### 1NC - T

#### The aff should be topical.

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

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

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

#### The World Trade Organization is an international body that governs trade.

Tarver 21 (Evan Tarver has 6+ years of experience in financial analysis and 5+ years as an author, editor, and copywriter, “World Trade Organization”, Mar 1, 2021, https://www.investopedia.com/terms/w/wto.asp)

Created in 1995, the World Trade Organization (WTO) is an international institution that oversees the global trade rules among nations. It superseded the 1947 [General Agreement on Tariffs and Trade](https://www.investopedia.com/terms/g/gatt.asp) (GATT) created in the wake of World War II.

#### Reduce means to make smaller.

Cambridge Dictionary ND (https://dictionary.cambridge.org/us/dictionary/english/reduce)

to [become](https://dictionary.cambridge.org/us/dictionary/english/become) or to make something [become](https://dictionary.cambridge.org/us/dictionary/english/become) [smaller](https://dictionary.cambridge.org/us/dictionary/english/small) in [size](https://dictionary.cambridge.org/us/dictionary/english/size), [amount](https://dictionary.cambridge.org/us/dictionary/english/amount), [degree](https://dictionary.cambridge.org/us/dictionary/english/degree), [importance](https://dictionary.cambridge.org/us/dictionary/english/importance), etc…

#### Don’t let cheaty I-meets – CX -- at best they’re extra topical

#### We don’t require defending the state, defending government policies, or saying any institution is normatively good – saying an actor ought to do something doesn’t condone the ethicality of that actor or require roleplaying as that actor.

#### Vote neg to preserve substantive engagement --

#### 1] Preparation- repacking the topic gives the aff a huge edge, they can prepare for 6 months on an issue that catches us by surprise. Preparation is better than thinking on your feet- research demonstrates pedagogical humility and research skills are the only portable debate training – the process of debate outweighs the content – only our interp generates the argumentative skills needed to rigorously defend their affirmative out of round and create engaged citizens who have the self reflexivity to advocate for positive change

#### 2] Limits- there are a finite amount of standardized tests and universities, but an infinite number of non topical affirmatives. Consider this our “library disad”- not debating the topic allows someone to specialize in one area of the library for 4 years giving them a huge edge over people who switch research focus ever 2 months.

#### 3] Truth testing - you can’t vote on the case outweighs T because lack of preparation prevents rigorous testing of the AC claims. If we win fairness we don’t have to “outweigh” other impacts

#### 4] Switch side debate is good -- it forces debaters to consider a controversial issue from multiple perspectives which prevents ideological dogmatism. Even if they prove the topic is bad, our argument is that the process of preparing and defending proposals is an educational benefit of engaging it.

#### D] TVA

#### 1] Read a cybernetics aff about the WTO perpetuating cybernetics regime with big pharma perpetuating it

#### E] Even if you don’t by our education impacts, fairness is an intrinsic good and the only possible impact to your ballot -- debate is a game: forced winner/loser, competitive norms, and the tournament invite prove. Alternative impacts like activism or education can be pursued in other forums – the ballot can’t change our subjectivities BUT it can rectify in round fairness

#### F] Paradigm issues

#### 1] TFW has to be drop the debater – it indicts their method of engagement and proves we couldn’t engage fairly with their aff – crossapply truth testing

#### 2] Competing interps – reasonability is arbitrary, you can’t be

#### 4] No impact turns—exclusions are inevitable because we only have 45 minutes so it’s best to draw those exclusions along reciprocal lines to ensure a role for the negative

### Framing

The standard is maximizing expected wellbeing

#### 1] The role of the judge is to vote for the better debater – anything else is self serving and arbitrary – even then, winning cybernetics is good means the judge has th0ught through VR and concluded it’s good.

#### 2] Extinction o/ws under any framework- moral uncertainty and future gens

Pummer 15 — (Theron Pummer, Junior Research Fellow in Philosophy at St. Anne's College, University of Oxford, “Moral Agreement on Saving the World“, Practical Ethics University of Oxford, 5-18-2015, Available Online at http://blog.practicalethics.ox.ac.uk/2015/05/moral-agreement-on-saving-the-world/, accessed 7-2-2018, HKR-AM) \*\*we do not endorse ableist language=

There appears to be lot of disagreement in moral philosophy. Whether these many apparent disagreements are deep and irresolvable, I believe there is at least one thing it is reasonable to agree on right now, whatever general moral view we adopt: that it is very important to reduce the risk that all intelligent beings on this planet are eliminated by an enormous catastrophe, such as a nuclear war. How we might in fact try to reduce such existential risks is discussed elsewhere. My claim here is only that we – whether we’re consequentialists, deontologists, or virtue ethicists – should all agree that we should try to save the world. According to consequentialism, we should maximize the good, where this is taken to be the goodness, from an impartial perspective, of outcomes. Clearly one thing that makes an outcome good is that the people in it are doing well. There is little disagreement here. If the happiness or well-being of possible future people is just as important as that of people who already exist, and if they would have good lives, it is not hard to see how reducing existential risk is easily the most important thing in the whole world. This is for the familiar reason that there are so many people who could exist in the future – there are trillions upon trillions… upon trillions. There are so many possible future people that reducing existential risk is arguably the most important thing in the world, even if the well-being of these possible people were given only 0.001% as much weight as that of existing people. Even on a wholly person-affecting view – according to which there’s nothing (apart from effects on existing people) to be said in favor of creating happy people – the case for reducing existential risk is very strong. As noted in this seminal paper, this case is strengthened by the fact that there’s a good chance that many existing people will, with the aid of life-extension technology, live very long and very high quality lives. You might think what I have just argued applies to consequentialists only. There is a tendency to assume that, if an argument appeals to consequentialist considerations (the goodness of outcomes), it is irrelevant to non-consequentialists. But that is a huge mistake. Non-consequentialism is the view that there’s more that determines rightness than the goodness of consequences or outcomes; it is not the view that the latter don’t matter. Even John Rawls wrote, “All ethical doctrines worth our attention take consequences into account in judging rightness. One which did not would simply be irrational, crazy.” Minimally plausible versions of deontology and virtue ethics must be concerned in part with promoting the good, from an impartial point of view. They’d thus imply very strong reasons to reduce existential risk, at least when this doesn’t significantly involve doing harm to others or damaging one’s character. What’s even more surprising, perhaps, is that even if our own good (or that of those near and dear to us) has much greater weight than goodness from the impartial “point of view of the universe,” indeed even if the latter is entirely morally irrelevant, we may nonetheless have very strong reasons to reduce existential risk. Even egoism, the view that each agent should maximize her own good, might imply strong reasons to reduce existential risk. It will depend, among other things, on what one’s own good consists in. If well-being consisted in pleasure only, it is somewhat harder to argue that egoism would imply strong reasons to reduce existential risk – perhaps we could argue that one would maximize her expected hedonic well-being by funding life extension technology or by having herself cryogenically frozen at the time of her bodily death as well as giving money to reduce existential risk (so that there is a world for her to live in!). I am not sure, however, how strong the reasons to do this would be. But views which imply that, if I don’t care about other people, I have no or very little reason to help them are not even minimally plausible views (in addition to hedonistic egoism, I here have in mind views that imply that one has no reason to perform an act unless one actually desires to do that act). To be minimally plausible, egoism will need to be paired with a more sophisticated account of well-being. To see this, it is enough to consider, as Plato did, the possibility of a ring of invisibility – suppose that, while wearing it, Ayn could derive some pleasure by helping the poor, but instead could derive just a bit more by severely harming them. Hedonistic egoism would absurdly imply she should do the latter. To avoid this implication, egoists would need to build something like the meaningfulness of a life into well-being, in some robust way, where this would to a significant extent be a function of other-regarding concerns (see chapter 12 of this classic intro to ethics). But once these elements are included, we can (roughly, as above) argue that this sort of egoism will imply strong reasons to reduce existential risk. Add to all of this Samuel Scheffler’s recent intriguing arguments (quick podcast version available here) that most of what makes our lives go well would be undermined if there were no future generations of intelligent persons. On his view, my life would contain vastly less well-being if (say) a year after my death the world came to an end. So obviously if Scheffler were right I’d have very strong reason to reduce existential risk. We should also take into account moral uncertainty. What is it reasonable for one to do, when one is uncertain not (only) about the empirical facts, but also about the moral facts? I’ve just argued that there’s agreement among minimally plausible ethical views that we have strong reason to reduce existential risk – not only consequentialists, but also deontologists, virtue ethicists, and sophisticated egoists should agree. But even those (hedonistic egoists) who disagree should have a significant level of confidence that they are mistaken, and that one of the above views is correct. Even if they were 90% sure that their view is the correct one (and 10% sure that one of these other ones is correct), they would have pretty strong reason, from the standpoint of moral uncertainty, to reduce existential risk. Perhaps most disturbingly still, even if we are only 1% sure that the well-being of possible future people matters, it is at least arguable that, from the standpoint of moral uncertainty, reducing existential risk is the most important thing in the world. Again, this is largely for the reason that there are so many people who could exist in the future – there are trillions upon trillions… upon trillions. (For more on this and other related issues, see this excellent dissertation). Of course, it is uncertain whether these untold trillions would, in general, have good lives. It’s possible they’ll be miserable. It is enough for my claim that there is moral agreement in the relevant sense if, at least given certain empirical claims about what future lives would most likely be like, all minimally plausible moral views would converge on the conclusion that we should try to save the world. While there are some non-crazy views that place significantly greater moral weight on avoiding suffering than on promoting happiness, for reasons others have offered (and for independent reasons I won’t get into here unless requested to), they nonetheless seem to be fairly implausible views. And even if things did not go well for our ancestors, I am optimistic that they will overall go fantastically well for our descendants, if we allow them to. I suspect that most of us alive today – at least those of us not suffering from extreme illness or poverty – have lives that are well worth living, and that things will continue to improve. Derek Parfit, whose work has emphasized future generations as well as agreement in ethics, described our situation clearly and accurately: “We live during the hinge of history. Given the scientific and technological discoveries of the last two centuries, the world has never changed as fast. We shall soon have even greater powers to transform, not only our surroundings, but ourselves and our successors. If we act wisely in the next few centuries, humanity will survive its most dangerous and decisive period. Our descendants could, if necessary, go elsewhere, spreading through this galaxy…. Our descendants might, I believe, make the further future very good. But that good future may also depend in part on us. If our selfish recklessness ends human history, we would be acting very wrongly.” (From chapter 36 of On What Matters

