# **1AC**

## **1ar**

**Extend the advs**

**Overview**

**Aff outweighs**

**Two biggest responses was just gov and solvency**

#### **Just gov: Affs ought to debate what a just government would do in a specific country, not that the specific country is a just government. We meet since a just government is evaluating whether the plan is a good idea in the US.**

#### **1] Ground – no gov is completely just since there’s always a more utopian way to act – force them to provide a caselist that meets their definition. Even if they do, it’ll be on same arbitrary standard which fails to create a commom stasis point . That’s bad –**

A ) If no governments can be just then we have no ground – making it unfair + impossible to affrim

### **1AR – AT: Econ DA**

#### **1] This disad is fearmongering – the NLRA didn’t cause the recession and the economy adapts when one happens**

**Craver 06** Craver, Charles B. [fellow of the College of Labor and Employment Lawyers, and served as Secretary of the ABA Labor and Employment Law Section in 1986-87]; "The relevance of the NLRA and labor organizations in the post-industrial global economy." (2006). (AG DebateDrills)

From 1935 through the mid-1950s, union membership experienced the most rapid expansion in U.S. history, as the union density rate increased from 13.2 percent to 34.7 percent**.**4 Competition between ACL and CIO unions – and the unparalleled success of the newly created industrial unions – generated significant membership growth. As labor organizations enhanced their economic power, Congress amended the NLRA in 19475 and in 19596 to prohibit union unfair labor practices and to limit secondary activity by organized labor. 2 In the mid-1950s, the AFL and the CIO united into a single labor federation, and AFLCIO unions agreed not to compete with one another to represent the same workers. Although union membership continued to grow, it did not expand as rapidly as the nonagricultural labor force. As a result, by 1970, the union density rate had fallen to 27.3 percent.7 Throughout the late 1970s, the U.S. experienced high inflation, fueled by the formation of OPEC and rapidly rising oil prices.Cost-of-living adjustment clauses contained in many collective bargaining agreements caused labor costs in unionized manufacturing industries to increase substantially compared to costs associated with unorganized workers not covered by such contractual provisions. As businesses sought to reduce labor costs, northern manufacturing jobs were moved to sunbelt states. Labor-intensive work was often relocated to Maquiladoro plants in Northern Mexico.8 Electrical manufacturing and clothing production was relocated to low wage Asian countries. Businesses that continued to produce goods in the U.S. demanded wage and benefit reductions from labor unions that would enable them to compete with facilities operated in lower wage areas of the world**.** The American economy was being transformed from manufacturing to white-collar, service, and retail.By 1990, only 16.1 percent of nonagricultural labor force participants were union members.9 These new businesses were highly competitive, and they worked hard to discourage their employees from joining labor organizations. Private sector union membership began to decline substantially.By the end of 2005, only 7.8 percent of private sector, nonagricultural workers were members of labor organizations.10 If this trend continues, private sector labor unions will become almost entirely irrelevant in coming years.

#### **2] Worker strikes lead to increased wages and better working conditions – multiple examples.**

**Shierholz and Poydock 20** [Heidi Shierholz and Margaret Poydock, 2-11-2020, "Continued surge in strike activity signals worker dissatisfaction with wage growth," Economic Policy Institute, <https://www.epi.org/publication/continued-surge-in-strike-activity/>]

Teacher strikes In February 2018, teachers went on a statewide strike in West Virginia to demand just wages and better teaching and learning conditions. For nine days, schools across the state were closed as teachers, students, and community supporters protested at the state capital against the state government’s chronic underfunding of public education and the impact on the teachers and students. After a week and a half on strike, the West Virginia teachers received a pay increase. They also sparked a movement that prompted public school teachers in other states to strike in support for better pay and working conditions.[12](https://www.epi.org/publication/continued-surge-in-strike-activity/#_note12) Consequently, the largest work stoppages by number of workers during 2018 and 2019 were in elementary and secondary schools in states such as Arizona, Colorado, Kentucky, North Carolina, and West Virginia.[13](https://www.epi.org/publication/continued-surge-in-strike-activity/#_note13) Community support, such as students and parents protesting in solidarity at schools and state capitals, made it possible for hundreds of thousands of teachers to strike in an effort to improve their pay and working conditions. The General Motors strike In the early hours of September 16, 2019, nearly 50,000 workers walked out of General Motors (GM) factories across the nation and went on strike. The action followed GM’s decision to close multiple U.S.-based factories and move jobs abroad, even after the company received millions in corporate tax cuts.[14](https://www.epi.org/publication/continued-surge-in-strike-activity/#_note14) GM workers went on strike to preserve job security, improve wages, and retain health care benefits. The GM strike was the longest major work stoppage in 2019, with over 1.3 million days idle.[15](https://www.epi.org/publication/continued-surge-in-strike-activity/#_note15) The strike was also the first GM strike in over a decade. The six week strike concluded with the United Auto Workers and GM agreeing to a four-year contract that improved wages, sustained health care costs for workers at existing levels, created a transition process for temporary workers to become permanent employees, and committed to making investments in American factories.[16](https://www.epi.org/publication/continued-surge-in-strike-activity/#_note16) In addition to improving the pay and working conditions of GM workers, the final contract will serve as a template for UAW’s contracts with Ford and Chrysler, creating a set of standards in the automotive industry.[17](https://www.epi.org/publication/continued-surge-in-strike-activity/#_note17) The Stop & Shop strike Another notable major work stoppages of 2019 was the Stop & Shop strike. More than 30,000 workers at the New England-based grocery chain went on strike after negotiations over new contracts stalled for three months. During those negotiations, Stop & Shop had offered workers across-the-board pay increases but also proposed increasing the cost of health care, ultimately negating the pay raises. The workers argued that Stop & Shop could offer better compensation than it did because the company reported profits of more than $2 billion in 2018.[18](https://www.epi.org/publication/continued-surge-in-strike-activity/#_note18) As a result of the impasse, workers in over 240 locations went on strike for better pay and benefits during the week of Easter. The Stop & Shop strike was the second largest private industry work stoppage in 2019, with over 215,000 days idle. The 11 day strike concluded with the United Food and Commercial Workers and Stop & Shop agreeing to a three-year contract that preserved health care benefits, increased wages, and maintained time-and-a-half pay on Sunday for current employees.[19](https://www.epi.org/publication/continued-surge-in-strike-activity/#_note19)

#### **3] Increased wages and benefits are key to boosting the economy.**

**Manyika et al. 18** [James Manyika, jaana Remes, and Jan Mischke, Harvard Business Review, 2-21-2018, "The U.S. Economy Is Suffering from Low Demand. Higher Wages Would Help," <https://hbr.org/2018/02/the-u-s-economy-is-suffering-from-low-demand-higher-wages-would-help>]

