-intensive economies engaged each other in several fatal conflicts during this period, about the number to be expected if democracy in states without a contracting economy has no impact on foreign policy. These results are highly robust after consideration of many competing causes, few of which have any significant impact on war and peace once the role of the contract-intensive economy variable is considered. The existence of this variable, in contrast, has the strongest impact of all nontrivial variables normally observed in studies of international conflict. Several implications follow from this study. First, this research supports the claims of some critics of the democratic peace who have long argued that a third variable may cause both democracy and peace:4 that variable is a [End Page 53] contract-intensive economy. Second, although challenging the role of democracy as a cause of democratic peace, this study shows that a zone of peace does exist among democratic nations, but it is one that appears to be caused by economic rather than governing institutions. Third, whether or not shared democracy contributes to international peace is an important issue because U.S. leaders’ belief in this proposition has influenced their conduct of foreign policy. President Bill Clinton, for example, supported the United States’ “democratic enlargement” policy because he believed that “democracies don’t attack each other.”5 His successor, George W. Bush, explained that his administration promoted democracy because “democracies don’t go to war with each other.”6 President Barack Obama has asserted that “we benefit from the expansion of democracy” because democracies are “the nations with which we share our deepest values.”7 Although support for democracy may be good for a variety reasons, this article presents compelling evidence that the promotion of peace among nations is not one of them. The article is organized as follows. First, I review the emergence of the democratic peace literature and the evidence linking this peace to economic development. Next, I present several explanations for the role of economic conditionality. I draw out the implications of economic norms theory for explaining stable democracy and peace among nations. After discussing the test conditions, reporting the results, and exploring alternative explanations, I offer a case study of the economic peace involving Greece and Turkey to illustrate the usefulness of the theory. I conclude with several policy implications that follow from the analysis. Two pioneers in the study of the democratic peace were Dean Babst in the 1960s and Rudolph Rummel in the 1970s.8 Key articles by Michael Doyle and [End Page 54] Jack Levy brought increased attention to the concept.9 By the early 1990s, a large number of highly rigorous studies had widely confirmed the proposition that democracies do not go war with each other.10 There are two primary sources of continuing skepticism, however. First, because most explanations for the democratic peace were created after it was first observed—the primary exception being Immanuel Kant in 179511—empirical confirmation for any of them can come only with the observation of novel empirical facts.12 To my knowledge, there are few confirmed, clear-cut, nontrivial, and novel facts that have been explicitly deduced from any explanation for the democratic peace. The closest candidate is the war-winning hypothesis, an expectation deduced from several accounts. The weight of the evidence is mixed as to whether democracies tend to win their wars.13 [End Page 55] Second, the finding that the democratic peace may be conditioned on some level of economic development indicates that democracy, alone, is probably not an independent cause of the peace. The most compelling study in this regard appeared in 2003, when several scholars came together to examine their contending expectations.14 The following four hypotheses were tested: (1) the democratic peace holds firm without any conditions; (2) the democratic peace is conditioned by economic development;15 (3) the democratic peace is conditioned by trade;16 and (4) the interaction of trade and development accounts for the democratic peace.17 The test failed to support hypotheses (1), (3), and (4), and robustly reconfirmed hypothesis (2). Most other studies that have examined the role of economic conditionality have confirmed it, including those of some scholars who had once supported the democratic peace thesis.18 Some scholars have responded to this finding by stressing that the level of economic development at which democracy becomes significant is low enough that, at least in recent years, most democracies are included among [End Page 56] those nations that do not engage in war with each other.19 But in a previous study, I argued that the exact level at which democracy becomes significant is not important, for two reasons. First, the question probably cannot be answered to everyone’s satisfaction. The precise level is highly sensitive to the researcher’s choice of control variables, sample, and measure of economic development.20 Second, without theory, the predicted level of development at which democracy becomes significant poses the danger of the fallacy of induction. Scholars can be much more confident in predictions grounded in theories with established predictive and explanatory power. Not only have all theories of democracy acting alone in causing the peace been unable to produce compelling novel facts, but the economic conditionality of this peace strongly suggests that all of these theories are, at best, incomplete. The issue is not the level of economic development at which democracy becomes a significant force for peace: it is how development causes the peace. Economic Conditionality and Economic Norms Theory Following the first report of the economic conditionality of the democratic peace, several studies sought to explain it. Azar Gat offered a list of factors potentially associated with what he calls economic “modernization,” including industrialization, which has delinked territory from the production of wealth, and a cultural “feminization” of men caused by urbanization and the service economy.21 Erik Gartzke argued that openness of markets may be the cause of the economic peace: nations with freer capital markets are more dependent than others on international investors, who are likely to divest from a country about to engage in war. Policymakers first recognize which nations have free capital markets and which do not, and then give greater credibility to threats made by those with freer capital markets than those with controlled ones. In theory, this can cause countries with freer capital markets to be more peaceful than others. The role of development in the democratic peace is based, presumably, on the assumption that development and capital openness are related.22 [End Page 57] My explanation for the economic peace integrates two long-standing findings in social science.23 First, research in economics and sociology has established the notion of bounded rationality: that is, individuals economize on the costs of decisionmaking by forming cognitive habits—heuristics—for situations they repeatedly encounter.24 Second, studies in economic history and sociology have documented that dependency on ties with friends and families—clientelism—often constitutes significant portions of trade and services in middle- and lower-income countries.25 It follows that divergent everyday routines of individuals in clientelist and contract-intensive societies should give rise to divergent decisionmaking heuristics. In a previous study, I showed how these divergent heuristics can affect political culture and institutions.26 In clientelist economies, individuals depend on group leaders, called “patrons,” who promote loyalty by providing economic and physical security in the form of gifts. To obtain these gifts, clients learn to habitually signal their willingness to abide by all of their patron’s commands with alacrity. When clientelist societies face rapid change and leadership is fluid, political entrepreneurs offer themselves as new group patrons. To increase the demand for security, these political entrepreneurs promote fear of outsiders. This may explain why societies in civil anarchy or in transition between clientelism and advanced capitalism—when high unemployment rates often coexist with clientelist traditions in large cities—tend to give rise to extremist dogmas that fit in-group worldviews, such as nationalist, Marxist, fascist, and militant Islamist ideologies.27 In contract-intensive societies, in contrast, making contracts with strangers promotes loyalty not to patrons but to a state that enforces these contracts with [End Page 58] impartiality and equal application of the rule of law. Because bigger markets offer more contracting opportunities than smaller ones, and because contracts cannot be arranged unless all parties explicitly state their preferences, individuals habitually perceive it as in their interest to respect the preferences and rights of strangers. Compared with voters in clientelist-integrated societies, voters in contract-intensive societies are more likely to support candidates for office who stress individual freedoms, at home and abroad, and who advocate government transparency and equal enforcement of the law. Discussion of the causes of a nation’s transition from a clientelist to a contract-intensive economy is largely beyond the scope of economic norms theory. Exogenous factors include those that make the benefits of trusting strangers in the market greater than the benefits of personalized ties. The theory identifies political factors as the primary cause of economic changes because a contract-intensive economy cannot exist unless government authorities make the decision to enforce contracts with impartiality. But this decision does not guarantee a contract-intensive economy: geographic factors, such as poor harbors or an absence of neighbors with contract-intensive economies, can constrain markets. 