### Case

#### Vote negative on presumption:

#### 1—no connection between affirming their research model and ballots—they can disrupt debate’s research practices while losing rounds by reading affs like this.

#### 2—no spillover— If they can’t clearly illustrate how disrupting policy debates about IPR would solve those things, vote neg.

#### 3—no solvency advocate in the 1AC defends affective cybernetic research—zero basis in research or literature for the success of their strategy AND proves disconnect between their advocacy and solvency mechanism

#### 1] Cybernetics solves crisis escalation.

Corneliu Bjola 19, Head of the Oxford Digital Diplomacy Research Group, University of Oxford, 11/10/19, “Diplomacy in the Age of Artificial Intelligence,” http://www.realinstitutoelcano.org/wps/portal/rielcano\_en/contenido?WCM\_GLOBAL\_CONTEXT=/elcano/elcano\_in/zonas\_in/ari98-2019-bjola-diplomacy-in-the-age-of-artificial-intelligence

Taking note of the fact that developments in AI are so dynamic and the implications so wide-ranging, another report prepared by a German think tank calls on Ministries of Foreign Affairs (MFAs) to immediately begin planning strategies that can respond effectively to the influence of AI in international affairs. Economic disruption, security & autonomous weapons, and democracy & ethics are the three areas they identify as priorities at the intersection of AI and foreign policy. Although they believe that transformational changes to diplomatic institutions will eventually be needed to meet the challenges ahead, they favour, in the short term, an incremental approach to AI that builds on the successes (and learns from the failures) of “cyber-foreign policy”, which, in many countries, has been already internalised in the culture of the relevant institutions, including of the MFAs.13 In the same vein, the authors of a report prepared for the Centre for a New American Security see great potential for AI in national security-related areas, including diplomacy. For example, AI can help improve communication between governments and foreign publics by lowering language barriers between countries, enhance the security of diplomatic missions via image recognition and information sorting technologies, and support international humanitarian operations by monitoring elections, assisting in peacekeeping operations, and ensuring that financial aid disbursements are not misused through anomaly detection.14

From an AI perspective, consular services could be a low-hanging fruit for AI integration in diplomacy as decisions are amenable to digitisation, the analytical contribution is reasonable relevant and the technology favours collaboration between users and the machine. Consular services rely on highly structured decisions, as they largely involve recurring and routinised operations based on clear and stable procedures, which do not need to be treated as new each time a decision has to be made (except for crisis situations, which are discussed further below). From a knowledge perspective, AI-assisted consular services may embody declarative (know-what) and procedural knowledge (know-how) to automate routinised operations and scaffold human cognition by reducing cognitive effort. This can be done by using data mining and data discovery techniques to organize the data and make it possible to identify patterns and relationships that would be difficult to observe otherwise (e.g., variation of demand for services by location, time, and audience profile).

Case study #1: AI as Digital Consul Assistant

The consulate of country X has been facing uneven demand for emergency passports, visa requests and business certifications in the past five years. The situation has led to a growing backlog, significant loss of public reputation and a tense relationship between the consulate and the MFA. An AI system trained with data from the past five years uses descriptive analytics to identify patterns in the applications and concludes that August, May and December are the most likely months to witness an increase of the demand in the three categories next year. AI predictions are confirmed for August and May but not for December. AI recalibrates its advice using updated data and the new predictions help consular officers manage requests more effectively. As the MFA confidence in the AI system grows, the digital assistant is then introduced to other consulates experiencing similar problems.

Digital platforms could also emerge as indispensable tools for managing diplomatic crises in the digital age and for good reasons. They can help embassies and MFAs make sense of the nature and gravity of the events in real-time, streamline the decision-making process, manage the public’s expectations, and facilitate crisis termination. At the same time, they need to be used with great care as factual inaccuracies, coordination gaps, mismatched disclosure level, and poor symbolic signalling could easily derail digital efforts of crisis management.15 AI systems could provide great assistance to diplomats in times of crisis by helping them make sense of what it is happening (descriptive analytics) and identify possible trends (predictive analytics). The main challenge for AI is the semi-structured nature of the decisions to be taken. While many MFAs have pre-designed plans to activate in case of a crisis, it is safe to assume that reality often defies the best crafted plans. Given the high level of uncertainty in which crisis decision-making operates and the inevitable scrutiny and demand of accountability to occur if something goes wrong, AI integration can work only if humans retain control over the process. As a recent SIPRI study pointed out, AI systems may fail spectacularly when confronted with tasks or environments that differ slightly to those they were trained for. Their algorithms are also opaque, which makes difficult for humans to explain how they work and whether they include bias that could lead to problematic –if not dangerous– behaviours.16

#### 2] Double bind—either the aff can’t solve because it leaves cybernetic tech like CCS unchallenged OR the aff spills up to challenge tech more broadly—do not let the 1AR get out of this – their 1AC Hui evidence says they rupture cybernetic futures -- that means it disrupts environmental management via tech and databases: That causes extinction

David Victor 19, professor of international relations at the School of Global Policy and Strategy and director of the Laboratory on International Law and Regulation, Co-Chair of the Brookings Initiative on Energy and Climate, 1/10/19, “How artificial intelligence will affect the future of energy and climate,” https://www.brookings.edu/research/how-artificial-intelligence-will-affect-the-future-of-energy-and-climate/

HOW AI WILL IMPROVE CLIMATE POLICY

Since the chief protagonist in the climate change story, CO2, has a long atmospheric lifetime, there is only a sluggish relationship between changes in emissions and the accumulated concentrations; in turn, those concentrations have a sluggish impact on the climate. Even if AI were part of some massive transformation in the energy system, the built-in inertia of that energy system, along with the inertia in the climate system, virtually guarantees that the world is in for a lot of climate change. All this is grim news and means that widely discussed goals, such as stopping warming at 1.5 or 2 degrees Celsius are unlikely to be realized.

These geophysical and infrastructural realities give rise to a new policy reality: adaptation is urgent.[7] They also mean that emergency responses to extreme climate impacts—for example, solar geoengineering, might be needed as well.

Existing research shows that there is a huge difference in the impact on public welfare from scenarios where climate change affects a society that doesn’t have an adaptation plan compared with a society that takes active adaptive measures. For example, the most recent U.S. climate-impact assessment released in November 2018 demonstrates that active adaptation measures can radically reduce losses from some climate impacts—often with benefits that far exceed the costs.[8] Extreme climate change is going to be ugly and will require hard choices—such as which coastlines to protect or abandon. Without smart adaptation strategies, it will be a lot worse.

One of the central insights from the science of climate impacts is that extreme events will cause most of the damage. A world that is a bit warmer and wetter (and a bit drier in some places) is a world that societies, within reason, can probably adapt to—especially if those gradual changes are easy to anticipate. But a world that has more extreme events—put differently, climate events that have a higher variance—is a world that requires a lot more preparedness. A farming area that faces a new, significant risk of truly extreme drought for example, such as a decade-long dust bowl, will need to prepare as if that extreme event is commonplace. It will need irrigation systems, the option of planting hardier crops and other possible interventions that sit ready when the extreme events come.

Once those systems are purchased, much of the expense is borne and it makes sense to use them all the time. This has been the experience, for example, with the Thames river barrier or a similar Dutch flood barrier—these systems were designed and installed at vast expense with extreme events in mind, and now they are being used much more frequently. Climate impacts are, fundamentally, stochastic events centered around shifting medians—a warmer world, for example, is one where median temperature rises and where the whole distribution of temperatures from cold to hot shifts hotter. But the tails in that statistical distribution also probably fatten, and for some impacts, those tails get a lot fatter. Machine learning techniques will probably improve the ability to understand the shapes of those tails.

This logic of extreme events as the main drivers of climate impacts and response strategies has some big implications for how societies will plan for adaptation and how AI can help—possibly in transformative ways.