A little over a century ago, Henry Ford doubled the minimum pay of his workers to $5 a day. When other employers followed suit, it became clear that Ford had sparked a chain reaction. Higher pay throughout the industry helped lead to more sales, creating a virtuous cycle of growth and prosperity. Could we be at another Henry Ford moment? Some major companies have announced plans to boost employee pay. Target raised its minimum wage to $11 this past fall and committed to $15 by 2020. More recently, Walmart announced plans to match that increase to $11. In banking, Wells Fargo and Fifth Third Bancorp also announced pay increases for minimum wage employees. These pay increases have occurred against a backdrop of weak economic growth and rising income inequality. Economic growth has been stuck in low gear for almost a decade now, averaging around 2% a year since 2010 while productivity growth, the key to increasing living standards, has been languishing near historic lows since the financial crisis. But more recently there has been a glimmer of hope. After stagnating for years, wages have begun picking up slightly, as has productivity growth, while corporate profits remain near record highs. Are these recent wage increases merely necessary in light of a tightening labor market, or could they start a broader trend that may change our economic growth trajectory? [After a year-long analysis of seven developed countries and six sectors](http://www.mckinsey.com/productivitypuzzle), we have concluded that demand matters for productivity growth and that increasing demand is key to restarting growth across advanced economies. The impact of demand on productivity growth is often underappreciated. Looking closer at the period following the financial crisis, 2010 to 2014, we find that weak demand played a key role in the recent productivity growth decline to historic lows. In fact, about half of the slowdown in productivity growth — from an average of 2.4% in the United States and Western Europe in 2000 to 2004 to 0.5% a decade later — was due to weak demand and uncertainty. For example, in the mid-1990s to the mid-2000s, rising consumer purchasing power boosted productivity growth in both the retail and the auto sector, by encouraging a shift to higher-value goods that can be supplied at higher productivity levels. In the auto sector, as customers in the early 2000s purchased higher value-added SUVs and premium vehicles in both the United States and Germany, they spurred incremental productivity growth of 0.4 to 0.5 percentage points. Today, that trend has slowed slightly in both countries, contributing only 0.3 percentage points to productivity growth in the period 2010 to 2014. Similarly, in retail, we estimate that consumers shifting to higher-value goods, for example higher-value wines or premium yogurts, contributed 45% to the [1995-2000 retail productivity acceleration](https://www.mckinsey.com/global-themes/americas/us-productivity-growth-1995-2000) in the United States. This subsequently waned, dragging down productivity growth. To put it simply, when consumers have more to spend, they buy more sophisticated things. That’s good not just for consumers and producers, but for the overall economy, because making more sophisticated, higher-value things makes everyone involve more productive, and therefore helps increase overall standards of living. In addition, we found two other ways weak demand hurt productivity growth in the aftermath of the financial crisis: a reduction in economies of scale and weak investment. First, the economies of scale effect. In finance, productivity growth declined particularly in the United States, United Kingdom, and Spain due to contractions in lending volumes that banks were unable to fully offset with staff cuts due to the need for fixed labor (for example to support branch networks and IT infrastructure or to deal with existing loans and bad debt). The utilities sector, which has seen flattening demand growth due to both energy efficiency policies as well as a decline in economic activity during the crisis, was similarly not able to downsize labor due to the need for labor to support electricity distribution and the grid infrastructure, and here, too, productivity growth fell. Second, the effect of weak investment. We have found from our global surveys of businesses that almost half of companies that are increasing their investment budgets are doing so because of an increase in demand. Demand is the single most important factor driving corporate investment decisions. Investment, in turn, is critical for productivity growth, as it equips workers with more – and with more recent and innovative – equipment, software, and structures. But we have seen capital intensity growth fall to the lowest levels in post-WWII history. Weaker demand leads to weaker investment and creates a vicious cycle for productivity and income growth. Of course, the financial crisis is long since over, and the economy has recovered, at least by some measures. So what’s to worry about? Won’t demand return to pre-recession levels, and thereby increase productivity? Unfortunately, there is reason to believe that some of the drags on demand for goods and services may be more structural than crises-related. Slowing population growth means less rapid expansion of the pool of consumers. And rising income inequality is shifting purchasing power from those most likely to spend to those more likely to save. This is reflected in slowing growth expectations in many markets. For example, across our sectors and countries studied, in the decade from 1995 to 2004, growth in demand for goods and services averaged 4.6%, slowed to 2.3% in 2010 to 2014, and is forecast to slightly increase to 2.8% in 2014 to 2020. Today, there is concern about where the next wave of growth will come from. Some prominent economists worry that we may be stuck in a vicious cycle of economic underperformance for some time. Our analyses strongly suggest that supporting sustained demand growth needs to be part of the answer. Demand may deserve attention to help boost productivity growth not only during the recovery from the financial crisis but also in terms of longer-term structural leakages and their impact on productivity. Suitable tools for this longer-term situation include: focusing on productive investment as a fiscal priority, growing the purchasing power of low-income consumers with the highest propensity to consume, unlocking private business and residential investment, and supporting worker training and transition programs to ensure that periods of transition do not disrupt incomes. Companies play a key role in promoting growth through investment and innovation as well as supporting their workforce through training programs. Yet companies may also want to consider the words of Ford when he said: “The owner, the employees, and the buying public are all one and the same, and unless an industry can so manage itself as to keep wages high and prices low it destroys itself, for otherwise it limits the number of its customers. One’s own employees ought to be one’s own best customers.” While this is certainly not true for individual companies, it is true for the broader economy, and we might be at a rare point where the representatives of employees and employers alike share a common interest in healthy wage growth.

#### 4]

### **1AR – AT: harms Nurses DA**

#### **This disad is garbage. If I win any of these arguments then it means that they’re straight up missing a bunch of internal links.**

#### **1] No internal link – the evidence says that strikes have killed about a hundred people but nothing about striking killing mortality rates directly .**

#### **2] No reason why hospitals in the US are uniquely key – if a massive super spreader has gone global and will kill us all, then what are hospitals in the US going to do about it?**

3] aff outweighs one some pure weighing

## **Adv 1– Lobbying**

#### **Big tech holds a massive amount of political power, and their “climate change” measures are a façade to hide the actual lobbying that they do.**

**Terstein 21** [Terstein, Zoya, 1-28-2021, "Big Tech says it wants to solve climate change. Its lobbying dollars say otherwise.," <https://grist.org/politics/big-tech-says-it-wants-to-solve-climate-change-its-lobbying-dollars-say-otherwise/>] //DDPT

It’s hard to quantify political power, but it’s safe to say that big tech companies wield [a lot](https://www.newyorker.com/tech/annals-of-technology/what-can-america-learn-from-europe-about-regulating-big-tech) of it. A decade ago, companies like Amazon and Google employed [just a smattering of lobbyists](https://www.washingtonpost.com/technology/2020/01/22/amazon-facebook-google-lobbying-2019/) who worked to influence D.C. policymakers on their behalf. Now, the Big Five tech companies — Apple, Microsoft, Facebook, Google, and Amazon — spend tens of millions of dollars each year lobbying Congress. In 2020, they collectively spent [$61 million domestically lobbying](https://www.cnbc.com/2021/01/22/facebook-spent-more-on-lobbying-than-any-other-big-tech-company-in-2020.html) on issues that included international tax policies, copyright reform, and content policy. Only a tiny fraction of Big Tech’s legislative lobbying might is going toward advocating for climate policy, according to a [new report](https://influencemap.org/report/Big-Tech-and-Climate-Policy-afb476c56f217ea0ab351d79096df04a) from the think tank InfluenceMap. Between 2019 and 2020, just 4 percent of Apple, Alphabet (Google’s parent company), Amazon, Facebook, and Microsoft’s self-reported lobbying activities targeted climate-related policy at the federal level. In Europe, these companies do even less lobbying on climate — InfluenceMap says they have been “largely silent on the EU’s ambitious climate policy agenda.” This halfhearted effort to promote climate-friendly policies stands in sharp contrast to Big Tech’s much-publicized promises to lead the rest of the business sector, and indeed the entire world, toward a greener future. Apple, for instance, revealed a plan last summer to make its supply chain and products carbon neutral by 2030, something CEO Tim Cook said will be good for the planet and its products. “With our commitment to carbon neutrality, we hope to be a ripple in the pond that creates a much larger change,” [Cook said](https://www.apple.com/newsroom/2020/07/apple-commits-to-be-100-percent-carbon-neutral-for-its-supply-chain-and-products-by-2030/). In 2019, Amazon unveiled a climate plan that aims to get the company to meet the decarbonization requirements of the Paris Agreement 10 years early. “If we can do this, anyone can do this,” Amazon founder Jeff Bezos [said](https://www.cnbc.com/2019/09/19/jeff-bezos-speaks-about-amazon-sustainability-in-washington-dc.html) at the time. “Climate change is a crisis we will only be able to address if we all work together on a global scale,” Facebook founder Mark Zuckerberg [said](https://sustainability.fb.com/). Facebook aims to make its global operations [net-zero](https://sustainability.fb.com/), starting with making its value chain net-zero by 2030. “We will support new public policy initiatives to accelerate carbon reduction and removal opportunities,” Microsoft president Brad Smith [wrote](https://blogs.microsoft.com/blog/2020/01/16/microsoft-will-be-carbon-negative-by-2030/) in January last year, outlining seven principles the company will adhere to in its quest to remove more emissions than it produces by 2030 and eliminate all of its emissions since 1975 by mid-century. “We know that no company, no matter how ambitious, can solve a challenge like climate change alone,” Google said in its [sustainability report](https://www.gstatic.com/gumdrop/sustainability/carbon-free-by-2030.pdf) last September. It’s clear that these companies like to talk about climate action being a collective effort. But despite the many detailed climate plans and pledges, Big Tech has done strikingly little government-level work to bring about the global-scale climate action it says it wants to see. The little lobbying the Big Five do has been largely focused on technical rules that are directly tied to these companies’ abilities to stick to their climate commitments, like procuring enough renewable energy. Meanwhile, the world is [nowhere near](https://www.theguardian.com/environment/2020/dec/12/world-is-in-danger-of-missing-paris-climate-target-summit-is-warned) where it needs to be to meet the climate targets outlined in the Paris Agreement. “Relative to their scale, they invest very little in saving the planet,” Nic Bryant, a spokesperson for the climate activist group Extinction Rebellion, told Grist, referring to tech companies. “These companies could and should be leading the way.”

#### **Terstein continues:**

Further complicating Big Tech’s stance on climate are its membership in industry associations. InfluenceMap scored each of the Big Five tech companies on the climate-friendliness of the industry groups they belong to. These are organizations like the Chamber of Commerce, the [most powerful trade organization in the world](https://www.wri.org/blog/2020/08/how-chamber-commerces-scorecard-elevates-climate-deniers), which has [lobbied extensively against climate policy](https://drive.google.com/file/d/1vopnWHRekDcqc8yEqAQi8TnoXubs-abK/view), as well as groups with progressive agendas like the Renewable Energy Buyers Alliance. By looking at Big Tech’s membership in industry associations across the board, InfluenceMap found “misalignment between the companies’ own climate lobbying positions and those of their industry associations.”“Big Tech has no problem shelling out tens of millions of dollars jockeying for their own interests in Washington, so we know their failure to lobby for climate solutions is not due to a lack of means, but a lack of will,” David Arkush, director of the climate program at the nonprofit consumer advocacy organization Public Citizen, told Grist. “If they’re serious about climate, they need to push for government climate action at the scale and speed we need.”