28 There is also a likely feedback loop from an emerging market culture to greater opportunities in the market. As increasing numbers of individuals decide to accept the risk of contracting with strangers—as a society approaches the “tipping point”29—the division of labor must grow increasingly complex. This in turn enhances opportunities in the market, causing more individuals to accept the risk of trusting strangers and their states. The shift in loyalty from group leaders to impartial states is not monotonic, however. Acontract-intensive economy can collapse for a variety of reasons, as the nascent capitalist and quasi-liberal political cultures of Classical Athens and Renaissance Italy did after defeats in foreign wars. In the modern era, the feedback loop seems to have started anew in Holland in the fifteenth century (possibly triggered by climate change), and was soon entered into by its neighbors with good harbors: England, northern France, northwestern Germany, and Scandinavia. Over time, contract norms reached more deeply into these societies. By the eighteenth century, however, in only two societies were [End Page 59] these norms in all likelihood highly institutionalized: possibly Switzerland and almost certainly the northern colonies of British North America, led foremost by the Massachusetts Bay Colony.30 By extrapolating from economic history and global migration patterns (because emigration can inversely reflect the level of opportunities in the market), I was able to determine that by the early twentieth century contract-intensive economies were highly institutionalized in all of the previously mentioned regions, as well as in the settler communities of the American West, Australia, Canada, and New Zealand. But between World Wars I and II, global economic troubles stalled the diffusion of contracting, causing it to decline in northwestern Germany when hyperinflation wiped out the middle class. Drawing on data discussed below, I found that by the 1960s contract norms were institutionalized throughout much of West Germany, rural France, the southern United States, and northern Italy, as well as Austria, Finland, and Japan.31 By the end of the Cold War, much of the rest of Italy, as well as Portugal, Singapore, South Africa, South Korea, Spain, and Taiwan seemed to have reached the tipping point. Since the end of the ColdWar, the peoples of Argentina, Chile, the Czech Republic, Greece, Hungary, Malaysia, Poland, and Slovenia may have reached it as well. A broad range of research documents the crucial role of economic norms in influencing political and social phenomena. Karl Polanyi’s book The Great Transformation highlights the transition from clientelist to contractual modes of exchange in Europe from the sixteenth to twentieth centuries.32 Studies in anthropology and archaeology document how economic conditions influence political and institutional preferences.33 As predicted by economic norms theory, there exists a correlation between high income and contracting and between low income and clientelism. Experimental studies have confirmed sizable differences in the way individuals from low- and high-income countries react in tests involving economic preferences.34 Studies in comparative politics have confirmed a strong linkage between economic development and stable, liberal [End Page 60] democracy.35 Survey and case studies in sociology and economics have linked in-group norms with collectivist preferences, and economic development with individualist preferences and higher levels of trust among strangers.36 The contract-intensive economy represents only one form of economic development. In the twentieth century, noncapitalist forms of development included fascism, communism, and petro-clientelism. Nations with these forms of development included totalitarian states (command economies—e.g., the Soviet Union), bureaucratic clientelist states (where authorities distributed wealth with an eye toward promoting and maintaining loyalty—e.g., Saudi Arabia), and “hybrid” states involving a mix of clientelism and totalitarianism (e.g., Nazi Germany). To test whether individuals in contract-intensive, higherincome economies think differently from those in other higher-income economies, I obtained data on levels of trust in nations from the World Values Survey project.37 Recall that contract-intensive economies are thought to foster the expectation that strangers will fulfill their contractual commitments, so a crucial prediction of economic norms theory is that, comparatively speaking, nations with contract-intensive economies should tend to have higher levels of impersonal trust than other nations. There are forty-four countries in 1997 with data on all variables. I regressed trust on gross domestic product (logged) and contract-intensive economy (see measure below). The result confirms this expectation: the contract-intensive economy variable, not higher income per se, is associated with higher levels of trust in nations.38 Both economic norms theory and classical liberal theory focus on the role of markets. But their assumptions and implications differ. Classical liberalism assumes that Adam Smith’s “propensity to truck, barter, and exchange” is ingrained [End Page 61] in human nature, and that freer markets (less state regulation and more foreign trade) promote economic development.39 Economic norms theory suggests that the propensity to truck, barter, and exchange is learned from the sustained presence of market-based opportunities, and that these opportunities have geographic and political origins. In this way, economic norms theory identifies the origins and popularity of classical liberal and social contract theories in the sustained presence of market-based opportunities. When contracting in the market becomes the way of life, people begin to think of it as natural and conceive of democratic governance too as a “social” contract or as embedded in “natural” law.40 Economic norms theory thus offers an explanation for why the classical liberal, social contract, and natural law traditions emerged when and where they did: in the areas of northwestern Europe that were developing contract-intensive economies in the seventeenth and eighteenth centuries. In fact, in contrast to what classical liberalism advocates claim, heavy state regulation of the economy may well be a prerequisite for countries to build and sustain a social market economy. Examples include the Scandinavian countries that have both contract-intensive economies and extensive state redistribution and regulation policies. Economic norms theory predicts that the leaders of contact-intensive nations will be less likely than other leaders to visibly challenge the sovereign rights of other states. This is because the modern interstate system is itself based on contract norms of legal equality: the Protestant Reformation was the consequence of the initial rise of contract norms in northwestern Europe in the sixteenth century; and the Treaty of Westphalia, which settled the Thirty Years’ War in 1648, institutionalized these norms across nations.41 Leaders of contract-intensive nations thus tend to view the continuation of the [End Page 62] Westphalian system of legally equal sovereign states, and the supremacy of international law over brute power politics, as consistent with the values and interests of their domestic populations. At first glance, economic norms theory may seem to imply the monadic expectation that contract-intensive nations should be less likely than other nations to engage in militarized conflict. But nothing in this theory suggests this to be true: rather, it is how they perceive their interests that makes contract-intensive nations different from other nations. Because contract-intensive nations consider the preservation of the Westphalian order to be in their interest, they may engage in wars with non-contract-intensive nations that challenge this order: for example, they may oppose states that threaten other states for economic gain in ways that violate international law. Economic norms theory predicts instead two hypotheses, one dyadic and one conditionally monadic. The dyadic hypothesis predicts a peace among contract-intensive nations; the monadic hypothesis predicts that contract-intensive nations, which are almost always highly democratic, will refrain from fighting other democratic nations. Starting with the dyadic hypothesis, the theory predicts that contract-intensive nations not only will be at peace with each other but are in a natural alliance. The alliance is the result of their fundamental agreement across a range of global issues and their consequent tendency to be on the same side in militarized confrontations.42 When the comparatively rare militarized dispute does occur between two contract-intensive nations, they are more likely than others to settle short of deadly force because their domestic audiences— and domestic opposition leaders—are more likely than their counterparts in non-contract-intensive nations to accept resolution through legal arbitration. The monadic hypothesis is conditioned by democracy. Recall that economic norms theory identifies how a contract-intensive economy can cause a population to value liberal democratic government. It follows that voters in contract-intensive democracies expect their leaders to refrain from fighting other democracies, regardless of the latters’ actions or economic conditions. This expectation accords with Spencer Weart’s view that liberal ideology causes [End Page 63] democratic nations to refrain from attacking other democratic nations.43 The key difference between Weart’s thesis and mine is that I predict that liberal ideology originates in contract-intensive economies, and thus only contract-intensive democracies—not other democracies—are so constrained. In this way, economic norms theory offers an explanation for why the promotion of human rights and democracy abroad appears on the agendas of contract-intensive democracies, but seemingly not on those of democracies that lack contract-intensive economies, or nations with other kinds of political systems. If this monadic thesis is correct, then democratic dyads where at least one state has a contract-intensive economy will be peaceful. Tests that do not control for this pattern would yield misleading results. Constructing the Test Conditions To test my hypotheses, I closely followed the analytic procedures used in a previous study.44 I included all fatal militarized disputes and wars as identified in the Correlates of War Militarized Interstate Dispute data set over the years 1961 to 2001.45 I made one modeling change to this previous study by [End Page 64] controlling for the development level of the more developed state in the dyad and its interaction with geographic distance.46 To my knowledge, two sources of direct contracting data across nations are available: investments in stocks and bonds and life insurance policies. Of all economic sectors to gauge, economic securities and life insurance are probably the most informative because it is the essential need for economic security that compels individuals to form loyalties to patrons or liberal states. Unfortunately, national-level data on stocks and bonds include foreign investment, and foreign investment does not reflect a society’s norms. Life insurance contracts, however, are not affected in this way. These contracts should also serve as an accurate indicator of contracting heuristics because, in predominantly clientelist societies, individuals normally protect their families in the event of death through ties with friends and extended families, as children inherit the debts of their parents as well as the favors owed them. In this type of society, few