First, AI can help focus and adjust adaptation strategies. Because uncertainty is high and extreme events are paramount, policymakers, firms, and households will not know where to act nor what expense is merited. They will have a large portfolio of responses, each with an option value. Machine learning can help improve the capacity to assess those option values more rapidly. Such techniques might also make it possible to rely more heavily on market forces to weigh which options generate private and public welfare—if so, AI could help reduce one of the greatest dangers as societies develop adaptation strategies, which is that they commit vast resources to adaptation without guiding resources to their greatest value. High levels of uncertainty, along with acute private incentives that can mis-allocate resources—for example, local construction firms and organized labor might favor some kinds of adaptive responses (e.g., building sea walls and other hardened infrastructure) even when other less costly options are available—mean that adaptation needs could generate a massive call on resources and thus a massive opportunity for mischief and mis-allocation.

Second, most adaptation efforts are intrinsically local and regional affairs. As a matter of geophysics, climate change harms public welfare when general perturbations in the oceans and atmosphere get translated into specific climatological events that are manifest in specific places—specific coastlines, mountainous regions, public lands, and natural ecosystems. As a matter of public policy, the actors whose responses have the biggest leverage on local impacts are managers of local infrastructures—coastal and urban planners, developers, city managers, and the like. Politically, this is one of the reasons why, despite all the difficulties in mobilizing action to control emissions, it is likely that as communities realize what’s at stake with adaptation, they will respond. Local responses generate, for the most part, local benefits. A big challenge in all this local response, however, is that local authorities are intrinsically decentralized and usually not steeped in technical expertise. Getting the best information on climate impacts and response strategies—let alone keeping that information aligned with local circumstances and shifting odds for climate impacts—is all but impossible. AI could help lower that cost and, in effect, democratize quality climate impacts response.

#### 3] Warming causes extinction.

Kareiva 18

Peter,Ph.D. in ecology and applied mathematics from Cornell University, director of the Institute of the Environment and Sustainability at UCLA, Pritzker Distinguished Professor in Environment & Sustainability at UCLA, et al., September 2018, “Existential risk due to ecosystem collapse: Nature strikes back,” Futures, Vol. 102, p. 39-50

In summary, six of the nine proposed planetary boundaries (phosphorous, nitrogen, biodiversity, land use, atmospheric aerosol loading, and chemical pollution) are unlikely to be associated with existential risks. They all correspond to a degraded environment, but in our assessment do not represent existential risks. However, the three remaining boundaries (climate change, global freshwater cycle, and ocean acidification) do pose existential risks. This is because of intrinsic positive feedback loops, substantial lag times between system change and experiencing the consequences of that change, and the fact these different boundaries interact with one another in ways that yield surprises. In addition, climate, freshwater, and ocean acidification are all directly connected to the provision of food and water, and shortages of food and water can create conflict and social unrest. Climate change has a long history of disrupting civilizations and sometimes precipitating the collapse of cultures or mass emigrations (McMichael, 2017). For example, the 12th century drought in the North American Southwest is held responsible for the collapse of the Anasazi pueblo culture. More recently, the infamous potato famine of 1846–1849 and the large migration of Irish to the U.S. can be traced to a combination of factors, one of which was climate. Specifically, 1846 was an unusually warm and moist year in Ireland, providing the climatic conditions favorable to the fungus that caused the potato blight. As is so often the case, poor government had a role as well—as the British government forbade the import of grains from outside Britain (imports that could have helped to redress the ravaged potato yields). Climate change intersects with freshwater resources because it is expected to exacerbate drought and water scarcity, as well as flooding. Climate change can even impair water quality because it is associated with heavy rains that overwhelm sewage treatment facilities, or because it results in higher concentrations of pollutants in groundwater as a result of enhanced evaporation and reduced groundwater recharge. Ample clean water is not a luxury—it is essential for human survival. Consequently, cities, regions and nations that lack clean freshwater are vulnerable to social disruption and disease. Finally, ocean acidification is linked to climate change because it is driven by CO2 emissions just as global warming is. With close to 20% of the world’s protein coming from oceans (FAO, 2016), the potential for severe impacts due to acidification is obvious. Less obvious, but perhaps more insidious, is the interaction between climate change and the loss of oyster and coral reefs due to acidification. Acidification is known to interfere with oyster reef building and coral reefs. Climate change also increases storm frequency and severity. Coral reefs and oyster reefs provide protection from storm surge because they reduce wave energy (Spalding et al., 2014). If these reefs are lost due to acidification at the same time as storms become more severe and sea level rises, coastal communities will be exposed to unprecedented storm surge—and may be ravaged by recurrent storms. A key feature of the risk associated with climate change is that mean annual temperature and mean annual rainfall are not the variables of interest. Rather it is extreme episodic events that place nations and entire regions of the world at risk. These extreme events are by definition “rare” (once every hundred years), and changes in their likelihood are challenging to detect because of their rarity, but are exactly the manifestations of climate change that we must get better at anticipating (Diffenbaugh et al., 2017). Society will have a hard time responding to shorter intervals between rare extreme events because in the lifespan of an individual human, a person might experience as few as two or three extreme events. How likely is it that you would notice a change in the interval between events that are separated by decades, especially given that the interval is not regular but varies stochastically? A concrete example of this dilemma can be found in the past and expected future changes in storm-related flooding of New York City. The highly disruptive flooding of New York City associated with Hurricane Sandy represented a flood height that occurred once every 500 years in the 18th century, and that occurs now once every 25 years, but is expected to occur once every 5 years by 2050 (Garner et al., 2017). This change in frequency of extreme floods has profound implications for the measures New York City should take to protect its infrastructure and its population, yet because of the stochastic nature of such events, this shift in flood frequency is an elevated risk that will go unnoticed by most people. 4. The combination of positive feedback loops and societal inertia is fertile ground for global environmental catastrophes. Humans are remarkably ingenious, and have adapted to crises throughout their history. Our doom has been repeatedly predicted, only to be averted by innovation (Ridley, 2011). However, the many stories of human ingenuity successfully addressing existential risks such as global famine or extreme air pollution represent environmental challenges that are largely linear, have immediate consequences, and operate without positive feedbacks. For example, the fact that food is in short supply does not increase the rate at which humans consume food—thereby increasing the shortage. Similarly, massive air pollution episodes such as the London fog of 1952 that killed 12,000 people did not make future air pollution events more likely. In fact it was just the opposite—the London fog sent such a clear message that Britain quickly enacted pollution control measures (Stradling, 2016). Food shortages, air pollution, water pollution, etc. send immediate signals to society of harm, which then trigger a negative feedback of society seeking to reduce the harm. In contrast, today’s great environmental crisis of climate change may cause some harm but there are generally long time delays between rising CO2 concentrations and damage to humans. The consequence of these delays are an absence of urgency; thus although 70% of Americans believe global warming is happening, only 40% think it will harm them (http://climatecommunication.yale.edu/visualizations-data/ycom-us-2016/). Secondly, unlike past environmental challenges, the Earth’s climate system is rife with positive feedback loops. In particular, as CO2 increases and the climate warms, that very warming can cause more CO2 release which further increases global warming, and then more CO2, and so on. Table 2 summarizes the best documented positive feedback loops for the Earth’s climate system. These feedbacks can be neatly categorized into carbon cycle, biogeochemical, biogeophysical, cloud, ice-albedo, and water vapor feedbacks. As important as it is to understand these feedbacks individually, it is even more essential to study the interactive nature of these feedbacks. Modeling studies show that when interactions among feedback loops are included, uncertainty increases dramatically and there is a heightened potential for perturbations to be magnified (e.g., Cox, Betts, Jones, Spall, & Totterdell, 2000; Hajima, Tachiiri, Ito, & Kawamiya, 2014; Knutti & Rugenstein, 2015; Rosenfeld, Sherwood, Wood, & Donner, 2014). This produces a wide range of future scenarios. Positive feedbacks in the carbon cycle involves the enhancement of future carbon contributions to the atmosphere due to some initial increase in atmospheric CO2. This happens because as CO2 accumulates, it reduces the efficiency in which oceans and terrestrial ecosystems sequester carbon, which in return feeds back to exacerbate climate change (Friedlingstein et al., 2001). Warming can also increase the rate at which organic matter decays and carbon is released into the atmosphere, thereby causing more warming (Melillo et al., 2017). Increases in food shortages and lack of water is also of major concern when biogeophysical feedback mechanisms perpetuate drought conditions. The underlying mechanism here is that losses in vegetation increases the surface albedo, which suppresses rainfall, and thus enhances future vegetation loss and more suppression of rainfall—thereby initiating or prolonging a drought (Chamey, Stone, & Quirk, 1975). To top it off, overgrazing depletes the soil, leading to augmented vegetation loss (Anderies, Janssen, & Walker, 2002). Climate change often also increases the risk of forest fires, as a result of higher temperatures and persistent drought conditions. The expectation is that forest fires will become more frequent and severe with climate warming and drought (Scholze, Knorr, Arnell, & Prentice, 2006), a trend for which we have already seen evidence (Allen et al., 2010). Tragically, the increased severity and risk of Southern California wildfires recently predicted by climate scientists (Jin et al., 2015), was realized in December 2017, with the largest fire in the history of California (the “Thomas fire” that burned 282,000 acres, https://www.vox.com/2017/12/27/16822180/thomas-fire-california-largest-wildfire). This catastrophic fire embodies the sorts of positive feedbacks and interacting factors that could catch humanity off-guard and produce a true apocalyptic event. Record-breaking rains produced an extraordinary flush of new vegetation, that then dried out as record heat waves and dry conditions took hold, coupled with stronger than normal winds, and ignition. Of course the record-fire released CO2 into the atmosphere, thereby contributing to future warming. Out of all types of feedbacks, water vapor and the ice-albedo feedbacks are the most clearly understood mechanisms. Losses in reflective snow and ice cover drive up surface temperatures, leading to even more melting of snow and ice cover—this is known as the ice-albedo feedback (Curry, Schramm, & Ebert, 1995). As snow and ice continue to melt at a more rapid pace, millions of people may be displaced by flooding risks as a consequence of sea level rise near coastal communities (Biermann & Boas, 2010; Myers, 2002; Nicholls et al., 2011). The water vapor feedback operates when warmer atmospheric conditions strengthen the saturation vapor pressure, which creates a warming effect given water vapor’s strong greenhouse gas properties (Manabe & Wetherald, 1967). Global warming tends to increase cloud formation because warmer temperatures lead to more evaporation of water into the atmosphere, and warmer temperature also allows the atmosphere to hold more water. The key question is whether this increase in clouds associated with global warming will result in a positive feedback loop (more warming) or a negative feedback loop (less warming). For decades, scientists have sought to answer this question and understand the net role clouds play in future climate projections (Schneider et al., 2017). Clouds are complex because they both have a cooling (reflecting incoming solar radiation) and warming (absorbing incoming solar radiation) effect (Lashof, DeAngelo, Saleska, & Harte, 1997). The type of cloud, altitude, and optical properties combine to determine how these countervailing effects balance out. Although still under debate, it appears that in most circumstances the cloud feedback is likely positive (Boucher et al., 2013). For example, models and observations show that increasing greenhouse gas concentrations reduces the low-level cloud fraction in the Northeast Pacific at decadal time scales. This then has a positive feedback effect and enhances climate warming since less solar radiation is reflected by the atmosphere (Clement, Burgman, & Norris, 2009). The key lesson from the long list of potentially positive feedbacks and their interactions is that runaway climate change, and runaway perturbations have to be taken as a serious possibility. Table 2 is just a snapshot of the type of feedbacks that have been identified (see Supplementary material for a more thorough explanation of positive feedback loops). However, this list is not exhaustive and the possibility of undiscovered positive feedbacks portends even greater existential risks. The many environmental crises humankind has previously averted (famine, ozone depletion, London fog, water pollution, etc.) were averted because of political will based on solid scientific understanding. We cannot count on complete scientific understanding when it comes to positive feedback loops and climate change.