#### **But Big tech lobbying is uniquely key to effective climate action – it’s the only way to ensure federal policy change.**

**Winston 19** [Winston, Andrew, Harvard Business Review, 10-15-2019, "Corporate Action on Climate Change Has to Include Lobbying," <https://hbr.org/2019/10/corporate-action-on-climate-change-has-to-include-lobbying>] //DDPT

The business world has recently started acting on climate change in earnest. Hundreds of the world’s largest companies have agreed to use [100% renewable energy](http://there100.org/companies) and set [targets](https://sciencebasedtargets.org/companies-taking-action/) that commit them to reduce emissions at the pace that science demands. Companies are [buying many gigawatts of renewable energy](https://www.forbes.com/sites/mikescott/2019/09/09/companies-continue-to-drive-demand-for-clean-energy/amp/?__twitter_impression=true), slashing their own energy use, and innovating to create products that help customers reduce their emissions. But it’s not nearly enough. The climate crisis is upon us, and there’s no time to wait for voluntary corporate action to tackle the challenge. We need the collective will that government provides. Many in business will rebel against this idea, but we are long past the point where free markets alone could solve the challenge in time (if such a possibility ever even existed). Business needs to, [in the words of Environmental Defense Fund president Fred Krupp](https://www.wri.org/news/2019/10/release-major-environmental-groups-call-businesses-lead-climate-policy), “unleash the most powerful tool they have to fight climate change: their political influence.” This is the logic and imperative behind [an announcement today](https://medium.com/@timetolead/its-time-to-lead-on-climate-policy-6f849eb114ba) from 11 environmental and sustainability organizations that have significant influence on the world’s largest companies and on policymakers. Using a full-page ad in The New York Times, the group is calling for business to advocate for policies, at all levels of government, that are consistent with what climate science is telling us we need to do — what they’re calling a “science-based climate policy agenda.” The statement also calls for companies to adjust their trade associations’ advocacy to align with climate science. (The signatories are the heads of BSR, C2ES, CDP, Ceres, Conservation International, Environmental Defense Fund, The Climate Group, The Nature Conservancy, the Union of Concerned Scientists, World Resources Institute, and WWF U.S.) In support of this public plea, the Sustainable Food Policy Alliance — which includes food and consumer products giants Nestle, Unilever, Mars, and Danone — is running the same letter in Roll Call with the message “we agree.” The new statement is also building on a [similar call to action last month](https://www.ceres.org/sites/default/files/Final%20Generic%20SIGN-ON%20PACKET%20Investor%20Expectations%20on%20Climate%20Lobbying%20sign-on%20packet%20September%202019.pdf) from 200 investors with more than $6 trillion in assets. It’s about time. Companies have long allowed a chasm to open up between their own statements and actions on climate and what their government relations and lobbying teams are doing in the halls of power. Most of these companies have also conveniently ignored that their own industry and trade associations have generally been fighting climate policy every step of the way. It’s an important discussion to have right now and this initiative could have an impact. I want to offer some thoughts on the context and where the policy discussion could, or should, go. This isn’t the first attempt. In 2006, some of these same NGOs formed the [U.S. Climate Action Partnership](https://en.wikipedia.org/wiki/U.S._Climate_Action_Partnership) with notable business partners such as Alcoa, BP, Caterpillar, Dupont, and GE. While the call to action was vague, it was an important message from some heavy industry players that they wanted pro-climate policies. But when the Waxman-Markey cap-and-trade climate bill [failed in the U.S. Senate in 2009](https://www.eenews.net/stories/1060039422), and climate policy entered the wilderness for years, the partnership petered away. Over the last decade, the nonprofit Ceres, a signer on this latest statement, has convened the Business for Innovative Climate and Energy Policy, or [BICEP](https://www.ceres.org/networks/ceres-policy-network), to bring company leaders in to talk to legislators. And more recently, a group of scientists and former high-ranking government officials (mostly Republican), launched the [Climate Leadership Council](https://www.clcouncil.org/), which is pushing for [a package of policies](https://www.clcouncil.org/our-plan/) that includes a carbon fee and “dividend” that returns most of the revenue to citizens. But none of these have really gotten the kind of traction we need. This time could be different. A few shifts in the world may make this push more effective. First, climate change is real and affecting businesses today. We’re not just discussing a model of future weather and costs; we’re seeing very real and massively expensive disruptions to operations, supply chains, and communities. Second, with increasing transparency, it’s much harder to hide the disconnect between what companies are saying they’re doing and what they’re actually advocating for behind the scenes. A [just-released analysis of corporate lobbying](https://www.theguardian.com/environment/2019/oct/10/exclusive-carmakers-opponents-climate-action-us-europe-emissions) shows that major auto companies, while talking up their efforts on electric vehicles, have lobbied aggressively to fight any real climate policy. Third, stakeholders — customers, employees, and communities — are demanding more action and are less tolerant of inconsistencies on this issue. Recently [Microsoft employees staged a walkout](https://www.theverge.com/2019/9/19/20874081/microsoft-employees-climate-change-letter-protest) for climate, and almost 8,700 Amazon employees have [signed an open letter](https://medium.com/@amazonemployeesclimatejustice/public-letter-to-jeff-bezos-and-the-amazon-board-of-directors-82a8405f5e38) calling on their CEO to lead on the issue. (Amazon then announced it would go climate-neutral by 2040 and [buy 100,000 electric vans](https://www.freightwaves.com/news/amazon-announces-purchase-of-100000-ev-delivery-vehicles-from-rivian-the-largest-order-ever)). There’s clearly pressure on business to take a broader role in society, which is why about 200 big-company CEOs signed a [statement from the Business Roundtable](https://hbr.org/2019/08/is-the-business-roundtable-statement-just-empty-rhetoric) pledging that they would focus on stakeholder needs, not just shareholder value.

#### **US climate action specifically spills over and spurs global climate action.**

**Geman 6/7**/21 [National Journal Energy and Environment Correspondent, reporter for Axios, Ben, “The global stakes of Biden's infrastructure negotiations.” https://www.axios.com/biden-infrastructure-bill-climate-change-87b70d16-fdec-4c84-84a6-e7532c592f15.html]

The infrastructure drama enveloping Capitol Hill could spill onto the global climate stage. Why it matters: Major new U.S. investments and policies could help spur other nations to take more aggressive and tangible steps to cut emissions. But failure to steer major new initiatives through Congress could hinder the White House diplomatic posture as the U.N. conference looms. State of play: The White House is negotiating with Republicans amid all kinds of uncertainty over whether Democrats can pass legislation without GOP backing. President Biden has proposed major investments in electric vehicles, grid tech, mass transit, clean energy tax incentives and many other initiatives. The negotiations with Republicans — who object to the plan's steep price tag and expansive definition of infrastructure — come ahead of November's critical United Nations climate summit. What they're saying: "Because of the importance of American leadership on climate**,** the rest of the world is definitely watching what happens on Capitol Hill," said the Environmental Defense Fund's Nathaniel Keohane. Keohane, who leads EDF's climate program, said major U.S. investments will bolster the country's economy and competitiveness. But they're also consequential internationally, he said. "The more the U.S. can demonstrate leadership — not only in the ambition of its targets but in the ambition of its implementation and the seriousness of its implementation — the more likely we are to see the rest of the world stepping into its ambition and accelerating its own climate action," he said. Catch up fast: In April the White House set a voluntary target under the Paris Agreement of cutting U.S. emissions by 50% below 2005 levels by 2030.But that's much harder to achieve absent Capitol Hill approval of new investments and incentives. The Atlantic Council's Margaret Jackson said Biden's climate initiatives thus far have borne some fruit, pointing to several nations strengthening their Paris targets. But Jackson, who has written about the importance of congressional action, also tells Axios: "U.S. allies and partners are still somewhat skeptical in terms of how much this administration can really accomplish, and will it be lasting."

#### **Warming causes extinction.**

**Xu 17** [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 categorizations (vertical dashed lines).

### **Adv 2– AI**

#### **US companies are on track to develop lethal AI weapons now.**

**Dellinger 19** [AJ Dellinger, 8-22-2019, "Could advancements in AI eventually lead to ‘Terminator’-style killer robots?," Mic, <https://www.mic.com/p/microsoft-amazon-other-big-tech-companies-are-putting-us-at-risk-of-a-killer-ai-study-says-18689833>] //PT