individuals are likely to trust strangers and the state enough to place their family’s welfare in an insurance contract; prevailing heuristics prevent most from even considering it. In societies where contracting is highly institutionalized, in contrast, comparatively few will have the personalized ties that are sufficiently strong and reliable that they will place their family’s security in them; comparatively larger numbers will act on prevailing heuristics and trust their family’s welfare to strangers in the form of life insurance contracts.47 [End Page 65] I gathered cross-national data on active life insurance contracts collected under the auspices of the World Bank from 1960 to 2000.48 Only sixty-five nations are included in the data, however, and many of these only after 1978. It is possible, however, to expand the data to most countries for this period by adopting a binary threshold and assuming that missing data reflect zero contract norms. This assumption follows from economic norms theory: contract-intensive societies are comparatively reliable providers of economic data because contracts must be enforced, and enforcement requires written records. States that promote markets also have an interest in collecting data on contractual transactions, so that they can monitor and promote contractual economic activity as well as tax it. In contrast, recording and tallying clientelist transactions are difficult tasks because they are framed as favors, which is why much more economic data exist on contract-intensive societies than on others, past and present. For instance, we know that in the eleventh and twelfth centuries, merchants in Cairo engaged in extensive contracting with merchants in Spain, North Africa, the Levant, and even India, because many of these contracts were later discovered in a repository of Old Cairo called the Geniza.49 The insurance data are most comprehensive for the years 1979 to 2000, so I identified the contract-intensive nations as those with existing insurance policies above the median level over this period. Additional tests show that the choice of threshold has no effect on the results. I also obtained identical results, unreported, using the original continuous data with missing values treated as missing.50 Model 1 in table 1 confirms the findings of previous studies regarding the relationship between democracy and fatal militarized disputes from 1961 to 2001. The coefficient for DemocracyL (−0.10) is negative and highly significant, confirming the expectation of democratic peace when the presence or absence of contract-intensive economy is not considered. The performance of most of the control variables is similar to that found in these earlier studies.51 To test the dyadic hypothesis that contract-intensive nations refrain from engaging in militarized disputes with each other, I constructed a binary indicator for both states having contract-intensive economies, which I call “Both States CIE.” As can be seen in table 1, the test yields a startling result: the Both States CIE variable must be dropped from the estimate because it predicts peace perfectly; that is, in the sample from 1961 to 2001, no fatal militarized disputes occurred between two nations with contract-intensive economies. A bivariate chi-square test indicates that this peace cannot be reasonably attributed to chance (p < 0.001). In contrast, with the binary measure “Both Coherent Democracies,” as defined by Edward Mansfield and Jack Snyder,52 ten fatal militarized disputes took place between democratic nations that lacked contract-intensive economies. A bivariate chi-square test suggests that this is about the expected number if democracy in countries without a contract-intensive economy does not cause peace among nations (p < 0.715). To test the monadic hypothesis, I distinguished democratic dyads where one state has a contract-intensive economy from those where neither state has one by including the variable “One State CIE” and its interaction with [End Page 68] DemocracyL. As can be seen in model 2 in table 1, the coefficient for the interactive term DemocracyL x One State CIE (−0.20) is negative and significant. This confirms the supplemental monadic hypothesis of a conditional relationship between contract-intensive economy and democracy. Because the coefficients for constituent terms (DemocracyL) in interactive models are meaningful only for cases where the other constituent term (One State CIE) equals zero, the coefficient for DemocracyL (−0.03) in model 2 confirms the results of the bivariate chi-square tests: in countries without a contract-intensive economy, democracy does not cause peace among nations.53 Models 3 and 4 in table 1 repeat the analyses for the onset of war, defined by convention as militarized interstate disputes that include more than 999 battle deaths. The coefficient for DemocracyL (−0.15) in model 3 is negative and highly significant. This confirms the findings of previous studies regarding the relationship between democracy and war from 1961 to 2001. In model 4 all cases where Both States CIE equals one are excluded because this variable predicts peace perfectly. A bivariate chi-square test indicates that this absence of war among contract-intensive nations is probably not the result of chance (p < 0.10). In contrast, the data yield two wars among coherent democracies where both lacked contract-intensive economies over the sample period: Cyprus and Turkey in 1974 and the Kargil war fought between India and Pakistan starting in 1993 (this dispute continued to 1999 when it reached the war level while both countries were still democratic). A chi-square test indicates that this is approximately the number to be expected if democracy without a contract-intensive economy does not prevent wars among nations (p < 0.857).54 The remaining coefficients in model 4 are substantially identical to the results for fatal militarized interstate disputes in model 2. The coefficient for [End Page 69] DemocracyL x One State CIE (−0.30) confirms the supplemental monadic hypothesis of a conditional relationship between a contract-intensive economy and democracy at the war level; the coefficient for DemocracyL (−0.03) confirms that democracy without a contract-intensive economy does not cause peace among nations. Identical results also appear, for fatal militarized disputes and wars, using the dyadic dummy variable for Both Coherent Democracies. One possible explanation for the insignificance of democracy may be that there are too few cases of democracies without contract-intensive economies. The data, however, do not support this conclusion. Economic norms theory predicts that a contract-intensive economy will cause and stabilize democracy: it is thus no surprise that 88 percent of contract-intensive nation-years from 1960 to 2000 are also coherently democratic.55 But non-contract-intensive nations can experiment with democratic government for a host of reasons, and 49 percent of coherent democratic nation-years do not have contract-intensive economies during this period. Because there are about as many democratic nation-years without contract-intensive economies as there are with them, a dearth of non-contract-intensive democratic cases cannot explain the insignificance of the democratic peace. Could the causal arrow point in the opposite direction, with democracy the ultimate cause of contract-intensive economies and peace? The evidence does not support this conclusion. Correlations among independent variables are not calculated in the results of multivariate regressions: coefficients show only the effect of each variable after the potential effects of the others are excluded. If democracy was a direct cause of both contract-intensive economy and peace, then there would be some variance remaining, after its moderate correlation with contract-intensive economy is excluded, that links democracy directly with peace.56 The insignificance of the DemocracyL coefficients in models 2 and 4 in table 1 indicates that no such direct effect exists. In addition, the scholarly consensus is that higher income per capita, which correlates with the contract-intensive economy variable, is far more likely to cause democracy [End Page 70] than democracy is to cause development.57 Still, the analysis here is not designed to test for reverse causation, though performance of such a test would be a valuable addition to the literature. Robustness tests indicate that in analyses of wars, democracy remains highly insignificant under any examined circumstance. In analyses of fatal disputes, on the other hand, the removal of some control variables can cause democracy to reach significance at the 0.10 level, which is the lowest threshold statisticians normally assign significance. Further tests show that democracy is not significant with the removal of all control variables.58 Nor does democracy become significant under any circumstance when observing only bordering nations. This suggests that if peace exists among non-bordering democracies, it is because non-contract-intensive democracies usually have weak economies and thus refrain from fighting each other because they do not have the capability to do so. The results in table 1 support both aspects of the economic peace: the dyadic unconditional peace and the supplemental monadic peace conditioned by democracy. These patterns conform with the economic norms expectation that a contract-intensive economy promotes liberal values and consolidated liberal democracy. Common preferences and interests cause foreign policy agreement and peace among contract-intensive nations, whereas liberal ideology causes contract-intensive democracies to refrain from using force against other democracies, including those without contract-intensive economies. Democracies that lack contract-intensive economies, on the other hand, have no such constraints and do not perceive common interests within the Westphalian order; thus they tend to fight each other about as often as other nations do. Further calculations indicate that a contract-intensive economy is a powerful force for peace. I could not directly estimate the substantive impact of Both States CIE because it predicts peace perfectly, so I reestimated model 2 after combining the dyadic and monadic measures into a single “super” variable: “One or Both States CIE.” I then included the product of this variable and Both Coherent Democracies to identify cases where both states are democracies and at least one has a contract-intensive economy. The results—unreported for reasons [End Page 71] of space—indicate that, among bordering democracies, a change from neither to one or both states with a contract-intensive economy causes a 97 percent reduction in the probability of fatal dispute onset. None of the remaining variables has an impact of this magnitude.59 Exploration of Alternative Explanations This section examines