#### 4] algorithmic governance enables effective responses to global atrocities – answers duffield

John Karlsrud 14, Senior Research Fellow and Manager of the Training for Peace programme at NUPI, Peacekeeping 4.0: Harnessing the Potential of Big Data, Social Media, and Cyber Technologies, in “Cyberspace and International Relations: Theory, Prospects and Challenges,” https://www.researchgate.net/profile/Hakan\_Mehmetcik/publication/285282612\_A\_New\_Way\_of\_Conducting\_War\_Cyberwar\_Is\_That\_Real/links/5c63f67d45851582c3e47db7/A-New-Way-of-Conducting-War-Cyberwar-Is-That-Real.pdf

Brought together, the data can enable international organizations to follow and possibly prevent evolving situations and crises. This potential has been recognized; and, following the financial crisis, the UN Secretary-General created UN Global Pulse to explore opportunities for using real-time data to gain a more accurate understanding of population wellbeing, especially related to the impacts of global crises. The availability of real-time data holds great promise for helping us detect the early signs of stress on vulnerable populations. It represents an unprecedented opportunity to track the human impacts of crises as they unfold, and to get real-time feedback on how well policy responses are working (UN Global Pulse 2012b). As such, research undertaken by UN Global Pulse, notably though its networks of country-level “Pulse Labs,” may give the UN a better ability to follow, respond to and mitigate the impact of natural disasters and complex crises.

However, more than 90 % of the information will be unstructured, potentially rich in useful information. Turning structured and unstructured information into actionable data requires efficient ways of structuring and analyzing the information in real time in a data ecosystem (WEF 2010, p. 4). This process is often called “reality mining” (UN Global Pulse 2012a, p. 18; Eagle and Pentland 2006) or “data mining”—discovering patterns in large data sets (Cheshire 2011; Helbing and Balietti 2012). So, how can the UN and other multilateral actors make use of this data? Cooperation has been initiated with Google and other large corporations that are at the forefront in harvesting actionable data from the “data deluge” (The Economist 2010b).

Concurrently with this development, the digital divide is closing at an increasing speed. According to the World Bank, 44.9 out of every 100 people in subSaharan Africa had a mobile subscription in 2010 (World Bank 2012a), and by 2016 this figure will reach 91.3 (Portio Research 2012), although the high number may mask persons have more than one subscription. The percentage of population with access to internet is also increasing (World Bank 2012b). This means that the amount of both structured and unstructured data that can be analyzed and can inform multilateral efforts for conflict prevention and international security is increasing rapidly and can give a more even and realistic picture of the situation in question. However, there is a need to be realistic. There is great variance in the access to data between countries such as Syria and the Democratic Republic of Congo, and many have more than one mobile subscription to strengthen their resilience against patchy networks.

Other co-influencing factors are the rapid spread of 3G networks in developing countries and affordable smart phones at prices down to $50 or less (Jidenma 2011). There is also a current global mega-trend of access to the internet through mobile devices: “in a world where there are 6.3 bn mobile users and 2.3 bn internet users, the default access mode to broadband services is mobile” (Ulf Ewaldsson, Ericsson, quoted in ITU 2012a). According to the International Telecommunication Union, “the ubiquitous mobile phone provides an important foundation for the uptake of mobilebased Internet [in the developing world]. With the majority of countries worldwide having launched 3G mobile-broadband services, the prospects are promising” (ITU 2012b, p. 39, Evans 2012).

In the areas of conflict prevention, humanitarian action, and development, the UN has made some initial steps. But what then is the situation in the areas of peacekeeping and peacebuilding? Unfortunately, little progress has been made so far. Notwithstanding the inclusion of surveillance drones in one peacekeeping mission, the development of Joint Mission Analysis Cells and Joint Operations Centres (which I will return to in the next section), the use of mobile phones in community alert networks in eastern Congo, and the heightened focus on the strategic planning and coordination capacity of peacekeeping and peacebuilding operations, much work remains before peacekeeping operations can be said to be tapping the potential of big data, social media, and cyber-technology effectively, entering the age of “Peacekeeping 4.0.”

The good part of this story is that much work already has been undertaken in the similar and parallel fields of conflict prevention, humanitarian action and development. Many lessons from these fields could easily be imported, while other innovative approaches can be accessed through increased cooperation and coordination. Accomplishing this will require overcoming various bureaucratic hurdles and turfism, driven by support from engaged member states and the Secretary-General. Finally, the uptake of digital information in the planning of UN peace operations may also have implications for how the interaction between the UN, member states and civil society is theorized. IR theorists have increasingly underscored the importance of civil society actors as potential norm entrepreneurs (Keck and Sikkink 1998), and more recent research looking at the relationship between media and international organizations emphasize the potential role civil society and new technology can play in democratizing the access to information, but also the potential for groups spreading disinformation and incite hatred.

This chapter will seek to explore what chances the availability of Big Data and new technologies offer for peacekeeping and as well as inherent challenges. The chapter proceeds as follows: First, I narrow in on some key initiatives in the areas of conflict prevention, humanitarian action, and development that can be relevant to peacekeeping. The following section provides a short background on peacekeeping and its evolution from the end of the Cold War until present, noting some of the steps taken to date. Thirdly, I discuss some of the challenges and opportunities facing policymakers, and relate these to the area of peacekeeping in particular. Finally, the chapter sums up and offers some recommendations for policymakers among member states, in the UN, and among civil society, as well as pointing out areas in need of further research, to enable the UN to enter the era of fourth generation peacekeeping—“Peacekeeping 4.0.”

2 Cyberization of Conflict Prevention, Humanitarian Action, and Development

The age of Big Data and social media has dawned on the fields of humanitarian activity, social activism, and development. Here the application of big data and social media has advanced a great deal further than in the areas of peacekeeping and peacebuilding, particularly among civil society organizations (CSOs) and other independent actors.