Tech companies are happy to tout their innovations and latest developments, but one organization is warning that not all advancements are good ones. Dutch nonprofit PAX, an organization that advocates for peace, recently looked into how the tech sector is handling the development of artificial intelligence and its potential to become an automated destructive force that could turn on humanity. What it found is that just seven of the 50 companies it investigated partake in "best practices" to mitigate the risk of an eventual AI apocalypse. Twenty-one firms, including the likes of [Amazon and Microsoft, were marked as "high concern."](https://www.paxforpeace.nl/publications/all-publications/dont-be-evil) PAX's research focused on answering three different questions: Is the company developing technology relevant to the potential development of lethal autonomous weapons, is the firm working on military projects that may enable deadly force, and has the company committed to not contributing to the development of autonomous weapons? Companies were given high marks for committing themselves to not contributing to the development of potentially deadly machines. Meanwhile, companies that freely work alongside the military without a clear plan in place to prevent their technology from being used for lethal purposes received demerits. Given that, it's not surprising that Amazon and Microsoft would sit atop the list of companies that just may push us toward a future filled with killer robots. The two have spent the better part of the last year locked in an ongoing competition to land a massive government contract to [build the Pentagon a "war cloud"](https://www.mic.com/p/the-joint-enterprise-defense-infrastructure-plan-from-the-us-department-of-defense-could-be-derailed-by-legal-challenges-18180447) known as the [Joint Enterprise Defense Infrastructure](https://www.fbo.gov/index?s=opportunity&mode=form&id=f7f1d0314ec7c83cd0ace1636b5474a1&tab=core&_cview=0), or JEDI. The project would equip the United States Department of Defense with a cloud infrastructure that would allow branches of the military to freely share information, from sensitive documents to mission plans, across multiple theaters. The appeal of tackling the proposal is clear for Amazon and Microsoft: it carries a $10 billion contract that will be rewarded to the company that can provide the service the government is looking for. But, in winning the contract and building the war-enabling technology that the military wants, one of these companies will undoubtedly contribute to the deaths of humans. U.S. Department of Defense Chief Management Officer John H. Gibson II has made that abundantly clear in talking about JEDI, stating publicly that "[This program is truly about increasing the lethality of our department](https://www.defense.gov/Newsroom/News/Article/Article/1466699/dod-officials-highlight-role-of-cloud-infrastructure-in-supporting-warfighters/)." The criticisms of the companies extend beyond just their interest in taking on the JEDI project. Microsoft has taken heat in the past for [providing its technology to the U.S. Immigration and Customs Enforcement](https://devblogs.microsoft.com/azuregov/federal-agencies-continue-to-advance-capabilities-with-azure-government/) (ICE), including providing the organization tasked with separating migrant children from their families with "facial recognition and identification" tools. Last year, the company called the separation policy "abhorrent" and said its [technology isn't being used to enable those practices](https://slate.com/technology/2018/06/microsoft-is-not-helping-ice-with-any-projects-relating-to-family-separation-ceo-claims.html), though it shied away from canceling ongoing work with ICE or from taking on future contracts with the government agency. Microsoft has [urged Congress to take steps to regulate facial recognition technology](https://www.npr.org/2018/12/06/674310978/microsoft-urges-congress-to-regulate-facial-recognition-technology) before it is put to use in overzealous and potentially harmful ways, so points for recognizing the risk even if the company is profiting off it anyway. While Microsoft has at least shown a little bit of caution when it comes to deploying its technology, Amazon has been a bit more brazen in offering up facial recognition services. Earlier this year, Andy Jassy — the CEO of Amazon Web Services (AWS) — said the company would offer its technology to "[any government department that is following the law](https://venturebeat.com/2019/06/10/amazon-will-serve-any-government-agency-with-facial-recognition-technology-so-long-as-its-legal/)." That's pretty broad, and since the government has a pretty powerful hand in deciding what exactly the law is, it can be read as Amazon offering its facial recognition project Rekognition up carte blanche to any agency that wants to use it. The company hasn't been shy about [selling Rekognition to law enforcement agencies](https://www.mic.com/articles/189511/amazon-sold-facial-recognition-software-to-law-enforcement-heres-why-some-say-its-dangerous) across the country despite concerns it contributes to the invasion of the public's right to privacy. It also hasn't been particularly dissuaded from profiting off the technology even though it's [actually pretty terrible at identifying people](https://www.mic.com/articles/190457/in-an-aclu-test-amazons-facial-recognition-tech-wrongly-matched-mugshots-to-28-members-of-congress) and [displays a clear bias when attempting to identify women and people of color](https://www.theverge.com/2019/1/25/18197137/amazon-rekognition-facial-recognition-bias-race-gender). Add to that the concern that it may one day contribute to the development of automated killing machines, as PAX would suggest, and you have a real recipe for something awful.

#### **These companies will sell AI weapons to the US military which will ensure the AI arms race – but workers have empirically caused them to back out of weapons development.**

**Skolnik 3/16** [Jon Skolnik, 3-16-2021, "Big Tech is fueling an AI "arms race": It could be terrifying — or just a giant scam," Salon, <https://www.salon.com/2021/03/16/big-tech-is-fueling-an-ai-arms-race-it-could-be-terrifying--or-just-a-giant-scam/>] //PT