the possibility that the results discussed above may be explained by variables that I have excluded thus far because economic norms theory predicts that they are at least partly caused by the contract-intensive economy variable. Because correlations among independent variables are not credited to any variable in a multivariate regression, economic norms theory predicts that inclusion of the variables below will reduce the impact of the contract-intensive economy variable. Therefore, this section cannot serve as a test of economic norms theory. Instead, it departs from the theory and examines the possibility that competing theories may account for the results discussed above. Economic norms theory identifies contract norms as a cause of economic development. It is also likely, however, that wealthier individuals are better positioned than poorer ones to engage in contracts. To ensure that the results of model 2 in table 1 are not a function of wealth, I added a control for economic development (see model 1 in table 2). The coefficients for the contract-intensive economy variables hold firmly, and the coefficient for DevelopmentL (0.05) is not significant. This means that the results of this study cannot be attributed to the fact that contract-intensive nations tend to be wealthier than other nations.60 Economic norms theory predicts that individuals in contract-intensive societies will be more likely than individuals in other societies to seek profitable contracts wherever they may find them. Because the nature of governance in contract-intensive nations is expected to reflect the contractualist worldview that good government abets the private pursuit of wealth, it predicts that governments of contract-intensive nations will be more likely than others to encourage foreign trade. Trade per capita is not the same as trade interdependence (trade/gross domestic product), however, and economic norms theory does not predict trade interdependence per se. But contract-intensive nations prefer law over brute force, and thus they are more likely to prefer trade over imperialism in foreign economic policy.61 Richard Rosecrance has argued that the decision to trade rather than to fight is a key factor in explaining peace among trading nations.62 Economic norms theory thus complements Rosecrance’s insights, and the contract-intensive economy variable can potentially account for the pacifying role of trade interdependence in international relations. But the reverse is also possible: trade interdependence may account for peace among contract-intensive nations. This is the view of economic liberals: interstate trade promotes market development, democracy, and peace.63 As can be seen in model 2 in table 2, the coefficient for Trade Interdependence (−0.59) is not significant. It thus appears that contracting is the more likely cause of both trade interdependence and peace among nations. Still, caution must be exercised: the trade variable is close to significant, and this regression model was not designed for resolving this issue. Also, scholars have not settled on how best to gauge trade interdependency.64 Further examination of the impact of trade in conflict is thus warranted. Some explanations for the democratic peace suggest that only democracies with mature or consolidated institutions might be peaceful. In addition, mature democracies may promote contract-intensive economies, suggesting the potential reversal of causation. In model 3 in table 2 the coefficient for Democratic MaturityL (−0.09) is not significant.65 It thus appears that even mature, consolidated democracies are not more peaceful with each other than [End Page 74] other nations. Rather, a contract-intensive economy is the more likely cause of both democratic maturity and the prevailing peace. Economic norms theory predicts that contract-intensive nations will perceive common security interests in the primacy of international law over power politics, causing them to form alliances. Common interests can develop for other reasons, however, and it is possible that alliances may account for the economic peace.66 In model 4 in table 2, the coefficient for Alliance (0.16) is not significant. The evidence thus favors the conclusion that contract-intensive economy partially accounts for the existence of both alliances and peace. As discussed above, Gat has offered several explanations for the peace among developed democratic nations.67 Most of these are broad and unfalsifiable, but he does offer urbanization and size of the service sector as variables, which he suggests make individuals less accustomed to the suffering of war and therefore opposed to it. But a service economy may be a function of contract norms, which encourage the commodification of services as well as of labor and capital. I gauge the variable Service Economy as the proportion of gross domestic product in the service sectors.68 In model 5 in table 2, the coefficient (0.01) is not significant. Analyses of urbanization show that dyads where both states are highly urbanized are significantly more likely than other dyads to engage in fatal disputes. Neither urbanization nor a service economy is thus a likely explanation for the economic peace. Also discussed above, Gartzke argues that free capital markets might explain the developed democratic peace. But these markets could be caused by contract norms, as states promote foreign trade and financial markets diffuse within, as well as across, international borders. Model 6 in table 2 reports the results using Gartzke’s measure. 69 The coefficient for Capital OpennessL (−0.15) is negative and significant, and coefficients for the contract-intensive economy variable also hold firmly. This suggests that, even if there is some causality stemming from the contract-intensive economy variable, free capital markets have an independent impact on the onset of fatal disputes. In short, the data support both Gartzke’s theory and economic norms theory. This result is reasonable, as the theories do not contain incompatible assumptions and are [End Page 75] not mutually exclusive.70 Further tests show that contract-intensive economy is the far stronger variable, with an impact about twice that of capital openness. Subsequent tests for war onsets produced identical results for all variables except Capital OpennessL, which is not significant at the war level. The Greek-Turkish Case An examination of a case study of recent changes in Greece’s economy and its relations with its neighbor Turkey illustrates how economic norms affect the domestic and foreign politics of nations. I chose this case because both countries have experienced many years of “coherent” democracy as defined above: Greece since 1975, with eighty-four years of democracy previously; and Turkey since 1983, with twenty-five years of democracy previously.71 Nevertheless, from 1960 to 2000, twenty militarized interstate disputes occurred between the two countries, five of which resulted in fatalities. If economic norms theory is correct, these tensions were a function of nationalist and xenophobic attitudes of voters on both sides. In 1990 Greece transitioned from a clientelist to a contract-intensive economy. This offers a direct opportunity to test the economic norms expectation that Greece’s transition to a contract-intensive economy should have been followed by substantial moderation and rationalization of Greek domestic and foreign politics, including Greece’s relations with Turkey. As discussed earlier, an increase in the use of contracts is thought to have political and geographic root causes. For Greece, the political roots stem from a desire to join the European Community (EC) and the role played by the EC in giving politicians an “excuse” to make institutional changes, such as the equitable enforcement of banking and trade laws, which favors the transition to a market economy. Geographically, Greece’s entry into the EC was followed by a substantial increase in foreign investment into the country from 1980 to 1995.72 Starting in 1986, the rate of growth in life insurance contracting in Greece increased dramatically; it crossed the global median into contract-intensive status in 1990. Still, in the year 2000 Greece’s level of per capita life insurance [End Page 76] contracting was only one-twenty-fifth that of the contract-intensive standard-bearers Japan, Switzerland, and the United Kingdom. Most observers agree that the mid-1990s was a turning point in Greek politics. Before then, the two main parties, the Panhellenic Socialist Movement (PASOK) and New Democracy (ND), were primarily agents of bureaucratic clientelism. As economic norms theory would expect, both parties were highly personalist and centered on charismatic leaders prone to populist and ideological bombast.73 Interparty relations were tense and based on opposing social identities and systems of patronage.74 The rule of law was weak,75 and distrust of the state ran deep76; in addition, the people identified with “the political parties rather than governments.”77 In foreign policy there was an “exclusivist notion of ‘Greekness.’”78 In the 1980s and early 1990s, PASOK won elections with the xenophobic, anticapitalist, anti-American, and anti-European rhetoric of its populist leader, Andreas Papandreou. In 1976 Greece confronted Turkey on issues in the Aegean over which the International Court of Justice later ruled the Greeks had no case. When a similar issue arose in 1987, Prime Minister Papandreou asserted that it was time to “teach the Turks a hard lesson.”79 The two countries came close to war in 1976, 1987, and 1996.80 Although during this period Greek and Turkish leaders made frequent attempts to resolve their differences, “these initiatives were not sustainable in the face of an adverse political climate, limited social contacts, high level of biases, and sensationalist press.”81 The watershed moment in Greek politics came in 1996, when Papandreou died and PASOK elected Costas Simitis to replace him. The gulf separating the two leaders was vast. Simitis was elected largely on the platform of [End Page 77] Eksynchronismos (modernization). In the words of Kevin Featherstone, “Simitis and his supporters advocated a greater separation of party from the state” and a break from the “bureaucratic clientelism of the recent past.” Whereas Papandreou “exercised a dominant authority over his party,” Simitis was “more managerial and technocratic.”82 As economic norms theory would expect, PASOK’s choice of a reformer reflected deep-seated changes in Greece’s political culture. The opposition ND also moved to the center, with the nationalist posturing and ideological bravado of both parties largely disappearing from Greece’s political discourse.83 A “cultural shift” occurred,84 as the new rhetoric of reform struck a strong chord with the electorate, which increasingly viewed the leaders of the country’s oldstyle politics as “dinosaurs.”85 Voters began to distance themselves from Greece’s political parties; legal institutions became more central to everyday life; and a “new sense of security changed the way ordinary citizens viewed public life.”86 Reflecting an increased respect for the rule of law, the two leading parties agreed on new protections for individual rights in the constitution. 