One of these initiatives is Ushahidi. Ushahidi is a “web based reporting system that utilizes crowdsourced data to formulate visual map information of a crisis on a real-time basis” (Ushahidi 2012a). Ushahidi, which means “testimony” in Swahili, was originally a website established after the election violence in Kenya in 2008 to map incidents of violence (Ushahidi 2012b). Using crowdsourcing as a method means that everyone with access to common digital communication channels can contribute data.1 The data can be provided via text messages, email, twitter and web-forms. One recent example is Syria Tracker—a website set up to monitor violent incidents involving civilians in Syria: “Syria Tracker is a crowdsourced effort developed by individuals concerned about the harm inflicted upon civilians in Syria” (Syria Tracker 2012). Ushahidi and Syria Tracker are part of a tendency of “how non-state actors are increasingly collaborating online to tackle issues traditionally managed by governments” (Leson 2012).

Also in the area of monitoring and evaluation, internet platforms are being established to ease the sharing and coordination of information. One example is the ActivityInfo website established by UNICEF, OCHA, and bedatadriven; it “that helps humanitarian organizations to collect, manage, map and analyze indicators…and allow for real time monitoring of the humanitarian situation in the eastern part of the Democratic Republic of Congo” (ActivityInfo 2012).

Analyzing the use of Google searches or Twitter messages can give strong indications of evolving situations, or whether an epidemic is spreading. Paul and Dredze (2011) found a very strong correlation coefficient (0.958) between tweets and official flu statistics, where the tweets were in real time and the statistics available only afterwards. Analyzing trending topics in Google searches or Facebook and blog posts can also yield significant data (Ginsberg et al. 2009). Google Dengue Trends uses aggregated Google search data to estimate dengue activity (Google 2012a); there is a similar service for influenza (Google 2012b). Following the earthquake in Port-au-Prince, Haiti, researchers from Sweden’s Karolinska Institutet and Columbia University in New York used mobile phone data, tracking 1.9 million SIM cards (Bengtsson et al. 2011, p. 2). They were able to follow the population flows and destinations of 648,717 people who had been displaced (ibid.:3). Later that year, the same team followed population movement after a cholera outbreak (Bengtsson et al. 2010, p. 2).

Multilateral actors have started to catch on. The UN Secretary-General has created UN Global Pulse; the World Bank has begun discussing how big data can be used for development (World Bank 2012c), and has established “Mapping for Results” to visualize and track its programs and projects on the ground (World Bank 2012d). However, much remains to be done. In 2009, the UN Global Pulse Initiative launched the Rapid Impact and Vulnerability Analysis Fund (RIVAF).

However, a recent report published by the initiative reveals a focus on the use of traditional indicators, and a lack of focus on conflict and post-conflict countries, even though many of the UN agencies, funds, and programs involved in the RIVAF initiative operate in precisely such locations (UN Global Pulse 2011). Further work is necessary in this area, also to focus the energies of developmentoriented organizations to conflict and post-conflict countries and utilize the potential offered by big data, social media, and cyber-technology.

The UN has engaged with the Crisis Mappers community since 2010 (UN 2012a, p. 4, Crisis Mappers 2012); among other things, the Standby Task Force has supported OCHA crowdsourcing data for South Sudan, collecting “a total of 1,767 unique rows of data and 15,271 unique pieces of information records” in a mere 3 days (Standby Task Force 2012). At a recent meeting in New York to discuss the status of implementation of the UN’s Crisis Information Strategy, it was agreed that there is a need for Crisis Information Managers, and that the efforts towards convergence in crisis information management could support the “endeavours of ‘One UN’ and better coordination within the UN and the international community in general” (Swiss Mission to the United Nations 2012). A Crisis Management Training Course has since been established, with the first course being given in February 2013 at the International Peace Support Training Centre (IPSTC) in Nairobi, Kenya. The course will train civilians, military and police “working in multidimensional peace and humanitarian operations … to integrate new information technology into an information management system [and] demonstrate the opportunities and challenges of new ICTs [Information and Communication Technology] and social media tools…” (ICT4Peace 2012a). The challenge now will be to get the UN onboard and send staff to these courses, providing the organization with staff trained personnel that can enable it to make use of Big Data, ICTs and social media in its operations. The UN in Sudan has taken one step in this direction. With support of the United Kingdom, UNDP has run a Crisis Recovery and Mapping Analysis project since 2007 (UNDP 2012a), aimed at supporting both the UN country team (UNCT) and national authorities in making their activities more evidence-based and conflict-responsive (see also Bott and Young 2012).2

In Georgia, the Caucasus Research Resource Centers and Saferworld have joined forces with developers to produce Elva, combining “the data-rich mapping of Ushahidi with the meticulous requirements of human-rights researchers” (Sifry 2012). The platform is used to create a community safety network where a community representative, using SMS, can report violent or security incidents on a weekly basis. A similar initiative was developed by Columbia University in connection with the Voix des Kivus program in the Democratic Republic of Congo (DRC) to “overcome the problems associated with the collection of conflict data” (van der Wind and Humphreys 2012). It involved distributing prepaid cellphones, solar chargers, and code sheets to community representatives in 18 villages in Eastern Congo (ibid.). For both projects, protecting the identity of those reporting against possible reprisals became an important concern (ibid., p. 24; see also Puig 2012).

Together with the crisis mapping community, OCHA is experimenting with developing twitter dashboards for humanitarian crises. These use “Machine Learning (ML) techniques and social computing methods… to extract relevant information from twitter and aggregate this information according to Cluster for analytical purposes” (Meier 2012). A similar dashboard for peacekeeping operations “that looks across social media content and perhaps uses corporate data” could be envisaged (Interview with Meier 2012).

#### 5 Tech is sustainable and resolves resource strain from urbanization.

Khan 15 (Zaheer Khan & Kamran Soomro – Faculty of Environment and Technology, Department of Computer Science and Creative Technologies, University of the West of England. Ashiq Anjum – Faculty of Business, Computing and Law, School of Computing and Mathematics, University of Derby. Muhammad Atif Tahir – School of Computer Science and Digital Technologies, University of Northumbria. <KEN> “Towards cloud based big data analytics for smart future cities,” Journal of Cloud Computing Vol. 4, No. 2. February 2015. https://journalofcloudcomputing.springeropen.com/articles/10.1186/s13677-015-0026-8#Sec12)

A large amount of land-use, environment, socio-economic, energy and transport data is generated in cities. An integrated perspective of managing and analysing such big data can answer a number of science, policy, planning, governance and business questions and support decision making in enabling a smarter environment. This paper presents a theoretical and experimental perspective on the smart cities focused big data management and analysis by proposing a cloud-based analytics service. A prototype has been designed and developed to demonstrate the effectiveness of the analytics service for big data analysis. The prototype has been implemented using Hadoop and Spark and the results are compared. The service analyses the Bristol Open data by identifying correlations between selected urban environment indicators. Experiments are performed using Hadoop and Spark and results are presented in this paper. The data pertaining to quality of life mainly crime and safety & economy and employment was analysed from the data catalogue to measure the indicators spread over years to assess positive and negative trends.

Introduction

ICT is becoming increasingly pervasive to urban environments and providing the necessary basis for sustainability and resilience of the smart future cities. With the rapid increase in the presence of Internet of Things (IoT) and future internet [1,2] technologies in the smart cities context [3-5], a large amount of data (a.k.a. big data) is generated, which needs to be properly managed and analysed for various applications using a structured and integrated ICT approach. Often ICT tools for a smart city deal with different application domains such as land use, transport and energy, and rarely provide an integrated information perspective to deal with sustainability and socioeconomic growth of the city. Smart cities can benefit from such information using big, and often real-time, cross-thematic data collection, processing, integration and sharing through inter-operable services deployed in a cloud environment. However, such information utilisation requires appropriate software tools, services and technologies to collect, store, analyse and visualise large amounts of data from the city environment, citizens and various departments and agencies at city scale to generate new knowledge and support decision making.

The real value of such data is gained by new knowledge acquired by performing data analytics using various data mining, machine learning or statistical methods. However, the field of smart city based data analytics is quite broad, complex and is rapidly evolving. The complexity in the smart city data analytics manifests due to a variety of issues: i) Requirements of cross-thematic applications e.g. energy, transport, water, urban etc, and ii) multiple sources of data providing unstructured, semi-structured or structured data, and iii) trustworthiness of data [6,7]. In this regard, this paper provides a data oriented overview of smart cities and provides a cloud based analytical service architecture and implementation for the analysis of selected case study data.

Smart cities provide a new application domain for big data analytics and relatively not much work is reported in literature. A review of the state of the art provides very promising insights about applying cloud computing resources for large scale smart city data analytics. For instance, Lu et al. [8] focus on using computational resources for large scale data for climate having complex structure and format. Using a multi scale dataset for climate data, they demonstrated a cloud based large scale data integration and analytics approach where they made use of tools such as RapidMiner and Hadoop to process the data in a hybrid cloud. Among others, the COSMOS project [9] provides a distributed on-demand cloud infrastructure based on Hadoop for analysing Big Data from social media sources. The infrastructure has the capability to process millions of data-points that would take much longer on a desktop computer. It allows social scientists to integrate and analyse data from multiple non-interoperable sources in a transparent fashion. Such a Big Data analysis platform can also be useful for smart cities as it would allow decision-makers to collect and analyse data from many sources in a timely manner. Ahuja and Moore [10] provide a state of the art review of the technologies being used for big data storage, transfer and analysis. Qin et al. [11] present challenges of Big data analytics and acknowledge the capabilities of MapReduce and RDBMS to solve these challenges. The main contribution of their work is that they have provided a unified MapReduce and RDBMS based analytic ecosystem to avail complementary advantages from both systems. Recently some studies have investigated the usefulness of data mining techniques to combine data from multiple sources such as by Moraru and Mladenic [12]. They applied Apriori technique, which is rule based data mining technique, to learn rules from data. Although they are able to extract some rules from small scale but they’re unable to learn much on large scale data due to high volume of the data and the limited memory on a single system.

