# 1NC

## Off

### 1NC – T

#### Interpretation—the aff may not specify medicines

#### Bare plurals imply a generic “rules reading” in the context of moral statements

Cohen 1 — (Ariel Cohen, Professor of Linguistics @ Ben-Gurion University of the Negev, PhD Computational Linguistics from Carnegie Mellon University, “On the Generic Use of Indefinite Singulars”. Journal of Semantics 18: 183-209, Oxford University Press, 2001, accessed 12-7-20, HKR-AM) \*\*BP = bare plurals

According to the rules and regulations view, on the other hand, generic sentences do not get their truth or falsity as a consequence of properties of individual instances. Instead, generic sentences are evaluated with regard to rules and regulations, which are basic, irreducible entities in the world. Each generic sentence denotes a rule; if the rule is in effect, in some sense (different theories suggest different characterizations of what it means for a rule to be in effect), the sentence is true, otherwise it is false. The rule may be physical, biological, social, moral, etc. The paradigmatic cases for which this view seems readily applicable are sentences that refer to conventions, i.e. man-made, explicit rules and regulations, such as the following example (Carlson 1995: 225):

(40) Bishops move diagonally.

Carlson describes the two approaches as a dichotomy: one has to choose one or the other, but not both. One way to decide which approach to choose is to consider a case where the behavior of observed instances conflicts with an explicit rule. Indeed, Carlson discusses just such a case. He describes a supermarket where bananas sell for $0.49/lb, so that (41a) is true. One day, the manager decides to raise the price to $1.00/lb. Immediately after the price has changed, claims Carlson, sentence (41a) becomes false and sentence (41b) becomes true, although the overwhelming majority of sold bananas were sold for $0.49/lb.

(41) a. Bananas sell for $0.49/lb.

b. Bananas sell for $1.00/lb.

Consequently, Carlson reaches the conclusion that the rules and regulations approach is the correct one, whereas the inductivist view is wrong.

While I share Carlson’s judgements, I do not accept the conclusion he draws from them. Suppose the price has, indeed, changed, but the supermarket employs incompetent cashiers who consistently use the old price by mistake, so that customers are still charged $0.49/lb. In this case, I think there is a reading of (41a) which is true, and a reading of (41b) which is false. These readings are more salient if the sentence is modified by expressions such as actually or in fact:

(42) a. Bananas actually sell for $0.49/lb.

b. In fact, bananas sell for $1.00/lb.

BP generics, I claim, are ambiguous: on one reading they express a descriptive generalization, stating the way things are. Under the other reading, they carry a normative force, and require that things be a certain way. When they are used in the former sense, they should be analysed by some sort of inductivist account; when they are used in the latter sense, they ought to be analysed as referring to a rule or a regulation. The respective logical forms of the two readings are different; whereas the former reading involves, in some form or another, quantification, the latter has a simple predicate-argument structure: the argument is the rule or regulation, and the predicate holds of it just in case the rule is ‘in effect’.

#### Rules readings are always generalized – specific instances are not consistent. Cohen 01

Ariel Cohen (Ben-Gurion University of the Negev), “On the Generic Use of Indefinite Singulars,” Journal of Semantics 18:3, 2001 https://core.ac.uk/download/pdf/188590876.pdf

In general, as, again, already noted by Aristotle, rules and definitions are not relativized to particular individuals; it is rarely the case that a specific individual¶ forms part of the description of a general rule.¶ Even DPs of the form a certain X or a particular X, which usually receive¶ a wide scope interpretation, cannot, in general, receive such an interpretation in the context of a rule or a definition. This holds of definitions in general, not¶ only of definitions with an IS subject. The following examples from the Cobuild¶ dictionary illustrate this point:¶ (74) a. A fanatic is a person who is very enthusiastic about a particular¶ activity, sport, or way of life.¶ b. Something that is record-breaking is better than the previous¶ record for a particular performance or achievement.¶ c. When a computer outputs something it sorts and produces information as the result of a particular program or operation.¶ d. If something sheers in a particular direction, it suddenly changes¶ direction, for example to avoid hitting something.

#### That outweighs—only our evidence speaks to how bare plurals are interpreted in the context of normative statements like the resolution. This means throw out aff counter-interpretations that are purely descriptive

#### Violation—they specified CRISPR—

#### Vote neg:

#### 1] Precision – if we win definitions the aff is not topical. The resolution is the only predictable stasis point for dividing ground—any deviation justifies the aff arbitrarily jettisoning words in the resolution at their whim which decks negative ground and preparation because the aff is no longer bounded by the resolution.