87 Still, a minority continued to vocalize opposition to what many Greeks called Greece’s growing “Europeanization,” led by Archbishop Christodoulos. Both leading parties also backed fundamental changes in Greece’s foreign policy.88 For Europe, the country that was once viewed as the “black sheep” of European foreign policy had evolved into a more consensual partner.89 Prior to the late 1990s, Greece maintained an uncompromising approach in its relations with Albania, Bulgaria, and Macedonia, and was widely viewed in Europe as the “bully of the Balkans.” In the late 1990s, however, a more cooperative attitude emerged, and Greece’s relations with these countries greatly improved.90 This realignment with other contract-intensive countries following Greece’s own transition to a contract-intensive economy, and its more cooperative attitude toward other democracies, accords with expectations of economic norms theory. [End Page 78] Greece’s foreign policy toward Turkey also underwent fundamental change in the late 1990s.91 Reflecting a change in Greek attitudes, foreign minister Theodoros Pangalos—considered a hard-liner—asserted that “we Greeks must get over the old knee-jerk reaction that if something is bad for Turkey it is good for us.”92 The most significant change occurred in 1999, when Greece moved from perennial obstructer to supporter of Turkey’s membership bid to join the European Union (EU). In all likelihood, this move was not strategic but an outcome of deep-seated shifts in Greeks’ perceptions of their national interest.93 Greek scholars and think tanks have stressed that it is in Greece’s interest to have Turkey in the EU as a partner.94 From 2000 to 2004, Greece and Turkey signed twenty-five major agreements; from 1970 to 2000 there were none.95 It must be recalled, however, that fundamental differences remain over the division of Cyprus and exploitation of the Aegean seabed.96 Resolution of the deeper issues in Greek-Turkish relations would also require change in how Turkish leaders perceive their interests. Unlike Greece, Turkey has not transitioned to a contract-intensive economy. If economic norms theory is correct, then Turkish politics should appear similar to Greek politics before Greece’s transition; this would include strong party loyalties, intense identity issues, and fear of outsiders in the country’s political discourse. In foreign policy, compromise should be difficult, as opposition parties seeking to garner the nationalist identity seize any reason to criticize the government for “giving in” to outsiders. Most observers agree that the above description characterizes Turkish politics today. There is no significant liberal party concerned with individual rights, equal enforcement of the law, or transparency in government. The left is characterized as favoring the elite-led modernization project, which increasingly includes “an intensifying nationalism with an underlying xenophobia”; the right emphasizes communitarian religious identity and social conservatism.97 [End Page 79] Turkey’s national identity includes a strong ethnoreligious dimension, and communitarianism remains a prominent feature: it continues to be a criminal offense to insult Turkishness. The political parties are weakly institutionalized and headed by strong, charismatic leaders who compete over state rents with ideological and populist appeals. Voters identify with parties, and the parties offer competing images of national identity.98 Although Turkey has contributed in many ways to the rapprochement with Greece, domestic core values continue to place constraints on further progress. For instance, Turkey could grant more religious freedom to its Orthodox community. 99 But with the international community, Turks feel that they can rely only on themselves, and the EU concern over Turkey’s human rights record is widely viewed “as part of a design to undermine Turkish national unity.”100 Engagement with Greece is considered risky for any incumbent government because it tends “to generate widespread nationalist sentiments.”101 The opposition can easily brand concessions, even if mutual, as giving in to outsiders and contrary to Turkish interests. Public opinion surveys in Turkey show that there continue to be very low levels of trust in the society, and “popular sentiment towards Greeks tends to be quite negative.”102 Turkey may have engaged with Greece in part due to the “earthquake diplomacy” that occurred after the catastrophic earthquake that struck Turkey in August 1999.103 Consistent with the economic norms expectation of a new universalism in Greek identity, many Greek individuals, nongovernmental organizations, and local authorities, in addition to the Greek government, offered substantial help to the Turks in their time of need. This opened a temporary window of good feeling toward Greece in Turkey that allowed Ankara to sign a number of confidence-building measures with Athens. [End Page 80] An alternative explanation for the improvement in Greek-Turkish relations might be the constraining and moderating role of the EU. It is true that Turkey’s constructive responses to Greek initiatives have been at least partly aimed at satisfying EU conditions for full membership. For instance, after refusing for decades to allow an international solution to the Cyprus dispute, Ankara acquiesced after the EU made doing so a condition of Turkey’s candidacy. In this way, the carrot of the EU acts as political cover for Turkish politicians, just as the EC once did for Greek politicians, offering leaders an “excuse” for “giving in” to the foreigners. Given Greece’s full membership in the EU since 1981, however, EU incentives do not offer a satisfying account for the changes in Greek politics and foreign policy in the 1990s. Recognition of the EC’s role in Greece’s transition to a contract-intensive economy suggests some promise for a more stable peace between Greece and Turkey in the years ahead. Like Greece in the 1980s, after Turkey became an official EU candidate, it experienced an explosion of foreign direct investment. 104 In the 1990s Turkey also experienced a rise in per capita life insurance contracting. If the rate of growth of the 1990s continues, the country will pass the contract-intensive threshold in the year 2019. If the time lag for political change after the economic transition in Turkey is the same as it was in Greece (seven years), significant moderation and individualization of Turkey’s political culture may occur around 2026. If the EU continues to act as an incentive for institutionalizing the market and as a source of foreign investment, Turkey’s change could come sooner.105 Economic norms theory would predict that when this happens, all of Turkey’s security-related issues with Greece will be positively and permanently settled; the enduring rivalry will end; and fatal militarized confrontations in this dyad will be a thing of the past. Conclusion Many policymakers and scholars of international relations believe that the promotion of democracy abroad will enhance global order and the security of the United States and its allies. Yet since the terrorist attacks on New York and [End Page 81] Washington on September 11, 2001, efforts to promote democracy as part of U.S. grand strategy in the Muslim Middle East only increased the influence of anti-U.S. factions in the region, including in Egypt, Lebanon, and the Palestinian territories. This study challenges the strategic assumptions of U.S. policymakers by showing that democracy is not a likely cause of peace among nations. Rather, domestic economic conditions appear to be the main factor in promoting peace. Scholars have erroneously linked democracies with peace because most contract-intensive nations are democratic. But this study showed that about half of all democratic nations lack contract-intensive economies, and these democratic countries are not peaceful. Indeed, all the potential exceptions to the democratic peace—such as the Spanish-American War, the Continuation War of Finland against the Allies during World War II, and the Kargil war between India and Pakistan—are easily accounted for in this study because in each of these wars the democracy on at least one of the sides lacked a contract-intensive economy. This article examined the implications of economic norms theory, which integrates the insights of bounded rationality with research by economic historians to show how voter preferences for democracy and respect for individual rights and equal protection under the law may be rooted in the conditions unique to social market economies, where individuals trust both strangers in making contracts and a state that enforces them with impartiality. In many middle- and low-income countries, in contrast, high structural unemployment encourages dependence on the patronage of friends and family. This dependency can promote the heuristics of identifying and trusting in-groups and their leaders, and distrusting strangers from out-groups and state institutions. The study traced the path of causation from economic norms to interstate peace across levels of analysis and methodologies and found that contract-intensive societies are associated with higher levels of trust. It is not this trust, however, that causes peace among contract-intensive nations: peace is the result of a fundamental agreement among voters and elites in these countries on the Westphalian order of sovereign states, including the primacy of international law over power politics and imperialist bullying. This agreement emerges from the heuristics of their common economic way of life. Leaders of states with contract-intensive economies thus perceive common security interests in defending the global status quo and are in natural alliance against any state or nonstate entity that seeks to challenge it. Although democracies are not inherently peaceful, there is a conditional role for democracy in the economic peace: Because contract-intensive economy [End Page 82] promotes the heuristics that value individual freedom and equitable government, most contract-intensive nations have liberal democratic governments. Valuing democracy, voters and elites in contract-intensive democracies tend to value the promotion of individual rights and democracy abroad. They therefore restrain themselves from fighting other countries perceived as democratic, regardless of their economic or foreign policy behavior. These patterns were confirmed in the quantitative analyses and in a case study of Greece and Turkey.