We use a similar approach that is based on MapReduce. Our prototype implementation analyses the Bristol open dataset to identify correlations between selected urban environment indicators such as Quality of Life. We have developed two implementations using Hadoop and Spark to compare the suitability of such infrastructures for Bristol open data analysis.

The remainder of this paper is structured as follows: the next section provides background and rationale in the context of smart cities. Section “An abstract architectural design of the cloud-based big data analysis” provides a data analytics service architecture and design for analytical processing of big data for smart cities. After this, a simple use case based on Bristol open data by identifying needs of information processing and knowledge generation for decision making is presented in Section “A use case: analytics using Bristol open data”. In Section “Prototype implementation” we present the applicability of the proposed solution by implementing a MapReduce based prototype for Bristol open data and discuss outcomes. Finally, we conclude our discussion and present future research directions in Section “Conclusions and future directions”.

ICT and smart cities

Approximately 50% of world’s population live in urban areas, a number which is expected to increase to nearly 60% by 2030 [13]. High levels of urbanisation are even more evident in Europe where today over 70% of Europeans live in urban areas, with projections that this will increase to nearly 80% by 2030 [13,14]. A continuous increase in urban population strains the limited resources of a city, affects its resilience to the increasing demands on resources and urban governance faces ever increasing challenges. Furthermore, sustainable urban development, economic growth and management of natural resources such as energy and water require better planning and collaborative decision making at the local level. In this regard, the innovation in ICT can provide integrated information intelligence for better urban management and governance, sustainable socioeconomic growth and policy development using participatory processes [15].

Smart cities [4] use a variety of ICT solutions to deal with real life urban challenges. Some of these challenges include environmental sustainability, socioeconomic innovation, participatory governance, better public services, planning and collaborative decision-making. In addition to creating a sustainable futuristic smart infrastructure, overcoming these challenges can empower the citizens in terms of having a personal stake in the well-being and betterment of their civic life. Consequently, city administrations can get new information and knowledge that is hidden in large-scale data to provide better urban governance and management by applying these ICT solutions. Such ICT enabled solutions thus enable efficient transport planning, better water management, improved waste management, new energy efficiency strategies, new constructions and structural methods for health of buildings and effective environment and risk management policies for the citizens. Moreover, other important aspects of the urban life such as public security, air quality and pollution, public health, urban sprawl and bio-diversity loss can also benefit from these ICT solutions. ICT as prime enabler for smart cities transforms application specific data into useful information and knowledge that can help in city planning and decision-making. From the ICT perspective, the possibility of realisation of smart cities is being enabled by smarter hardware and software e.g. IoTs i.e. RFIDs, smart phones, sensor nets, smart household appliances, and capacity to manage and process large scale data using cloud computing without compromising data security and citizens privacy [16]. With the passage of time, the volume of data generated from these IoTs is bound to increase exponentially and classified as Big data [17]. In addition, cities already possess land use, transport, census and environmental monitoring data which is collected from various local, often not interconnected, sources and used by application specific systems but is rarely used as collective source of information (i.e. system of systems [18]) for urban governance and planning decisions. Many local governments are making such data available for public use as “open data” [19]. Managing such large amount of data and analysing for various applications e.g. future city models, visualisation, simulations, provision of quality public services and information to citizens and decision making becomes challenging without developing and applying appropriate tools and techniques.

In the above context, recent emergence of Cloud computing promises solutions to such challenges by facilitating big data storage and delivering the capacity to process, visualise and analyse city data for information and knowledge generation. Such a solution can also facilitate the decision makers in meeting the QoS requirements by providing an integrated information processing and analytic infrastructure for variety of smart cities applications to support decision-making for urban governance.

#### 6] Unsustainability claims are suspect because our brains are wired for techno-pessimism – digital synchronicity can fix racism embedded in cybernetics thru human ingenuity and make the world materially better

Reinhart 18 (Will Rinehart is Director of Technology and Innovation Policy at the American Action Forum, where he specializes in telecommunication, Internet, and data policy, with a focus on emerging technologies and innovation. Rinehart previously worked at TechFreedom, where he was a Research Fellow. He was also previously the Director of Operations at the International Center for Law & Economics. In Defense of Techno-optimism. 10-10-2018. <https://techliberation.com/2018/10/10/in-defense-of-techno-optimism/> //shree)

Many are understandably pessimistic about platforms and technology. This year has been a tough one, from Cambridge Analytica and Russian trolls to the implementation of GDPR and data breaches galore.

Those who think about the world, about the problems that we see every day, and about their own place in it, will quickly realize the immense frailty of humankind. Fear and worry makes sense. We are flawed, each one of us. And technology only seems to exacerbate those problems.

But life is getting better. Poverty continues nose-diving; adult literacy is at an all-time high; people around the world are living longer, living in democracies, and are better educated than at any other time in history. Meanwhile, the digital revolution has resulted in a glut of informational abundance, helping to correct the informational asymmetries that have long plagued humankind. The problem we now face is not how to address informational constraints, but how to provide the means for people to sort through and make sense of this abundant trove of data. These macro trends don’t make headlines. Psychologists know that people love to read negative articles. Our brains are wired for pessimism.

In the shadow of a year of bad news, it helpful to remember that Facebook and Google and Reddit and Twitter also support humane conversations. Most people aren’t going online to talk about politics and if you are, then you are rare. These sites are places where families and friends can connect. They offer a space of solace – like when chronic pain sufferers find others on Facebook, or when widows vent, rage, laugh and cry without judgement through the Hot Young Widows Club. Let’s also not forget that Reddit, while sometimes a place of rage and spite, is also where a weight lifter with cerebral palsy can become a hero and where those with addiction can find healing. And in the hardest to reach places in Canada, in Iqaluit, people say that “Amazon Prime has done more toward elevating the standard of living of my family than any territorial or federal program. Full stop. Period”

Three-fourths of Americans say major technology companies’ products and services have been more good than bad for them personally. But when it comes to the whole of society, they are more skeptical about technology bringing benefits. Here is how I read that disparity: Most of us think that we have benefited from technology, but we worry about where it is taking the human collective. That is an understandable worry, but one that shouldn’t hobble us to inaction.

Nor is technology making us stupid. Indeed, quite the opposite is happening. Technology use in those aged 50 and above seems to have caused them to be cognitively younger than their parents to the tune of 4 to 8 years. While the use of Google does seem to reduce our ability to recall information, studies find that it has boosted other kinds of memory, like retrieving information. Why remember a fact when you can remember where it is located? Concerned how audiobooks might be affecting people, Beth Rogowsky, an associate professor of education, compared them to physical reading and was surprised to find “no significant differences in comprehension between reading, listening, or reading and listening simultaneously.” Cyberbullying and excessive use might make parents worry, but NIH supported work found that “Heavy use of the Internet and video gaming may be more a symptom of mental health problems than a cause. Moderate use of the Internet, especially for acquiring information, is most supportive of healthy development.” Don’t worry. The kids are going to be alright.

And yes, there is a lot we still need to fix. There is cruelty, racism, sexism, and poverty of all kinds embedded in our technological systems. But the best way to handle these issues is through the application of human ingenuity. Human ingenuity begets technology in all of its varieties.

When Scott Alexander over at Star Slate Codex recently looked at 52 startups being groomed by startup incubator Y Combinator, he rightly pointed out that many of them were working for the betterment of all:

Thirteen of them had an altruistic or international development focus, including Neema, an app to help poor people without access to banks gain financial services; Kangpe, online health services for people in Africa without access to doctors; Credy, a peer-to-peer lending service in India; Clear Genetics, an automated genetic counseling tool for at-risk parents; and Dost Education, helping to teach literacy skills in India via a $1/month course.

Twelve of them seemed like really exciting cutting-edge technology, including CBAS, which describes itself as “human bionics plug-and-play”; Solugen, which has a way to manufacture hydrogen peroxide from plant sugars; AON3D, which makes 3D printers for industrial uses; Indee, a new genetic engineering system; Alem Health, applying AI to radiology, and of course the obligatory drone delivery startup.

Eighteen of them seemed like boring meat-and-potatoes companies aimed at businesses that need enterprise data solution software application package analytics targeting management something something something “the cloud”.

As for the other companies, they were the kind of niche products that Silicon Valley has come to be criticized for supporting. Perhaps the Valley deserves some criticism, but perhaps it deserves more credit than it’s been receiving as-of-late.