**2] Limits: unlimited topics incentivize obscure affs that negs won’t have prep on – limits are key to reciprocal prep burden– also means there is no universal DA to spec affs**

**3] TVA solves – read the aff as advantage – most authors advocate for a change in WTO policy or TRIPS**

**4] No PICs offense – potential neg abuse doesn’t justify aff abuse because that would permit infinite 1AC abuse**

### 1NC – T

#### Interp – “medicines” prevent, diagnose, or treat harms

**MRS 20** [(MAINE REVENUE SERVICE SALES, FUEL & SPECIAL TAX DIVISION) “A REFERENCE GUIDE TO THE SALES AND USE TAX LAW” <https://www.maine.gov/revenue/sites/maine.gov.revenue/files/inline-files/Reference%20Guide%202020.pdf> December 2020] SS

[Medicines](https://www.lawinsider.com/dictionary/medicines) means antibiotics, analgesics, antipyretics, stimulants, sedatives, antitoxins, anesthetics, antipruritics, hormones, antihistamines, certain “dermal fillers” (such as BoTox®), injectable contrast agents, vitamins, oxygen, vaccines and other substances that are used in the prevention, diagnosis or treatment of disease or injury and that either (1) require a prescription in order to be purchased or administered to the retail consumer or patient; or (2) are sold in packaging.

#### Violation –

#### CRISPR is a platform technology, not a medicine – being relevant for other medical research isn’t sufficient

Editas n/d [Editas Medicine, transnational medical organization focused on gene research and medical innovation. “CRISPR Gene Editing” https://www.editasmedicine.com/crispr-gene-editing/]

CRISPR (pronounced “crisper”) is an acronym for “Clustered, Regularly Interspaced, Short Palindromic Repeats,” and refers to a recently developed gene editing technology that can revise, remove, and replace DNA in a highly targeted manner. CRISPR is a dynamic, versatile tool that allows us to get to and edit nearly any location in the genome, and has the potential to help us develop medicines for people with a wide variety of diseases. We view CRISPR as a “platform” technology because of its ability to target DNA in any cell or tissue.

#### 1] Limits – their model explodes it to medical devices, home remedies, anything that remotely treats and more – only our definition creates a reasonable caselist for medicines while they make prep impossible and wreck engagement

#### 2] Precision – MRS is a legal definition of medicines from codified law and has intent to define which proves we’re right and consistent with topic lit – that determines research burdens and the scope of aff and neg ground

### 1NC – DA

#### Drug price reform coming now – fight is ramping up but Biden has the opportunity

Cancryn 9/9 Cancryn, Adam. Adam Cancryn is a health care reporter for POLITICO Pro, graduate of Washington & Lee University."Biden admin backs direct government drug price negotiations." POLITICO, 9 Sept. 2021, www.politico.com/news/2021/09/09/biden-drug-price-negotiations-510828.

A new Biden administration plan aimed at lowering prescription drug prices endorses giving the government sweeping power to directly negotiate the cost of medicines, calling it one of the key steps Congress could take to make drugs “more affordable and equitable” for all Americans.

The plan — developed by the Department of Health and Human Services and released on Thursday — largely backs Democrats’ ongoing efforts to lower drug prices as part of a $3.5 trillion reconciliation proposal, and mirrors a range of legislative options that both House and Senate lawmakers have floated in recent years.

Those include capping out-of-pocket costs in Medicare Part D, limiting how quickly pharmaceutical companies can hike prices on existing drugs and banning so-called pay-for-delay agreements aimed at blocking generic competition to brand-name drugs.

But the HHS report’s embrace of broad price negotiation is the administration’s latest signal that it’s siding with progressives who have pushed for a far more aggressive approach to slashing pharmaceutical costs.

Under the HHS plan, the government would directly negotiate prices for drugs in Medicare parts B and D, with those prices also being available to private insurance plans and any employers who want to participate.

House Democrats passed a similar provision as part of a major drug pricing bill in 2019. But it never made it into law, and some in the party’s centrist wing have since vowed to oppose drug price negotiation.

Notably, the plan stops short of supporting the use of “march-in rights” that progressives argue empower the government to pull patent rights from a drug that is deemed too expensive. Sen. Elizabeth Warren has long advocated for the approach, and urged HHS to utilize it in an August letter with Sen. Amy Klobuchar and Rep. Lloyd Doggett.

“The Biden Administration has the opportunity to lower the prices of key drugs using these authorities,” the lawmakers wrote to HHS Secretary Xavier Becerra.

The department in its report acknowledged that it has been petitioned to use march-in rights, saying only that it would give them “due consideration.”

The HHS plan also lays out a series of administration actions that the department could take to fulfill what it identified as three “guiding principles:” making drugs more affordable, improving competition within the industry and encouraging innovation.