#### Proves that even if the alt is better it causes transition wars – prefer empirics

#### Empirics outweigh – none of their evidence outlines a realistic alternative to capitalism .

## Impact turns:

#### CCS. Markets are key.

Gregory F. Nemet et al. 16, Associate Professor, La Follette School of Public Affairs, University of Wisconsin–Madison, Martina Kraus, German Institute for Economic Research Vera Zipperer, German Institute for Economic Research, November, 2016, The Valley of Death, the Technology Pork Barrel, and Public Support for Large Demonstration Projects, La Follette School Working Paper No. 2016-007

Because the ultimate (but not immediate) goal of supporting demonstrations is to facilitate widespread adoption, demand a6nd thus markets are of course key (Kingsley et al., 1996). In climate change, policies are central to those markets (Taylor et al., 2003; Zhou et al., 2015), thus credibility in those policies is also central (Rai et al., 2010; Finon, 2012). But it is striking how many demonstration programs confronted markets that involved negative shocks around the time that projects came on-line—we see it in synfuels, biofuels, and solar thermal electricity (Figure 9), and CCS (Figure 10). The 1.9 year average lag from project initiation to time on-line is crucial. It would be a mistake to assume a Hotelling price path in which prices of an exhaustible resource (e.g. oil, atmospheric storage of CO2) rise at a constant pure rate of time preference. In this case the relevant price is the level at which avoided CO2 emissions are remunerated. Rather the experience of the past suggests we are more likely to see shocks and boom–bust cycles (Krautkraemer, 1998; Zaklan et al., 2011). We see it in our data in the prices related to each demonstration program (Figure 8). Lupion and Herzog (2013) attribute the failure of the NER300 program to stimulate the construction of any CCS projects to 4 factors: competition with renewables, project complexity, low carbon prices, and a combination of fiscal austerity and weak climate policy around the global financial crisis. Note that three of the four problems involved future demand, not the funding structure itself. Demonstrations need markets that pay off innovation investments not just under a steadily increasing Hotelling-style market, but under a broad range of market conditions. Features of robust demand pull include niche markets (Kemp et al., 1998), hedging across jurisdictions (Nemet, 2010), and flexible production (Sanchez and Kammen, 2016). Government price guarantees have played an important role as we have seen on synfuels, solar thermal electricity, and on a smaller scale, photovoltaics.

#### Try or die for CCS to solve warming

Moniz 9/23/19 - 13th Secretary of Energy (2013 to 2017) and is the founder and CEO of the Energy Futures Initiative

Fredd Krupp is president of the Environmental Defense Fund, Ernest Moniz, “Cutting Climate Pollution Isn’t Enough — We Also Need Carbon Removal,” Text, TheHill, September 23, 2019, <https://thehill.com/opinion/energy-environment/462609-cutting-climate-pollution-isnt-enough-we-also-need-carbon-removal>.

It has been almost four years since the Paris climate agreement was signed. But as leaders gather in New York this week for the United Nations Climate Change Summit, the world remains far off track from meeting the Paris objective of limiting global warming to well below 2 degrees Celsius -- and pursuing efforts at 1.5 degrees.

To meet that target, the world must achieve a 100 percent clean economy — one that produces net zero emissions, or no more climate pollution than can be removed from the atmosphere — soon after mid-century, with the United States and other advanced economies reaching that milestone no later than 2050. It’s a daunting but doable task.

The consequences of falling short are enormous. This year, the U.S. government’s fourth National Climate Assessment documented the huge economic and social impacts of unchecked warming. The Pentagon has repeatedly warned of the impacts on national security and our troops.

Achieving a 100 percent clean economy will require a swift transition to renewables and other zero-carbon energy sources. But we also need to face the reality that meeting the Paris target will require taking carbon out of the atmosphere at massive scale. In part, that’s because eliminating emissions will be very challenging for some sectors, especially the transportation industry and agriculture. Removing carbon from the atmosphere would also bring concentrations down, helping to stabilize the climate at safer levels. So, the push for clean energy must be supplemented by a suite of technologies known as carbon dioxide removal (CDR).

It is not a question of what we’d prefer. It’s a question of insurmountable math.

The crucial role carbon removal must play is becoming more widely recognized. The 2018 Intergovernmental Panel on Climate Change report stressed the importance of carbon removal, and the U.S. National Academies of Sciences, Engineering and Medicine late last year estimated that ten billion tons of CO2 will need to be pulled from the atmosphere annually by 2050, and double that by 2100. For context, today’s global emissions are less than 40 billion tons per year. If the 10 billion tons of CO2 from CDR were stored underground, that would be roughly double the world’s annual oil production.

The good news is that there are a surprisingly large number of promising pathways for carbon dioxide removal. Nature-based approaches include reforestation and forest management as well as agricultural practices that increase carbon stored in soils. Some of the attendant challenges include competition for land and permanence of the carbon sequestration.

Technological approaches include direct air capture — machines that actually suck carbon from the air — and technologically-enhanced natural processes, such as plants genetically modified with deep roots to fix carbon in the soil; enhanced mineralization, which uses certain reactive rocks to bind with carbon from the air; and accelerated ocean uptake in phytoplankton. These technologies are immature and require considerable research, development and demonstration to ensure viability and affordability at very large scale.

Despite the urgency, there is no dedicated federal effort to develop these crucial technologies; existing programs are piecemeal and largely focused on sequestering emissions from industrial and electricity generating sources.

The National Academies recommended the rapid establishment of a robust, focused, scalable and accelerated federal research program spanning the Departments of Energy and Agriculture, the National Oceanic and Atmospheric Administration and the National Science Foundation, among others. Such a program would encompass the full range of technological pathways that can remove CO2 from the environment. ‘’Clearing the Air,’’ an analysis of CDR’s value and a proposed plan to deploy it, has been completed by the Energy Futures Initiative. Over the next decade, the program scale would be about a billion dollars a year.

Carbon dioxide removal is not a magic bullet. We must do everything we can to deploy innovative low- and zero-carbon methods to generate electricity, heat homes, fuel vehicles, and power industry, creating new economic opportunities in the process. Tackling the climate crisis also requires placing a declining limit and a price on carbon pollution, as well as a significant increase in energy technology innovation and deployment across the board.

But CDR is also not a “Plan B.” It is a critical part of any “Plan A” for climate, a necessary complement to emission reduction. It can provide more flexibility and optionality in policy planning, which could ease the transition to a carbon-neutral economy while minimizing transition costs and providing greater assurance that science-based climate goals can be met in a timely manner. It would eventually enable a net negative global economy that could bring the atmospheric carbon concentrations down — and global temperatures with it.

We have delayed meaningful action for far too long. As a result, the scale and urgency of the challenge is such that we cannot simply work on doing better in the future. We need to correct what we did in the past. Carbon removal is the enabler.

#### The private sector is the key internal link to space exploration and colonization.

**Sharma 9/7** [Maanas Sharma, 9-7-2021, "The Space Review: The privatized frontier: the ethical implications and role of private companies in space exploration," The Space Review, https://www.thespacereview.com/article/4238/1]//DDPT

In recent years, private companies have taken on a larger role in the space exploration system. With lower costs and faster production times, they have displaced some functions of government space agencies. Though many have levied criticism against privatized space exploration, it also allows room for more altruistic actions by government space agencies and the benefits from increased space exploration as a whole. Thus, we should encourage this development, as the process is net ethical in the end. Especially if performed in conjunction with adequate government action on the topic, private space exploration can overcome possible shortcomings in its risky and capitalistic nature and ensure a positive contribution to the general public on Earth.