Contemporary tech criticism displays a kind of anti-nostalgia. Instead of being reverent for the past, anxiety for the future abounds. In these visions, the future is imagined as a strange, foreign land, beset with problems. And yet, to quote that old adage, tomorrow is the visitor that is always coming but never arrives. The future never arrives because we are assembling it today. We need to work diligently together to piece together a better world. But if we constantly live in fear of what comes next, that future won’t be built. Optimism needn’t be pollyannaish. It only needs to be hopeful of a better world.

#### 7] It prevents, rather than causing, endless warfare.

James Andrew Lewis 18, senior vice president at the Center for Strategic and International Studies, Ph.D. from the University of Chicago, January 2018, “Rethinking Cybersecurity: Strategy, Mass Effect, and States,” https://espas.secure.europarl.europa.eu/orbis/sites/default/files/generated/document/en/180108\_Lewis\_ReconsideringCybersecurity\_Web.pdf, p. 16-17

Cyber Operations and Interstate Conflict

International relations are being reshaped by the confluence of several powerful trends, some created by new technologies, some by the powerful reaction to American hegemony, and some from the fraying of the international order created after 1945. In contrast to sunny millennial optimism, efforts to improve cybersecurity must be designed for a period where, for an unknown duration, there will be increased conflict as states challenge the liberal postwar order. We are at the end of a sustained period of strategic stability17 and conflict, albeit at low levels, will be the norm. Conflict between states will take new forms and cyber operations will be an important part of this. They are ideal for the new strategic environment, given their opacity, the lack of clear norms, and inadequate defenses.

Opponent actions that stay below this threshold inhabit a "gray area," that is neither peace nor war, where the United States and its allies, unable to use military force in response, have so far been stymied in designing and articulated an effective reply. Opponents will exploit gray areas in international law to coerce without triggering armed conflict. Deterrence will be more difficult in this opaque environment, and we will see increased use by our opponents of coercive acts that fall below thresholds for the use of force or armed attack.

The future of armed conflict is that major powers will try to avoid armed confrontation. Wars between big, heavily armed states are expensive and risky, particularly if they have nuclear weapons. The major powers will not renounce the use of force and coercion—Russia, the United States, China, Iran, North Korea, and others use force or the threat of force all the time— but they will try to avoid war with each other. If major powers do stumble into conventional war, cyber attacks will be a part of the fighting, but the real nature of cyber conflict involves something other than warfare and lacks the sharp discontinuity between war and peace. The experience of the last decade suggests that the norm for interstate conflict will be increasingly continuous and not kinetic.

#### 8] Tech makes a US-led LIO sustainable.

Allen 3-1-2021, analyst @ The Hill (John, “To outpace China on technology, the US needs a 'full-stack' strategy,” <https://thehill.com/opinion/technology/540808-to-outpace-china-on-technology-the-us-needs-a-full-stack-strategy?rl=1>)

From the COVID-19 pandemic and a deeply struggling economy to the critical need for racial justice and immediate action on climate change, President Biden now confronts one of the most daunting inheritances of any U.S. president in at least a century. His administration also faces a looming strategic challenge: whether the United States and its allies and partners will be able to find common cause in accelerating the development of next-generation technologies. If the United States and its democratic partners develop and deploy next wave technologies first, they will generate significant strategic advantages and strengthen their position in rule-setting forums. In turn, this will enable them to help craft norms and regulations for emerging technologies that are reflective of democratic values. Simply put, technological competition sits at the core of great power competition and ideological rivalry for the 21st century and beyond. And with the U.S. and its democratic allies seeking to outpace authoritarian regimes such as those in Beijing and Moscow, tech innovation will be a critical determinant of the continued strength and resilience of the liberal international order.

#### 9] the alternative is spheres of influence—that collapses into nuclear war.

Twining 17, Counselor & Asia Director, the German Marshall Fund of the United States(Daniel, Abandoning the Liberal International Order for a Spheres-of-Influence World is a Trap for America…," Medium, <https://medium.com/out-of-order/abandoning-the-liberal-international-order-for-a-spheres-of-influence-world-is-a-trap-for-america-7bfcdbb83df4>)

The liberal world order is under assault. Polls suggest an American ambivalence about upholding the rules-based global system. Populists are besieging governing elites in the West while Russia works strategically to destabilize European and American governments through propaganda and proxies. A rising China wants to create a global system that is not U.S.-centric, one in which smaller powers defer to bigger ones and norms of democracy and rule of law do not prevail. Meanwhile, the U.S. alliance system looks adrift while competitors in China and Russia appear to be on the march. If it holds, this trend could produce a spheres-of-influence world — which many, including the current presidents of the United States, China, and Russia, find intuitively attractive. But were such an order to replace one based on global integration and American leadership in the geopolitical cockpits of Europe and Asia, it would only engender insecurity and conflict. In a spheres-of-influence world, great powers order their regions. The United States would go back to a “Monroe Doctrine” version of grand strategy; Russia would dominate the former Soviet space; China would govern East Asia, and India South Asia. The problem with this kind of order, however, is several-fold. Too many spheres overlap in ways that would generate conflict rather than clean lines of responsibility. Japan would oppose Chinese suzerainty in East Asia, including by developing nuclear weapons; India and China would compete vigorously in Southeast Asia; Russia and China would contest the resources and loyalties of Central Asia; Europe and Russia would clash over primacy of Central and Eastern Europe. The Middle East would be an even more likely arena for hot war between Saudi Arabia and Iran, and Turkey would contest regions also claimed by Russia, Europe, and possibly China. Russia, like the Soviet Empire before it, would keep pushing west until it met enough hard power to stop it. A spheres of influence world would also sharpen great power competition outside of each region. Regional hegemony is a springboard for global contestation. China would be more likely to challenge the United States out-of-area if it had subdued strategic competition in its own region. Russia, like the Soviet Empire before it, would keep pushing west until it met enough hard power to stop it. (The fact that Russian troops marched through Paris during the Napoleonic Wars demonstrates that the limits of Russian power need not be confined to the former Warsaw Pact). American leaders have long understood that a “Fortress America” approach is a source of national insecurity. Franklin Roosevelt made this case in a series of “fireside chats” in the run-up to America’s participation in World War II — even before the advent of the far more sophisticated power-projection technologies that exist today. Roosevelt and his generals well understood that the United States could not be safe if hostile powers controlled Europe and Asia, despite the wide oceans separating North America from both theaters. A spheres-of-influence world would also crack up the integrated global economy that underlies the miracle in human welfare that has lifted billions out of poverty in past decades. It would replicate the exclusive economic blocs of the 1930s, including an East Asia “co-prosperity sphere,” seeding conflict and undercutting prosperity. A real-world and real-time example of what happens when American power retreats in an effort to encourage regional powers to solve their own problems is the mess in Syria. It has produced the greatest refugee crisis since 1945 — a stain on the consciousness of human civilization — and has led many to conclude that the Middle Eastern order of states dating to the end of World War 1 is collapsing. President Obama pursued an express policy of retracting American military power from the Middle East, including withdrawing all troops from Iraq and refusing to intervene militarily when President Assad used chemical weapons against his own people, despite a red-line injunction from the United States not to do so. Obama and his White House political advisors believed that American withdrawal from the Arab Middle East (if not from the ironclad U.S. commitment to Israel) would lead a new balance of power to form, one policed by regional powers rather than by America. This flawed, amoral, and un-strategic approach has led to a series of hot wars — in Syria, Iraq, and Yemen — the collapse of Arab allies’ confidence in the United States as an ally, as well as an intensified cold war with Iran. Despite the international agreement freezing Iran’s nuclear program, Iran’s support for terrorism and hostile insurgencies targeting American allies across its region actually intensified during this period. A spheres-of-influence world leaves weaker states to become the victims of stronger or more aggressive ones, and it seeds insecurity by removing the reassuring variable of American military guarantees and presence This experience underlines a core problem with a spheres-of-influence world. It leaves weaker states to become the victims of stronger or more aggressive ones, and it seeds insecurity by removing the reassuring variable of American military guarantees and presence. It emboldens American adversaries and leads American allies to take self-help measures that themselves may undercut American security interests. A spheres-of-influence world would also produce contestation of the open global commons that are the basis for the unprecedented prosperity produced by the liberal international economic order. Should the Indian and Pacific Oceans, or the Arctic and Mediterranean Seas, become arenas of great-power conflict (like the South China Sea already has thanks to China’s militarization and unilateral assertion of sovereignty over it) as leading states seek to incorporate them into their privileged zones of control, economic globalization would collapse, harming the economies of every major power. The United States, because of its sheer power and resource base as well as its relative geographical isolation, might do OK in a spheres-of-influence world. Most of America’s friends and allies would not. Their weakening and insecurity would in turn render the United States weaker and more insecure — since U.S. allies are force-multipliers for American hard and soft power, and since norms like freedom of the global commons are in fact underwritten by that power. More broadly, such a transition would also likely lead to the kind of hot wars that reorder the international balance of power, including by incentivizing aggressive states to push out and assert regional dominion, knowing that America does not have the will or interest to oppose them. The fact that U.S. competitors such as Russia, China, and Iran — all of whom want to weaken the American-led world order — would welcome a spheres-of-influence world is another reason for Americans to oppose it. It would also be ironic if the United States were to back away from its historic commitment to shaping a world that is an idealized vision of America itself — one ruled by laws, norms, institutions, markets, and peaceful settlement of disputes.