Early in the 2020 presidential campaign, Democratic candidates Pete Buttigieg and Andrew Yang [tried to build political momentum](https://venturebeat.com/2019/11/21/buttigieg-and-yang-say-ai-is-essential-to-u-s-national-security/) around the claim that the United States is losing ground in a new arms race with China — not over nuclear missiles or conventional arms but artificial intelligence, or AI. Around the same time, former President Trump [launched](https://thebulletin.org/2019/02/trump-orders-some-sort-of-vague-action-in-the-ai-arms-race/) the American AI Initiative, which sought to marshal AI technologies against "adversarial nations for the security of our economy and our nation," as Trump's top technology adviser [put it](https://www.wired.com/story/a-national-strategy-for-ai/). Buttigieg, Yang and Trump may have agreed about little else, but they appeared to go along with the nonpartisan think tanks and public policy organizations –– many of them funded by weapons contractors –– that have worked to promote the supposedly alarming possibility that China and Russia may be "beating" the U.S. in defense applications for AI. Hawkish or "centrist" research organizations like the [Center for New American Security](https://www.cnas.org/publications/reports/understanding-chinas-ai-strategy) (CNAS), the [Brookings Institution](https://www.brookings.edu/blog/order-from-chaos/2018/11/06/artificial-intelligence-and-the-security-dilemma/) and the [Heritage Foundation](https://www.heritage.org/technology/commentary/america-must-counter-chinas-military-civil-union), despite their policy and ideological differences in many areas, have argued that America must ratchet up spending on AI research and development, lest it lose its place as No. 1. Just last week, the National Security Commission on Artificial Intelligence (NSCAI) published a sweeping 756-page [report](https://www.nscai.gov/wp-content/uploads/2021/03/Full-Report-Digital-1.pdf), culminating two years of work following the 2019 National Defense Authorization Act, asking Congress to authorize a $40 billion federal investment in AI research and development, which the NSCAI calls "a modest down payment." The commission also urged President Biden to reject the push for a global ban on AI-enabled autonomous weapons — a ban proposed by thousands of scientists and thought leaders in an [open letter](https://www.vice.com/en/article/nzep5k/thousands-of-scientists-say-we-need-a-global-ban-on-autonomous-weapons) written in 2015. Concerned about the threat of increasing AI sophistication in Russia and China, the commission warned lawmakers that America "will not be able to defend against AI-enabled threats without ubiquitous AI capabilities and new warfighting paradigms." It offered a laundry list of recommendations to put these paradigms into action, including a "Steering Committee on Emerging Technology" within the Defense Department, an accredited university designed to produce and recruit tech talent for the defense sector, and a ramped-up investment in semiconductor manufacturing designed to keep the U.S. "two generations" ahead of China. One question, however, was not directly answered in the NSCAI's gigantic report or in all the think-tank policy papers that preceded it: Is this science fiction-flavored arms race against largely imaginary Chinese and Russian techno-weapons of the future really necessary? Is it remotely a good idea, or likely to improve the lives of any human beings on the planet? (Excepting, that is, those who stand to profit from it.) Jim Naureckas, the editor of Fairness and Accuracy in Reporting (FAIR) and a frequent critic of military spending, told Salon in an interview that framing of AI development as an "arms race" is irresponsible, but in the larger sweep of history is also nothing new. "The whole military industry is driven by fear as a motivator," he said. "There's a logic to an arms race that's different from the logic of arms control." After its release, the NSCAI report was greeted with a deluge of largely uncritical media coverage, most of it echoing concerns about the U.S. losing the "AI arms race" — a term not mentioned in the report itself, but certainly evoked by its framing. "Unless America acts now," a Washington Post [headline](https://www.washingtonpost.com/opinions/unless-america-acts-now-china-could-trounce-it-in-artificial-intelligence/2021/03/09/81f99508-805b-11eb-9ca6-54e187ee4939_story.html) read, "China could trounce it in artificial intelligence." "Which country is emerging as the global leader in AI?" [echoed](https://techhq.com/2021/03/which-country-is-emerging-as-the-global-leader-in-ai/) TechHQ. "America wakes up to the China threat," [chimed](https://www.wsj.com/articles/america-wakes-up-to-the-china-threat-11615311587) the Wall Street Journal. As Naureckas pointed out, the notion that that the U.S. will soon fall behind its global competitors in military technology is a tried-and-true scare tactic, employed at various times in slightly different registers by both Democrats and Republicans. In reality, U.S. military spending remains mind-bogglingly high. For the 2020 fiscal year, the Trump administration [approved](https://www.cnbc.com/2019/12/21/trump-signs-738-billion-defense-bill.html) a military budget of $738 billion, a $21 billion increase from the previous year and it passed with overwhelming bipartisan support, facing only 48 "no" votes in the House and eight in the Senate. In 2019, the militarized budget accounted for [64.5 percent](https://www.nationalpriorities.org/analysis/2020/militarized-budget-2020/) of all federal discretionary spending. The U.S. has 800 military bases on foreign soil, far more than any other country in the world. According to [Military.com](https://www.military.com/daily-news/2020/02/24/5-most-powerful-armies-world.html#:~:text=In%20what%20shouldn't%20be,and%20742%20special%20mission%20aircraft.), America is the world leader in every significant category of military hardware, and has roughly 1.4 million active-duty military personnel. In 2020, the Stockholm International Peace Research Institute (SIPRI) [found](https://www.pgpf.org/blog/2020/05/the-united-states-spends-more-on-defense-than-the-next-10-countries-combined) that the U.S. allocated more to its military budget than the next 10 nations combined. American military spending is about 2.7 times greater than that of China — which has a much larger population — and more than 10 times higher than Russia's, or that of any other single country. Meanwhile, bureaucratic and operational waste within the defense budget abound. In 2016, for example, it was discovered that the Pentagon had [buried an internal study](https://www.washingtonpost.com/investigations/pentagon-buries-evidence-of-125-billion-in-bureaucratic-waste/2016/12/05/e0668c76-9af6-11e6-a0ed-ab0774c1eaa5_story.html) finding that it had spent some $125 billion in wasteful business operations. More recently, it was [discovered](https://www.vice.com/en/article/939kxa/some-things-we-could-have-done-with-the-billions-wasted-on-a-broken-f-35) that the Pentagon's F-35 fighter jet program — which costed taxpayers somewhere in the neighborhood of $1.5 trillion — has been riddled with software glitches and operational failures since 2006, rendering an untold number of fighter jets (each one costing $100 million) not flight-ready. In spite of all its administrative bloat and operational dysfunction, the military remains exceptionally well-funded. Why, then, would the NSCAI insist it needs billions more for a hypothetical arms race against badly underfunded opponents? The report's authors may tell a better story than the report itself. Jack Poulson, a former Google employee who [resigned](https://theintercept.com/2018/09/13/google-china-search-engine-employee-resigns/) over the company's plan to launch a censored version of its search engine in China, told Salon that profit motives is deeply entrenched in the NSCAI report. "It should not come as a surprise that a commission packed with tech billionaires would call for increased intellectual property protections, oppose regulation (including on Lethal Autonomous Weapons), propose toothless ethics principles, and call for more federal funding of their industry," Poulson said in a statement. Indeed, many commission members are past and present tech executives of companies on the fore of AI — companies that have much to gain from future contracting deals with the Pentagon. The commission's chair, for example, is Eric Schmidt, the former CEO of Google, who remains — as Poulson pointed out — a major shareholder in Alphabet, Google's parent company. Google's head of AI, Andrew Moore, is also a member of the NSCAI. Google already has an extensive history of working with the Pentagon. According to The Intercept, in a federally-funded $70 million program called Project Maven, Google [developed](https://theintercept.com/2018/03/06/google-is-quietly-providing-ai-technology-for-drone-strike-targeting-project/) "algorithmic warfare initiative to apply artificial intelligence solutions to drone targeting." The company [expecting](https://www.theverge.com/2018/6/1/17418406/google-maven-drone-imagery-ai-contract-expire) that revenue would steadily rise from $15 million to $250 million a year for such defense projects. In April of 2018, however, 3,000 Google employees signed an open letter decrying the company's involvement in defense technology, a move that eventually led to Google's ultimate decision to back out of the deal. Schmidt strongly objected to Google's decision, calling it an "[aberration](https://nypost.com/2021/03/02/ai-panel-urges-us-to-boost-tech-skills-amid-chinas-rise/)" within the tech industry, which he felt was otherwise inclined to collaborate with the Defense Department. Former Undersecretary of the Navy Robert Work, the vice chairman of NSCAI, called Google's decision "hypocritical," [using language](https://www.voanews.com/silicon-valley-technology/former-us-defense-official-says-google-has-stepped-moral-hazard) that suggested a new cold war is already underway: "Anything that's going on in the AI center in China is going to the Chinese government and then will ultimately end up in the hands of the Chinese military." Other members of the commission include Oracle CEO Safra Catz, Microsoft chief scientific officer Eric Horvitz, and Andrew Jassy, the future CEO of Amazon Web Services, all of whom received cloud awards as part of the CIA's Commercial Cloud Enterprise (C2E), as Poulson noted. Oracle, Amazon and Microsoft, in fact, are currently involved in an acrimonious legal battle over a $10 billion cloud-computing contract called the Joint Enterprise Defense Initiative (JEDI). The deal was initially considered to be "gift-wrapped" for Amazon until Oracle butted in, [alleging improprieties](https://www.extremetech.com/computing/320577-pentagon-may-dump-10-billion-jedi-program-over-microsoft-amazon-fight). In an odd turn of events, the Pentagon awarded the contract to Microsoft, prompting Amazon to sue the federal government for anti-Amazon bias, based on ex-President Trump's overheated rhetoric. When it comes to securing Big Tech's enormous future contracts with the Pentagon, it appears that Jassy, Catz and Horvitz have set aside their mutual grievances for the time being Other board members of NSCAI include Gilman Louie and Christopher Darby, who are the founder and vice president (respectively) of a CIA-funded nonprofit called In-Q-Tel, which invests money in private companies who are developing technologies that might be useful to the intelligence community. According to a Wall Street Journal [investigation](https://www.wsj.com/articles/the-cias-venture-capital-firm-like-its-sponsor-operates-in-the-shadows-1472587352) from 2015, half of In-Q-Tel's trustees were financially connected to private companies in which In-Q-Tel had invested. Another board member, William Mark, a vice president of SRI International, has served on the Defense Advanced Research Projects Agency (DARPA), a government-run program that [partners with a variety of private companies and research institutions](http://www.darpa.mil/about-us/about-darpa) to "make pivotal investments in breakthrough technologies for national security." DARPA has awarded SRI numerous contracts for the development of speech recognition, translation and, most recently, [deep-fake recognition systems](https://techcrunch.com/2018/04/30/deepfakes-fake-videos-darpa-sri-international-media-forensics/). In other words, nearly everyone involved in preparing or supporting the NSCAI report would seem likely to benefit from the perception that the U.S. is falling behind other nations in vital defense technology. The Defense Department, Poulson told Salon, "prefers to run the race as if it is losing — which happens to increase military budgets, justify post-government consulting careers and help tech CEOs oppose regulation." It's only natural that government authorities would seek out industry experts to consult on AI projects — it's a fast-developing field that almost no one outside the tech world understands. Poulson wonders, however, "whether the U.S. will give human rights organizations — such as Human Rights Watch and the Campaign to Stop Killer Robots — as much of a seat at the table as it does tech billionaires." The very fact that the NSCAI is stacked with panel members with an obvious incentive to weaponize new technologies raises the question whether there needs to be an AI "arms race" at all. That term, of course, harkens back to Cold War hysteria surrounding the threat of nuclear annihilation, which led U.S. lawmakers to grow unduly concerned with the "missile gap," a widely held misconception that the Soviet Union was outpacing the U.S. with superior ballistic missile capabilities. (As intelligence sources knew even at the time, the Soviet nuclear arsenal was in bad shape and much smaller than advertised.) Arms control strategies, in fact, may be a more effective strategy in the AI realm, just as it was with nuclear missiles, especially given that America already collaborates heavily with China in AI research. As Graham Webster [wrote recently](https://www.technologyreview.com/2018/12/19/138211/the-us-and-china-arent-in-a-cold-war-so-stop-calling-it-that/) in MIT Tech Review: Unlike the US and USSR, in which science and technology developed on largely independent tracks, the US and China are part of a globally intertwined ecosystem. Even if the US and China cut off trade with each other, both countries would still have to worry about security risks from components, since risks along the supply chain exist everywhere. [For example](https://www.newamerica.org/cybersecurity-initiative/reports/essay-reframing-the-us-china-ai-arms-race/problem-1-arms-race-framing-is-winner-takes-all), Alibaba, a tech giant on the forefront of AI, has multiple offices in the U.S., and Google AI chief Jeff Dean is an adviser at China's Tsinghua University, which opened an Institute for Artificial Intelligence in June 2018. Stanford University's Artificial Intelligence lab has a partnership with one of China's biggest retailers. In other words, an arms race in which the two nations are locked in silos of information, research and development is not just ethically dubious but logistically impossible. Will China and Russia explore uses of AI in weapons of the future? Almost certainly — both countries have already [signaled](https://www.theverge.com/2017/9/4/16251226/russia-ai-putin-rule-the-world) movement in that direction. But if American politicians and scientists want to maximize the potential of AI, framing its development in terms of an international "arms race" seems like a strategic and philosophical mistake on a huge scale. AI has the potential to revolutionize [health care](https://www.healthcareitnews.com/news/emea/uk-hospital-first-use-ai-cancer-treatment-tool#:~:text=The%20technology%20computes%20hospital%20data,on%20the%20quality%20of%20care.), [education](https://www.nytimes.com/2021/02/23/technology/ai-innovation-privacy-seniors-education.html), [climate science](https://www.forbes.com/sites/bernardmarr/2021/01/04/how-artificial-intelligence-can-power-climate-change-strategy/?sh=69174b6a3482) and many other fields — and those things all play a fundamental role in national security. But these new technologies will not make America more secure if they are understood as weapons of international combat.