The implications of commercial space exploration have been thrust into the limelight with the successes and failures of billionaire Elon Musk’s company SpaceX. While private companies are not new to space exploration, their prominence in American space exploration efforts has increased rapidly in recent years, fueled by technological innovations, reductions in cost, and readily available funding from government and private sources.[1] In May 2020, SpaceX brought American astronauts to space from American soil for the first time in almost 10 years.[2] Recognizing the greatly reduced costs of space exploration in private companies, NASA’s budget has shifted to significantly relying on private companies.[3] However, private space companies are unique from government space agencies in the way they experience unique sets of market pressures that influence their decision-making process. Hence, the expansion of private control in the space sector turns into a multifaceted contestation of its ethicality.

The most obvious ethical concern is the loss of human life. Critics contend that companies must answer to their shareholders and justify their profits. This contributes to a larger overall psyche that prioritizes cost and speed above all else, resulting in significantly increased risks.[4] However, the possible increase in mishaps is largely overstated. Companies recognize the need for safety aboard their expeditions themselves.[5] After all, the potential backlash from a mishap could destroy the company’s reputation and significantly harm their prospects. According to Dr. Nayef Al-Rodhan, Head of the Geneva Centre for Security Policy’s Geopolitics and Global Futures Programme, “because there were no alternatives to government space programs, accidents were seen to some degree as par for the course… By comparison, private companies actually have a far more difficult set of issues to face in the case of a mishap. In a worst case scenario, a private company could make an easy scapegoat.” [6]

Another large ethical concern is the prominence capitalism may have in the future of private space exploration and the impacts thereof. The growth of private space companies in recent years has been closely intertwined with capitalism. Companies have largely focused on the most profitable projects, such as space travel and the business of space.[7] Many companies are funded by individual billionaires, such as dearMoon, SpaceX’s upcoming mission to the Moon.[8] Congress has also passed multiple acts for the purpose of reducing regulations on private space companies and securing private access to space. From this, many immediately jump to the conclusion that capitalism in space will recreate the same conditions in outer space that plague Earth today, especially with the increasing push to create a “space-for-space” economy, such as space tourism and new technologies to mine the Moon and asteroids. Critics, such as Jordan Pearson of VICE, believe that promises of “virtually unlimited resources” are only for the rich, and will perpetuate the growing wealth inequality that plagues the world today.[9]

However, others contend that just because private space exploration has some capitalist elements, it is by no means an embodiment of unrestricted capitalism. A healthy balance of restricted capitalism—for example, private space companies working through contracts with government agencies or independently under monitoring and regulation by national and international agreements—will avoid the pitfalls that capitalist colonialism faced down here on Earth. Even those who are generally against excessive government regulation should see the benefits of them in space. Lacking any consensus on definitions and rights in space will create undue competition between corporations as well as governments that will harm everyone rather than helping anyone. To create a conducive environment for new space-for-space exploration, one without confrontation but with protection for corporate astronauts, infrastructure, and other interests, governments must create key policies such as a framework for property rights on asteroids, the Moon, and Mars.[7,10]

Another key matter to note is restricted capitalism in space “could also be our salvation.”[11] Private space exploration could reap increased access to resources and other benefits that can be used to solve the very problems on Earth that critics of capitalism identify. Since governments offset some of their projects to private companies, government agencies can focus on altruistic projects that otherwise would not fit in the budget before and do not have the immediate commercial use that private companies look for. Scott Hubbard, an adjunct professor of aeronautics and astronautics at Stanford University, discusses how “this strategy allows the space agency to continue ‘exploring the fringe where there really is no business case’” but still has important impacts on people down on Earth.[12]

Indeed, this idea is a particularly powerful one when considering the ideal future of private companies in space exploration. Though there is no one set way governments will interact with companies, the consensus is that they must radically reimagine their main purpose as the role of private space exploration continues to grow. As governments utilize services from private space companies, “[i]nstead of being bogged down by the routine application of old research, NASA can prioritize their limited budget to work more on research of other unknowns and development of new long-term space travel technologies.”[13] According to the Council on Foreign Relations, such technologies have far-reaching benefits on Earth as well. Past developments obviously include communications satellites, by themselves a massive benefit to society, but also “refinements in artificial hearts; improved mammograms; and laser eye surgery… thermoelectric coolers for microchips; high-temperature lubricants; and a means for mass-producing carbon nanotubes, a material with significant engineering potential; [and h]ousehold products.”[2] Agencies like NASA are the only actors able to pursue the next game-changing missions, “where the profit motive is not as evident and where the barriers to entry are still too high for the private sector to really make a compelling business case.”[8] These technologies have revolutionized millions, if not billions, of lives, demonstrating the remarkable benefits of space exploration. It follows then that it is net ethical to prioritize these benefits.

This report concludes that the private sector, indeed, has a prominent role to play in the future of space exploration. Further, though private space exploration does bring the potential of increased danger and the colonization of space, these concerns can be effectively mitigated. Namely, strong government frameworks—particularly international ones—will minimize possible sources of ethical violations and ensure an optimal private sector role in space. This also allows government agencies to complete significantly more difficult, innovative projects which have transformative benefits for life on Earth.

#### Space exploration solves extinction and endless resource wars.

Collins 10 [Patrick Collins, professor of economics at Azabu University in Japan, and a Collaborating Researcher with the Institute for Space & Astronautical Science, as well as adviser to a number of companies, Adriano V. Autino is President of the Space Renaissance International; Manager, CEO/CTO, Systems Engineering Consultant / Trainer at Andromeda Systems Engineering LLC; and Supplier of methodological tools and consultancy at Intermarine S.p.A, Acta Astronautica, Volume 66, Issues 11–12, June–July 2010, “What the growth of a space tourism industry could contribute to employment, economic growth, environmental protection, education, culture and world peace”, Pages 1553–1562]

7. World peace and preservation of human civilisation

The major source of social friction, including international friction, has surely always been unequal access to resources. People fight to control the valuable resources on and under the land, and in and under the sea. The natural resources of Earth are limited in quantity, and economically accessible resources even more so. As the population grows, and demand grows for a higher material standard of living, industrial activity grows exponentially. The threat of resources becoming scarce has led to the concept of “Resource Wars”. Having begun long ago with wars to control the gold and diamonds of Africa and South America, and oil in the Middle East, the current phase is at centre stage of world events today [37]. A particular danger of “resource wars” is that, if the general public can be persuaded to support them, they may become impossible to stop as resources become increasingly scarce. Many commentators have noted the similarity of the language of US and UK government advocates of “war on terror” to the language of the novel “1984” which describes a dystopian future of endless, fraudulent war in which citizens are reduced to slaves.

7.1. Expansion into near-Earth space is the only alternative to endless “resource wars”

As an alternative to the “resource wars” already devastating many countries today, opening access to the unlimited resources of near-Earth space could clearly facilitate world peace and security. The US National Security Space Office, at the start of its report on the potential of space-based solar power (SSP) published in early 2007, stated: “Expanding human populations and declining natural resources are potential sources of local and strategic conflict in the 21st Century, and many see energy as the foremost threat to national security” [38]. The report ended by encouraging urgent research on the feasibility of SSP: “Considering the timescales that are involved, and the exponential growth of population and resource pressures within that same strategic period, it is imperative that this work for “drilling up” vs. drilling down for energy security begins immediately” [38].

Although the use of extra-terrestrial resources on a substantial scale may still be some decades away, it is important to recognise that simply acknowledging its feasibility using known technology is the surest way of ending the threat of resource wars. That is, if it is assumed that the resources available for human use are limited to those on Earth, then it can be argued that resource wars are inescapable [22] and [37]. If, by contrast, it is assumed that the resources of space are economically accessible, this not only eliminates the need for resource wars, it can also preserve the benefits of civilisation which are being eroded today by “resource war-mongers”, most notably the governments of the “Anglo-Saxon” countries and their “neo-con” advisers. It is also worth noting that the $1 trillion that these have already committed to wars in the Middle-East in the 21st century is orders of magnitude more than the public investment needed to aid companies sufficiently to start the commercial use of space resources.