#### Unipolarity is sustainable – the aff’s turn away from “mastery” and control trades off with trades-off with it, that creates great power war and escalation – power vacuums cause cascade prolif and extinction

Hal **Brands 15**. On the faculty at the Sanford School of Public Policy at Duke University The Elliott School of International Affairs The Washington Quarterly Summer 2015 38:2 pp. 7–28

The fundamental reason is that both U.S. influence and international stability are thoroughly interwoven with a robust U.S. forward presence. Regarding influence, the protection that Washington has afforded its allies has equally afforded the United States great sway over those allies’ policies.43 During the Cold War and after, for instance, the United States has used the influence provided by its security posture to veto allies’ pursuit of nuclear weapons, to obtain more advantageous terms in financial and trade agreements, and even to affect the composition of allied nations’ governments.44 More broadly, it has used its alliances as vehicles for shaping political, security, and economic agendas in key regions and bilateral relationships, thus giving the United States an outsized voice on a range of important issues. To be clear, this influence has never been as pervasive as U.S. officials might like, or as some observers might imagine. But by any reasonable standard of comparison, it has nonetheless been remarkable. One can tell a similar story about the relative stability of the post-war order. As even some leading offshore balancers have acknowledged, the lack of conflict in regions like Europe in recent decades is not something that has occurred naturally. It has occurred because the “American pacifier” has suppressed precisely the dynamics that previously fostered geopolitical turmoil. That pacifier has limited arms races and security competitions by providing the protection that allows other countries to under-build their militaries. It has soothed historical rivalries by affording a climate of security in which powerful countries like Germany and Japan could be revived economically and reintegrated into thriving and fairly cooperative regional orders. It has induced caution in the behavior of allies and adversaries alike, deterring aggression and dissuading other destabilizing behavior. As John Mearsheimer has noted, the United States “effectively acts as a night watchman,” lending order to an otherwise disorderly and anarchical environment.45 What would happen if Washington backed away from this role? The most logical answer is that both U.S. influence and global stability would suffer. With respect to influence, the United States would effectively be surrendering the most powerful bargaining chip it has traditionally wielded in dealing with friends and allies, and jeopardizing the position of leadership it has used to shape bilateral and regional agendas for decades. The consequences would seem no less damaging where stability is concerned. As offshore balancers have argued, it may be that U.S. retrenchment would force local powers to spend more on defense, while perhaps assuaging certain points of friction with countries that feel threatened or encircled by U.S. presence. But it equally stands to reason that removing the American pacifier would liberate the more destabilizing influences that U.S. policy had previously stifled. Long-dormant security competitions might reawaken as countries armed themselves more vigorously; historical antagonisms between old rivals might reemerge in the absence of a robust U.S. presence and the reassurance it provides. Moreover, countries that seek to revise existing regional orders in their favor—think Russia in Europe, or China in Asia—might indeed applaud U.S. retrenchment, but they might just as plausibly feel empowered to more assertively press their interests. If the United States has been a kind of Leviathan in key regions, Mearsheimer acknowledges, then “take away that Leviathan and there is likely to be big trouble.”46 Scanning the global horizon today, one can easily see where such trouble might arise. In Europe, a revisionist Russia is already destabilizing its neighbors and contesting the post-Cold War settlement in the region. In the Gulf and broader Middle East, the threat of Iranian ascendancy has stoked region-wide tensions manifesting in proxy wars and hints of an incipient arms race, even as that region also contends with a severe threat to its stability in the form of the Islamic State. In East Asia, a rising China is challenging the regional status quo in numerous ways, sounding alarms among its neighbors—many of whom also have historical grievances against each other. In these circumstances, removing the American pacifier would likely yield not low-cost stability, but increased conflict and upheaval. That conflict and upheaval, in turn, would be quite damaging to U.S. interests even if it did not result in the nightmare scenario of a hostile power dominating a key region. It is hard to imagine, for instance, that increased instability and acrimony would produce the robust multilateral cooperation necessary to deal with transnational threats from pandemics to piracy. More problematic still might be the economic consequences. As scholars like Michael Mandelbaum have argued, the enormous progress toward global prosperity and integration that has occurred since World War II (and now the Cold War) has come in the climate of relative stability and security provided largely by the United States.47 One simply cannot confidently predict that this progress would endure amid escalating geopolitical competition in regions of enormous importance to the world economy. Perhaps the greatest risk that a strategy of offshore balancing would run, of course, is that a key region might not be able to maintain its own balance following U.S. retrenchment. That prospect might have seemed far-fetched in the early post-Cold War era, and it remains unlikely in the immediate future. But in East Asia particularly, the rise and growing assertiveness of China has highlighted the medium- to long-term danger that a hostile power could in fact gain regional primacy. If China’s economy continues to grow rapidly, and if Beijing continues to increase military spending by 10 percent or more each year, then its neighbors will ultimately face grave challenges in containing Chinese power even if they join forces in that endeavor. This possibility, ironically, is one to which leading advocates of retrenchment have been attuned. “The United States will have to play a key role in countering China,” Mearshimer writes, “because its Asian neighbors are not strong enough to do it by themselves.”48 If this is true, however, then offshore balancing becomes a dangerous and potentially self-defeating strategy. As mentioned above, it could lead countries like Japan and South Korea to seek nuclear weapons, thereby stoking arms races and elevating regional tensions. Alternatively, and perhaps more worryingly, it might encourage the scenario that offshore balancers seek to avoid, by easing China’s ascent to regional hegemony. As Robert Gilpin has written, “Retrenchment by its very nature is an indication of relative weakness and declining power, and thus retrenchment can have a deteriorating effect on relations with allies and rivals.”49 In East Asia today, U.S. allies rely on U.S. reassurance to navigate increasingly fraught relationships with a more assertive China precisely because they understand that they will have great trouble balancing Beijing on their own. A significant U.S. retrenchment might therefore tempt these countries to acquiesce to, or bandwagon with, a rising China if they felt that prospects for successful resistance were diminishing as the United States retreated.50 In the same vein, retrenchment would compromise alliance relationships, basing agreements, and other assets that might help Washington check Chinese power in the first place—and that would allow the United States to surge additional forces into theater in a crisis. In sum, if one expects that Asian countries will be unable to counter China themselves, then reducing U.S. influence and leverage in the region is a curious policy. Offshore balancing might promise to preserve a stable and advantageous environment while reducing U.S. burdens. But upon closer analysis, the probable outcomes of the strategy seem more perilous and destabilizing than its proponents acknowledge.

#### They surrender the geopolitical benefits of space dominance as a novel military technology---unconstrained freedom of action in space enables crisis management and bargaining that prevents large-scale war and threats to international order

Jeremy Rabkin 17, Professor of Law at George Mason University; and John Yoo, Professor of Law at the University of California-Berkeley, 2017, Striking Power: How Cyber, Robots, and Space Weapons Change the Rules of War, p. 195-196

The potential for space warfare has led to calls to ban the “militarization” of space. Such efforts began as early as the Outer Space Treaty of 1967, which declares its purpose “to promote international co-operation in the peaceful exploration and use of outer space.”5 The Treaty forbids the stationing of nuclear weapons (and other WMD) in orbit and bans military’ installations or operations on the moon and other celestial bodies.6 The Treaty also forbids any nation from claiming sovereignty over the moon and planets or even the space above their territory (unlike airspace, for example). Ever since, some have argued that space must be an arms- free zone, and any use of space for military’ purposes, even non- aggressive ones, violates international law.7 The United Nations General Assembly has repeatedly passed resolutions “to prevent an arms race in outer space.”8 Some scholars argue that the U.N. Charter’s ban on the use of force, except for self-defense or Security Council authorization, must also apply to outer space.9 They hope that international agreements and cooperation can head off the U.S. and other great powers from their quests for military supremacy in space. “The United States has by choice and by overconfidence bordering on folly embarked upon a course that relies primarily on technology, including space weapons, to protects its space assets, rather than diplomacy and cooperation, which had been the cornerstones of U.S. policy until the Reagan administration.”10

In this chapter, we argue against adopting any broad prohibition on the use of force in space. At the level of legal doctrine, the great powers have already carefully crafted treaties to limit a nuclear arms race in outer space. But at the same time they have left open significant routes for other military uses of space. Current law, for example, does not prohibit the passage of weapons through space, such as ballistic missiles, the stationing of reconnaissance satellites, or the basing of conventional weapons in orbit. We believe that states can use force in these ways to achieve the same goals s

et out in the cyber and robotics chapters: for self-defense, to pursue terrorist groups, to stop international crises, and to resolve disputes between states. Combat in space raises the same questions as other technologies, due to the integration of civilian and military networks in space, but also realizes the same benefits: greater precision in attack, a reduction in battle casualties, and clearer negotiations between states to settle their controversies. Nations can coordinate to place certain areas of space off limits to occupation, rendering them akin to the legal status of Antarctica. But it would deny reality to expect the great powers to ignore the military and technological advantages made possible by space.