#### **AI weapon arms racing causes nuclear war – lack of verification methods and uncertainty about technological trajectory ensures racing likely to escalate.**

**Horowitz 19** [Michael C. Horowitz, Political Science Professor, Director Perry World House, and Perry Professor at the University of Pennsylvania, author of the Diffusion of Power: Causes and Consequences for International Politics and co-author of Why Leaders Fight, “When Speed Skills: Lethal Autonomous Weapon Systems, deterrence and stability, <https://sci-hub.st/https://www.tandfonline.com/doi/abs/10.1080/01402390.2019.1621174?src=recsys&journalCode=fjss20>]

55 All arms races share an underlying political dynamic whereby fear of developments by one or multiple other actors, andthe inability to verify that those actors are not developing particular capabilities, fuels more intense development of new weapon systems than would happen otherwise.56 An arms race in the area of machine autonomy would be no different in that dimension. The root would be inherently political.57 Actors would also have to believe that they would gain an advantage from the developing LAWS, or least be at a significant disadvantage if they did not develop those weapon systems. Jervis argues that arms races occur due to a security dilemma when states have **the** ability to measure each other’s capabilities, but nottheir intentions.58 The opacity surrounding LAWS development might generate increased riskfor arms competition because of potential opacity about capabilities, in addition to the ‘normal’ opacity that exists about intentions. First, it will be extremely difficult for states to credibly demonstrate autonomous weapon capabilities. The difference between a remotely piloted system and an autonomous system is software, not hardware, meaning verification that a given country is operating an autonomous system at all would be difficult. Second, uncertainty about the technological trajectory of machine learning and specific military applications means that countries might have significant uncertainty about other countries’ capabilities. Thus, countries might invest a lot in AI applications to military systems due to fear of what others are developing. The heightened role of uncertainty about what other countries are developing would make an LAWS arms competition different than many historical arms races – for example, the Anglo-German naval arms race prior to World War I. In the Anglo-German naval arms race case, both sides could see the ships being produced by the other side because those ships left port for testing, and were subject to reporting by spies who could observe construction patterns.59 Even though there was some uncertainty about the specific capabilities of battleships and battlecruisers, each side could count the number and size of the guns deployed on each ship. Third, the rules ofengagement for LAWS wouldalso likely beunknown – and use of an LAWSby a state in one engagement might not generate predictability, since a state could change the programming of the system prior to the next engagement. Thus, opacity surrounding AI capabilities could, potentially, lead to worse case assumptions about capability development by potential adversaries, thus making arms race dynamics more likely. Research on bargaining and war also suggests that uncertainty about capabilities makes it harder for countries to come to agreements when they enter into disputes. Private information about military capabilities means both sides can believe they are likely to win if a dispute escalates.60 The dispute then becomes harder to resolve and more likely to escalate. To the extent that machine learning systems generate more uncertainty due to their opacity, an arms race over machine learning systems might therefore be somewhat more likely to escalate. The extent of the effect would be difficult to determine, however.

#### **Nuclear war causes extinction – ozone layer loss, firestorms, and agricultural disruption.**

**Starr 17** (Steven; Steven Starr is the director of the University of Missouri’s Clinical Laboratory Science Program, as well as a senior scientist at the Physicians for Social Responsibility. He has been published in the Bulletin of the Atomic Scientists and the Strategic Arms Reduction (STAR) website of the Moscow Institute of Physics and Technology; Jan 09, 2017; “Turning a Blind Eye Towards Armageddon — U.S. Leaders Reject Nuclear Winter Studies”; Federation of American Scientists; https://fas.org/2017/01/turning-a-blind-eye-towards-armageddon-u-s-leaders-reject-nuclear-winter-studies/; DOA December 8, 2019; JPark)

The detonation of an atomic bomb with this explosive power will instantly ignite fires over a surface area of three to five square miles. In the recent studies, the scientists calculated that the blast, fire, and radiation from a war fought with 100 atomic bombs could produce direct fatalities comparable to all of those worldwide in World War II, or to those once estimated for a “counterforce” nuclear war between the superpowers. However, the long-term environmental effects of the war could significantly disrupt the global weather for at least a decade, which would likely result in a vast global famine. The scientists predicted that nuclear firestorms in the burning cities would cause at least five million tons of black carbon smoke to quickly rise above cloud level into the stratosphere, where it could not be rained out. The smoke would circle the Earth in less than two weeks and would form a global stratospheric smoke layer that would remain for more than a decade. The smoke would absorb warming sunlight, which would heat the smoke to temperatures near the boiling point of water, producing ozone losses of 20 to 50 percent over populated areas. This would almost double the amount of UV-B reaching the most populated regions of the mid-latitudes, and it would create UV-B indices unprecedented in human history. In North America and Central Europe, the time required to get a painful sunburn at mid-day in June could decrease to as little as six minutes for fair-skinned individuals. As the smoke layer blocked warming sunlight from reaching the Earth’s surface, it would produce the coldest average surface temperatures in the last 1,000 years. The scientists calculated that global food production would decrease by 20 to 40 percent during a five-year period following such a war. Medical experts have predicted that the shortening of growing seasons and corresponding decreases in agricultural production could cause up to two billion people to perish from famine. The climatologists also investigated the effects of a nuclear war fought with the vastly more powerful modern thermonuclear weapons possessed by the United States, Russia, China, France, and England. Some of the thermonuclear weapons constructed during the 1950s and 1960s were 1,000 times more powerful than an atomic bomb. During the last 30 years, the average size of thermonuclear or “strategic” nuclear weapons has decreased. Yet today, each of the approximately 3,540 strategic weapons deployed by the United States and Russia is seven to 80 times more powerful than the atomic bombs modeled in the India-Pakistan study. The smallest strategic nuclear weapon has an explosive power of 100,000 tons of TNT, compared to an atomic bomb with an average explosive power of 15,000 tons of TNT. Strategic nuclear weapons produce much larger nuclear firestorms than do atomic bombs. For example, a standard Russian 800-kiloton warhead, on an average day, will ignite fires covering a surface area of 90 to 152 square miles. A war fought with hundreds or thousands of U.S. and Russian strategic nuclear weapons would ignite immense nuclear firestorms covering land surface areas of many thousands or tens of thousands of square miles. The scientists calculated that these fires would produce up to 180 million tons of black carbon soot and smoke, which would form a dense, global stratospheric smoke layer. The smoke would remain in the stratosphere for 10 to 20 years, and it would block as much as 70 percent of sunlight from reaching the surface of the Northern Hemisphere and 35 percent from the Southern Hemisphere. So much sunlight would be blocked by the smoke that the noonday sun would resemble a full moon at midnight. Under such conditions, it would only require a matter of days or weeks for daily minimum temperatures to fall below freezing in the largest agricultural areas of the Northern Hemisphere, where freezing temperatures would occur every day for a period of between one to more than two years. Average surface temperatures would become colder than those experienced 18,000 years ago at the height of the last Ice Age, and the prolonged cold would cause average rainfall to decrease by up to 90%. Growing seasons would be completely eliminated for more than a decade; it would be too cold and dark to grow food crops, which would doom the majority of the human population.

### **Solvency**

#### **Plan: The United States ought to recognize the unconditional right of big tech workers to strike.**

#### **Tech worker strikes lead to quick, concrete, climate action from policymakers and tech leaders.**

**Baca and Greene ’19** [Amazon, Google, other tech employees protest in support of climate action, Marie Baca and Jay Greene, <https://www.washingtonpost.com/technology/2019/09/20/amazon-google-other-tech-employees-protest-support-climate-action/>, September 20 2019, Education: Stanford University, BA in Human Biology; Stanford University, MA in Communications, Graduate Program in Journalism Marie C. Baca was a breaking news technology and business reporter in San Francisco. She left The Post in December 2019, Education: Macalester College, BA in English; Columbia University, MS in Journalism Jay Greene is a reporter for The Washington Post who is focused on technology coverage in the Pacific Northwest.] [SS]