Industrial and financial groups which profit from monopolistic control of terrestrial supplies of various natural resources, like those which profit from wars, have an economic interest in protecting their profitable situation. However, these groups’ continuing profits are justified neither by capitalism nor by democracy: they could be preserved only by maintaining the pretence that use of space resources is not feasible, and by preventing the development of low-cost space travel. Once the feasibility of low-cost space travel is understood, “resource wars” are clearly foolish as well as tragic. A visiting extra-terrestrial would be pityingly amused at the foolish antics of homo sapiens using long-range rockets to fight each other over dwindling terrestrial resources—rather than using the same rockets to travel in space and have the use of all the resources they need!

7.2. High return in safety from extra-terrestrial settlement

Investment in low-cost orbital access and other space infrastructure will facilitate the establishment of settlements on the Moon, Mars, asteroids and in man[/woman]-made space structures. In the first phase, development of new regulatory infrastructure in various Earth orbits, including property/usufruct rights, real estate, mortgage financing and insurance, traffic management, pilotage, policing and other services will enable the population living in Earth orbits to grow very large. Such activities aimed at making near-Earth space habitable are the logical extension of humans’ historical spread over the surface of the Earth. As trade spreads through near-Earth space, settlements are likely to follow, of which the inhabitants will add to the wealth of different cultures which humans have created in the many different environments in which they live.

Success of such extra-terrestrial settlements will have the additional benefit of reducing the danger of human extinction due to planet-wide or cosmic accidents [27]. These horrors include both man-made disasters such as nuclear war, plagues or growing pollution, and natural disasters such as super-volcanoes or asteroid impact. It is hard to think of any objective that is more important than preserving peace. Weapons developed in recent decades are so destructive, and have such horrific, long-term side-effects that their use should be discouraged as strongly as possible by the international community. Hence, reducing the incentive to use these weapons by rapidly developing the ability to use space-based resources on a large scale is surely equally important [11] and [16]. The achievement of this depends on low space travel costs which, at the present time, appear to be achievable only through the development of a vigorous space tourism industry.

### XT First (60)

#### 1] Extinction is a distinct phenomena which is offense under ANY fw

Burke et al 16 Associate Professor of International and Political Studies @ UNSW, Australia, 2016 (Anthony, Stefanie Fishel is Assistant Professor, Department of Gender and Race Studies at the University of Alabama, Audra Mitchell is CIGI Chair in Global Governance and Ethics at the Balsillie School of International Affairs, Simon Dalby is CIGI Chair in the Political Economy of Climate Change at the Balsillie School of International Affairs, and, Daniel J. Levine is Assistant Professor of Political Science at the University of Alabama, “Planet Politics: Manifesto from the End of IR,” Millennium: Journal of International Studies 1–25)

8. Global ethics must respond to mass extinction. In late 2014, the Worldwide Fund for Nature reported a startling statistic: according to their global study, 52% of species had gone extinct between 1970 and 2010.60 This is not news: for three decades, conservation biologists have been warning of a ‘sixth mass extinction’, which, by definition, could eliminate more than three quarters of currently existing life forms in just a few centuries.61 In other words, it could threaten the practical possibility of the survival of earthly life. Mass extinction is not simply extinction (or death) writ large: **it is a qualitatively different phenomena that demands its own ethical categories.** It cannot be grasped by aggregating species extinctions, let alone the deaths of individual organisms. Not only does it erase diverse, irreplaceable life forms, their **unique histories** and **open-ended possibilities**, but it **threatens the ontological conditions of Earthly life**.

IR is one of few disciplines that is explicitly devoted to the pursuit of survival, yet it has almost nothing to say in the face of a possible mass extinction event.62 It utterly lacks the conceptual and ethical frameworks necessary to foster diverse, meaningful responses to this phenomenon. As mentioned above, Cold-War era concepts such as ‘nuclear winter’ and ‘omnicide’ gesture towards harms massive in their scale and moral horror. However, they are asymptotic: they imagine nightmares of a severely denuded planet, yet they do not contemplate the **comprehensive negation** that a mass extinction event entails. In contemporary IR discourses, where it appears at all, extinction is treated as a problem of scientific management and biopolitical control aimed at securing existing human lifestyles.63 Once again, this approach fails to recognise the reality of extinction, which is a **matter of being and nonbeing**, not one of life and death processes.

Confronting the enormity of a possible mass extinction event requires a total overhaul of human perceptions of what is at stake in the disruption of the conditions of Earthly life. The question of what is ‘lost’ in extinction has, since the inception of the concept of ‘conservation’, been addressed in terms of financial cost and economic liabilities.64 Beyond reducing life to forms to capital, currencies and financial instruments, the dominant neoliberal political economy of conservation imposes a homogenising, Western secular worldview on a planetary phenomenon. Yet the **enormity, complexity, and scale** of mass extinction is so huge that humans need to **draw on every possible resource in order to find ways of responding**. This means that they need to mobilise multiple worldviews and lifeways – including those emerging from indigenous and marginalised cosmologies. Above all, it is crucial and urgent to realise that extinction is a **matter of global ethics**. It is not simply an issue of management or security, or even of particular visions of the good life. Instead, it is about staking a claim as to the goodness of life itself. If it does not fit within the existing parameters of global ethics, then it is these boundaries that need to change.

9. An Earth-worldly politics. Humans are worldly – that is, we are fundamentally worldforming and embedded in multiple worlds that traverse the Earth. However, the Earth is not ‘our’ world, as the grand theories of IR, and some accounts of the Anthropocene have it – an object and possession to be appropriated, circumnavigated, instrumentalised and englobed.65 Rather, it is a complex of worlds that we share, co-constitute, create, destroy and inhabit with countless other life forms and beings.

The formation of the Anthropocene reflects a particular type of worlding, one in which the Earth is treated as raw material for the creation of a world tailored to human needs. Heidegger famously framed ‘earth’ and ‘world’ as two countervailing, conflicting forces that constrain and shape one another. We contend that existing political, economic and social conditions have pushed human worlding so far to one extreme that it has become almost entirely detached from the conditions of the Earth. Planet Politics calls, instead, for a mode of worlding that is responsive to, and grounded in, the Earth. One of these ways of being Earth-worldly is to embrace the condition of being entangled. We can interpret this term in the way that Heidegger66 did, as the condition of being mired in everyday human concerns, worries, and anxiety, to prolong existence. But, in contrast, we can and should reframe it as authors like Karen Barad67 and Donna Haraway68 have done. To them and many others, ‘entanglement’ is a radical, indeed fundamental condition of being-with, or, as Jean-Luc Nancy puts it, ‘being singular plural’.69 This means that no being is truly autonomous or separate, whether at the scale of international politics or of quantum physics. World itself is singular plural: what humans tend to refer to as ‘the’ world is actually a multiplicity of worlds at various scales that intersect, overlap, conflict, emerge as they surge across the Earth. World emerges from the poetics of existence, the collision of energy and matter, the tumult of agencies, the fusion and diffusion of bonds.

Worlds erupt from, and consist in, the intersection of **diverse forms of being** – material and intangible, organic and inorganic, ‘living’ and ‘nonliving’. Because of the tumultuousness of the Earth with which they are entangled, ‘**worlds’ are not static, rigid or permanent. They are permeable and fluid**. They can be **created**, **modified** – and, of course, destroyed. Concepts of violence, harm and (in)security that focus only on humans ignore at their peril the destruction and severance of worlds,70 **which undermines the conditions of plurality that enables life on Earth to thrive.**

#### 2] Magnitude/future generations – turns any of their harm impacts since the impact of global death would also affect any future generations

#### 3] Pre-req – in order to engage in counter-operations or to invest in a structure that hurts cap we need to be alive

#### 4] Moral uncertainty – we can’t be sure that racial cap constrains all forms of violence nor that util does but extinction would kills us all anyways

#### 5] No framing in the 1AC means you default neg and don’t allow new 1AR contextualization since they allow the aff to shift out of their offense which affects all 1nc strat