Thousands of workers at the nation’s largest tech companies were expected to walk off their jobs Friday to urge industry and world leaders to address climate change more aggressively, part of a larger wave of demonstrations expected to draw millions of people across the globe. The group Amazon Employees for Climate Justice said more than 1,800 Amazon employees in 25 cities pledged to walk out. Google Workers for Action on Climate tweeted that they expected about 700 workers to strike as of Thursday. Similar groups that said they were representing employees at Microsoft, Facebook, Twitter, Square and other major tech companies tweeted that they also expected significant numbers of employees to walk out. Hundreds gathered Friday outside Amazon’s headquarters in downtown Seattle as part of the demonstrations. Participants chanted, “Hey hey, ho ho, fossil fuels have got to go” and held signs with messages such as “Amazon, Let’s lead. Zero Emissions By 2030.” Rebecca Sheppard, 28, works in Amazon’s air, science and tech group to make the online retail giant’s planes more efficient. She said she thought about quitting last year over her concerns about Amazon’s massive carbon footprint, but colleagues discouraged her, saying she could effect change by sticking around. “We’ve just got to double down,” she said about employee efforts to produce change. (Amazon founder and chief executive Jeff Bezos owns The Washington Post.) ‘I hope the politicians hear us’: Millions of youth around the world strike for action The strike is being held in advance of a Monday climate summit at the United Nations. U.N. Secretary-General António Guterres has insisted that instead of bringing “fancy speeches” with them to the meeting, the countries must offer concrete commitments such as reaching net zero emissions by 2050 or eliminating the construction of coal-fired power plants. Strike organizers expected more than 1,000 events to take place in the United States alone. The tech workers joined millions of youths from more than 150 countries around the world who skipped school Friday in solidarity with the movement. Among them was 16-year-old Swedish climate activist Greta Thunberg, who has given a speech before the United Nations, met with political and business leaders, and has been nominated for a Nobel Peace Prize for her work. Facebook released a statement Friday expressing its support for employees who chose to walk out and said that the company is “building sustainability into our operations as well as engaging the global community on this important issue with our products.” Microsoft declined to comment. Google, Twitter and Square were not immediately available to comment. At Amazon, the walkout came a day after Bezos announced a “Climate Pledge” that would require signatories to meet the goals of the Paris climate agreement a decade early. The pledge also requires regular measuring and reporting of emissions, as well as obtaining net zero carbon across businesses by 2040, among other stipulations. U.S. takes a low profile as nations gather in New York to debate steps to combat climate change Bezos said Amazon would be the first company to sign the pledge. Critics, who have long claimed Amazon does little to offset the emissions it produces, say the pact lacks transparency and standardized rules for what is measured and reported. Amazon declined to comment on the walkout. In Seattle, workers who walked out held signs that opposed deals with gas and oil companies. The crowd booed when a speaker noted that Amazon funds climate-denying lobbyists. There was also a speaker from Google. Sarah Read, a user experience researcher with Prime Video, said Thursday’s announcement shows employees are having an impact. She said she believes the Climate Pact is related to an employee-sponsored shareholder resolution that would have required the company create a plan to address climate change, a resolution that failed in spring. Amazon CEO Jeff Bezos announces new ‘Climate Pledge’ ahead of employee protests “It’s a direct response to Amazon employees standing up, speaking out and saying this is important to them,” Read said.

#### **Only the unconditional right to strike solves – the Trump administration rolled back union and worker rights guaranteed by the NLRB.**

**McNicholas et al. 19** [Celine McNicholas, Margaret Poydock, Lynn Rhinehart, 10-16-2019, "Unprecedented: The Trump NLRB’s attack on workers’ rights," Economic Policy Institute, https://www.epi.org/publication/unprecedented-the-trump-nlrbs-attack-on-workers-rights/]

Under the Trump administration, the National Labor Relations Board (NLRB) has systematically rolled back workers’ rights to form unions and engage in collective bargaining with their employers, to the detriment of workers, their communities, and the economy. The Trump board has issued a series of significant decisions weakening worker protections under the National Labor Relations Act (NLRA/Act). Further, the board has engaged in an unprecedented number of rulemakings aimed at overturning existing worker protections. Finally, the Trump NLRB general counsel (GC) has advanced policies that leave fewer workers protected by the NLRA and has advocated for changes in the law that roll back workers’ rights. The Trump board and GC have elevated corporate interests above those of working men and women and have routinely betrayed the statute they are responsible for administering and enforcing. This paper highlights the most egregious actions of the Trump board and GC and evaluates the impact on working people. It is critical that Congress hold the Trump NLRB accountable and that policymakers prioritize legislative reforms that will restore the original promise of our nation’s labor law—to encourage and promote the formation of unions and the practice of collective bargaining.

## **Framing**

#### **Thus, the standard is maximizing expected well-being or act hedonistic util. Prefer additionally –**

#### **Pleasure and pain are intrinsically valueable and disvalueable – everything else regresses. Evolutionary knowledge is reliable – broad consensus and robust neuroscience prove.**

**Blum et al. 18**

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**Pleasure** is not only one of the three primary reward functions but it also **defines reward.** As homeostasis explains the functions of only a limited number of rewards, the principal reason why particular stimuli, objects, events, situations, and activities are rewarding may be due to pleasure. This applies first of all to sex and to the primary homeostatic rewards of food and liquid and extends to money, taste, beauty, social encounters and nonmaterial, internally set, and intrinsic rewards. Pleasure, as the primary effect of rewards, drives the prime reward functions of learning, approach behavior, and decision making and provides the **basis for hedonic theories** of reward function. We are attracted by most rewards and exert intense efforts to obtain them, just because they are enjoyable [10]. Pleasure is a passive reaction that derives from the experience or prediction of reward and may lead to a long-lasting state of happiness. The word happiness is difficult to define. In fact, just obtaining physical pleasure may not be enough. One key to happiness involves a network of good friends. However, it is not obvious how the higher forms of satisfaction and pleasure are related to an ice cream cone, or to your team winning a sporting event. Recent multidisciplinary research, using both humans and detailed invasive brain analysis of animals has discovered some critical ways that the brain processes pleasure [14]. Pleasure as a hallmark of reward is sufficient for defining a reward, but it may not be necessary. A reward may generate positive learning and approach behavior simply because it contains substances that are essential for body function. When we are hungry, we may eat bad and unpleasant meals. A monkey who receives hundreds of small drops of water every morning in the laboratory is unlikely to feel a rush of pleasure every time it gets the 0.1 ml. Nevertheless, with these precautions in mind, we may define any stimulus, object, event, activity, or situation that has the potential to produce pleasure as a reward. In the context of reward deficiency or for disorders of addiction, homeostasis pursues pharmacological treatments: drugs to treat drug addiction, obesity, and other compulsive behaviors. The theory of allostasis suggests broader approaches - such as re-expanding the range of possible pleasures and providing opportunities to expend effort in their pursuit. [15]. It is noteworthy, the first animal studies eliciting approach behavior by electrical brain stimulation interpreted their findings as a discovery of the brain’s pleasure centers [16] which were later partly associated with midbrain dopamine neurons [17–19] despite the notorious difficulties of identifying emotions in animals. Evolutionary theories of pleasure: The love connection BO:D Charles Darwin and other biological scientists that have examined the biological evolution and its basic principles found various mechanisms that steer behavior and biological development. Besides their theory on natural selection, it was particularly the sexual selection process that gained significance in the latter context over the last century, especially when it comes to the question of what makes us “what we are,” i.e., human. However, the capacity to sexually select and evolve is not at all a human accomplishment alone or a sign of our uniqueness; yet, we humans, as it seems, are ingenious in fooling ourselves and others–when we are in love or desperately search for it. It is well established that modern biological theory conjectures that **organisms are** the **result of evolutionary competition.** In fact, Richard Dawkins stresses gene survival and propagation as the basic mechanism of life [20]. Only genes that lead to the fittest phenotype will make it. It is noteworthy that the phenotype is selected based on behavior that maximizes gene propagation. To do so, the phenotype must survive and generate offspring, and be better at it than its competitors. Thus, the ultimate, distal function of rewards is to increase evolutionary fitness by ensuring the survival of the organism and reproduction. It is agreed that learning, approach, economic decisions, and positive emotions are the proximal functions through which phenotypes obtain other necessary nutrients for survival, mating, and care for offspring. Behavioral reward functions have evolved to help individuals to survive and propagate their genes. Apparently, people need to live well and long enough to reproduce. Most would agree that homo-sapiens do so by ingesting the substances that make their bodies function properly. For this reason, foods and drinks are rewards. Additional rewards, including those used for economic exchanges, ensure sufficient palatable food and drink supply. Mating and gene propagation is supported by powerful sexual attraction. Additional properties, like body form, augment the chance to mate and nourish and defend offspring and are therefore also rewards. Care for offspring until they can reproduce themselves helps gene propagation and is rewarding; otherwise, many believe mating is useless. According to David E Comings, as any small edge will ultimately result in evolutionary advantage [21], additional reward mechanisms like novelty seeking and exploration widen the spectrum of available rewards and thus enhance the chance for survival, reproduction, and ultimate gene propagation. These functions may help us to obtain the benefits of distant rewards that are determined by our own interests and not immediately available in the environment. Thus the distal reward function in gene propagation and evolutionary fitness defines the proximal reward functions that we see in everyday behavior. That is why foods, drinks, mates, and offspring are rewarding. There have been theories linking pleasure as a required component of health benefits salutogenesis, (salugenesis). In essence, under these terms, pleasure is described as a state or feeling of happiness and satisfaction resulting from an experience that one enjoys. Regarding pleasure, it is a double-edged sword, on the one hand, it promotes positive feelings (like mindfulness) and even better cognition, possibly through the release of dopamine [22]. But on the other hand, pleasure simultaneously encourages addiction and other negative behaviors, i.e., motivational toxicity. It is a complex neurobiological phenomenon, relying on reward circuitry or limbic activity. It is important to realize that through the “Brain Reward Cascade” (BRC) endorphin and endogenous morphinergic mechanisms may play a role [23]. While natural rewards are essential for survival and appetitive motivation leading to beneficial biological behaviors like eating, sex, and reproduction, crucial social interactions seem to further facilitate the positive effects exerted by pleasurable experiences. Indeed, experimentation with addictive drugs is capable of directly acting on reward pathways and causing deterioration of these systems promoting hypodopaminergia [24]. Most would agree that pleasurable activities can stimulate personal growth and may help to induce healthy behavioral changes, including stress management [25]. The work of Esch and Stefano [26] concerning the link between compassion and love implicate the brain reward system, and pleasure induction suggests that social contact in general, i.e., love, attachment, and compassion, can be highly effective in stress reduction, survival, and overall health. Understanding the role of neurotransmission and pleasurable states both positive and negative have been adequately studied over many decades [26–37], but comparative anatomical and neurobiological function between animals and homo sapiens appear to be required and seem to be in an infancy stage. Finding happiness is different between apes and humans As stated earlier in this expert opinion one key to happiness involves a network of good friends [38]. However, it is not entirely clear exactly how the higher forms of satisfaction and pleasure are related to a sugar rush, winning a sports event or even sky diving, all of which augment dopamine release at the reward brain site. Recent multidisciplinary research, using both humans and detailed invasive brain analysis of animals has discovered some critical ways that the brain processes pleasure. Remarkably, there are pathways for ordinary liking and pleasure, which are limited in scope as described above in this commentary. However, there are **many brain regions**, often termed hot and cold spots, that significantly **modulate** (increase or decrease) our **pleasure or** even **produce the opposite** of pleasure— that is disgust and fear [39]. One specific region of the nucleus accumbens is organized like a computer keyboard, with particular stimulus triggers in rows— producing an increase and decrease of pleasure and disgust. Moreover, the cortex has unique roles in the cognitive evaluation of our feelings of pleasure [40]. Importantly, the interplay of these multiple triggers and the higher brain centers in the prefrontal cortex are very intricate and are just being uncovered. Desire and reward centers It is surprising that many different sources of pleasure activate the same circuits between the mesocorticolimbic regions (Figure 1). Reward and desire are two aspects pleasure induction and have a very widespread, large circuit. Some part of this circuit distinguishes between desire and dread. The so-called pleasure circuitry called “REWARD” involves a well-known dopamine pathway in the mesolimbic system that can influence both pleasure and motivation. In simplest terms, the well-established mesolimbic system is a dopamine circuit for reward. It starts in the ventral tegmental area (VTA) of the midbrain and travels to the nucleus accumbens (Figure 2). It is the cornerstone target to all addictions. The VTA is encompassed with neurons using glutamate, GABA, and dopamine. The nucleus accumbens (NAc) is located within the ventral striatum and is divided into two sub-regions—the motor and limbic regions associated with its core and shell, respectively. The NAc has spiny neurons that receive dopamine from the VTA and glutamate (a dopamine driver) from the hippocampus, amygdala and medial prefrontal cortex. Subsequently, the NAc projects GABA signals to an area termed the ventral pallidum (VP). The region is a relay station in the limbic loop of the basal ganglia, critical for motivation, behavior, emotions and the “Feel Good” response. This defined system of the brain is involved in all addictions –substance, and non –substance related. In 1995, our laboratory coined the term “Reward Deficiency Syndrome” (RDS) to describe genetic and epigenetic induced hypodopaminergia in the “Brain Reward Cascade” that contribute to addiction and compulsive behaviors [3,6,41]. Furthermore, ordinary “liking” of something, or pure pleasure, is represented by small regions mainly in the limbic system (old reptilian part of the brain). These may be part of larger neural circuits. In Latin, hedus is the term for “sweet”; and in Greek, hodone is the term for “pleasure.” Thus, the word Hedonic is now referring to various subcomponents of pleasure: some associated with purely sensory and others with more complex emotions involving morals, aesthetics, and social interactions. The capacity to have pleasure is part of being healthy and may even extend life, especially if linked to optimism as a dopaminergic response [42]. Psychiatric illness often includes symptoms of an abnormal inability to experience pleasure, referred to as anhedonia. A negative feeling state is called dysphoria, which can consist of many emotions such as pain, depression, anxiety, fear, and disgust. Previously many scientists used animal research to uncover the complex mechanisms of pleasure, liking, motivation and even emotions like panic and fear, as discussed above [43]. However, as a significant amount of related research about the specific brain regions of pleasure/reward circuitry has been derived from invasive studies of animals, these cannot be directly compared with subjective states experienced by humans. In an attempt to resolve the controversy regarding the causal contributions of mesolimbic dopamine systems to reward, we have previously evaluated the three-main competing explanatory categories: “liking,” “learning,” and “wanting” [3]. That is, dopamine may mediate (a) liking: the hedonic impact of reward, (b) learning: learned predictions about rewarding effects, or (c) wanting: the pursuit of rewards by attributing incentive salience to reward-related stimuli [44]. We have evaluated these hypotheses, especially as they relate to the RDS, and we find that the incentive salience or “wanting” hypothesis of dopaminergic functioning is supported by a majority of the scientific evidence. Various neuroimaging studies have shown that anticipated behaviors such as sex and gaming, delicious foods and drugs of abuse all affect brain regions associated with reward networks, and may not be unidirectional. Drugs of abuse enhance dopamine signaling which sensitizes mesolimbic brain mechanisms that apparently evolved explicitly to attribute incentive salience to various rewards [45]. Addictive substances are voluntarily self-administered, and they enhance (directly or indirectly) dopaminergic synaptic function in the NAc. This activation of the brain reward networks (producing the ecstatic “high” that users seek). Although these circuits were initially thought to encode a set point of hedonic tone, it is now being considered to be far more complicated in function, also encoding attention, reward expectancy, disconfirmation of reward expectancy, and incentive motivation [46]. The argument about addiction as a disease may be confused with a predisposition to substance and nonsubstance rewards relative to the extreme effect of drugs of abuse on brain neurochemistry. The former sets up an individual to be at high risk through both genetic polymorphisms in reward genes as well as harmful epigenetic insult. Some Psychologists, even with all the data, still infer that addiction is not a disease [47]. Elevated stress levels, together with polymorphisms (genetic variations) of various dopaminergic genes and the genes related to other neurotransmitters (and their genetic variants), and may have an additive effect on vulnerability to various addictions [48]. In this regard, Vanyukov, et al. [48] suggested based on review that whereas the gateway hypothesis does not specify mechanistic connections between “stages,” and does not extend to the risks for addictions the concept of common liability to addictions may be more parsimonious. The latter theory is grounded in genetic theory and supported by data identifying common sources of variation in the risk for specific addictions (e.g., RDS). This commonality has identifiable neurobiological substrate and plausible evolutionary explanations. Over many years the controversy of dopamine involvement in especially “pleasure” has led to confusion concerning separating motivation from actual pleasure (wanting versus liking) [49]. We take the position that animal studies cannot provide real clinical information as described by self-reports in humans. As mentioned earlier and in the abstract, on November 23rd, 2017, evidence for our concerns was discovered [50] In essence, although nonhuman primate brains are similar to our own, the disparity between other primates and those of human cognitive abilities tells us that surface similarity is not the whole story. Sousa et al. [50] small case found various differentially expressed genes, to associate with pleasure related systems. Furthermore, the dopaminergic interneurons located in the human neocortex were absent from the neocortex of nonhuman African apes. Such differences in neuronal transcriptional programs may underlie a variety of neurodevelopmental disorders. In simpler terms, the system controls the production of dopamine, a chemical messenger that plays a significant role in pleasure and rewards. The senior author, Dr. Nenad Sestan from Yale, stated: “Humans have evolved a dopamine system that is different than the one in chimpanzees.” This may explain why the behavior of humans is so unique from that of non-human primates, even though our brains are so surprisingly similar, Sestan said: “It might also shed light on why people are vulnerable to mental disorders such as autism (possibly even addiction).” Remarkably, this research finding emerged from an extensive, multicenter collaboration to compare the brains across several species. These researchers examined 247 specimens of neural tissue from six humans, five chimpanzees, and five macaque monkeys. Moreover, these investigators analyzed which genes were turned on or off in 16 regions of the brain. While the differences among species were subtle, **there was** a **remarkable contrast in** the **neocortices**, specifically in an area of the brain that is much more developed in humans than in chimpanzees. In fact, these researchers found that a gene called tyrosine hydroxylase (TH) for the enzyme, responsible for the production of dopamine, was expressed in the neocortex of humans, but not chimpanzees. As discussed earlier, dopamine is best known for its essential role within the brain’s reward system; the very system that responds to everything from sex, to gambling, to food, and to addictive drugs. However, dopamine also assists in regulating emotional responses, memory, and movement. Notably, abnormal dopamine levels have been linked to disorders including Parkinson’s, schizophrenia and spectrum disorders such as autism and addiction or RDS. Nora Volkow, the director of NIDA, pointed out that one alluring possibility is that the neurotransmitter dopamine plays a substantial role in humans’ ability to pursue various rewards that are perhaps months or even years away in the future. This same idea has been suggested by Dr. Robert Sapolsky, a professor of biology and neurology at Stanford University. Dr. Sapolsky cited evidence that dopamine levels rise dramatically in humans when we anticipate potential rewards that are uncertain and even far off in our futures, such as retirement or even the possible alterlife. This may explain what often motivates people to work for things that have no apparent short-term benefit [51]. In similar work, Volkow and Bale [52] proposed a model in which dopamine can favor NOW processes through phasic signaling in reward circuits or LATER processes through tonic signaling in control circuits. Specifically, they suggest that through its modulation of the orbitofrontal cortex, which processes salience attribution, dopamine also enables shilting from NOW to LATER, while its modulation of the insula, which processes interoceptive information, influences the probability of selecting NOW versus LATER actions based on an individual’s physiological state. This hypothesis further supports the concept that disruptions along these circuits contribute to diverse pathologies, including obesity and addiction or RDS.