Those options included testing value-based payment models and boosting cost-sharing support to certain low-income Medicare beneficiaries. It also suggests that improved data collection from insurers and pharmacy benefit managers could give the government better insight into drug pricing, as well as rebates and out-of-pocket spending on prescription medications.

HHS developed the report in response to an executive order that President Joe Biden issued earlier this year aimed at improving competition across a range of industries, including the drug sector.

#### Biden’s PC is key to wrangle democrats and counter pharma lobbying

Johnson 8/12 Johnson, Jake, writer for Alternet . "Joe Biden throws support behind bold reforms to slash drug prices." Alternet, August 12, 2021, www.alternet.org/2021/08/biden-medicare-negotiate-prices.

The powerful industry's public and behind-closed-doors lobbying push is likely to grow more aggressive as congressional Democrats' reconciliation package begins to take shape.

On Wednesday, the Senate approved a $3.5 trillion budget resolution setting the boundaries for the package, and the House is expected to take up and pass the resolution later this month. Once both chambers have passed an identical resolution, congressional committees will begin crafting legislative text.

"We will save taxpayers hundreds of billions by requiring that Medicare negotiate prescription drug prices with the pharmaceutical industry and we will use those savings to expand Medicare by covering the dental care, hearing aids, and eyeglasses that seniors desperately need," Sen. Bernie Sanders (I-Vt.), the chief architect of the budget resolution, said in a statement earlier this week.

But it's far from certain that a Medicare negotiation provision will survive the process of developing the final reconciliation bill, particularly given that a number of Big Pharma-backed House Democrats—including Reps. Scott Peters (D-Calif.) and Jake Auchincloss (D-Mass.)—have recently voiced skepticism about the proposal.

With Republicans unanimously opposed to the reconciliation package, Democrats can afford just a handful of defections in the House and none in the Senate.

Larry Levitt, executive vice president for health policy at the Kaiser Family Foundation, told HuffPost on Thursday that "it's not yet clear how the Democratic leadership will corral the necessary votes for a drug pricing plan, but there's no sign they're backing off."

"An epic battle with the pharmaceutical industry is coming," said Levitt.

In a series of tweets responding to Biden's prescription drug agenda, Levitt wrote that while the president's "proposal doesn't break new policy ground," it "is significant in that he is now using his political capital to push for congressional action at a pivotal moment in the debate."

#### WTO waiver takes time, energy, and political capital away from domestic legislation – big pharma and EU allies

Bhadrakumar 5/9 M K Bhadrakumar is a former Indian diplomat. "Biden’s talk of vaccine IP waiver is political theater." Asia Times, May 9, 2021, asiatimes.com/2021/05/bidens-talk-of-vaccine-ip-waiver-is-political-theater.

On the other hand, Biden, whose political life of half a century was largely spent in the US Congress, is well aware of the awesome clout of the pharmaceutical companies in American politics. From that lobby’s perspective, the patent waiver “amounts to the expropriation of the property of the pharmaceutical companies whose innovation and financial investments made the development of Covid-19 vaccines possible in the first place,” as a senior scholar at the Johns Hopkins Center for Health Security puts it. The US pharmaceutical industry and congressional Republicans have already gone on the offensive blasting Biden’s announcement, saying it undermines incentives for American innovation. Besides, the argument goes, even with the patent waiver, vaccine manufacturing is a complex process and is not like simply flipping a switch. Senator Richard Burr, the top Republican on the US Senate Health Committee, denounced Biden’s decision. “Intellectual property protections are part of the reason we have these life-saving products,” he said. “Stripping these protections only ensures we won’t have the vaccines or treatments we need when the next pandemic occurs.” The Republican senators backed by Republican Study Committee chairman Jim Banks propose to introduce legislation to block the move. Clearly, Biden would rather spend his political capital on getting the necessary legislation through Congress to advance his domestic reform agenda rather than spend time and energy to take on the pharmaceutical industry to burnish his image as a good Samaritan on the world stage. Conceivably, Biden could be counting on the “text-based negotiations” at the WTO dragging on for months, if not years, without reaching anywhere. The US support for the waiver could even be a tactic to persuade pharmaceutical firms to back less drastic steps like sharing technology and expanding joint ventures to boost global production quickly. So far Covid-19 vaccines have been distributed primarily to the wealthy countries that developed them, while the pandemic sweeps through poorer ones such as India, and the real goal is, after all, expanded vaccine distribution. Biden is well aware that there will be huge opposition to the TRIPS waiver from the United States’ European allies as well. The British press has reported that the UK has been in closed-door talks at the World Trade Organization in recent months along with the likes of Australia, Canada, Japan, Norway, Singapore, the European Union and the US, who all opposed the idea.

#### Drug costs key to Democratic 2022 Midterms

Fuchs et al 9/2 Fuchs, Hailey, et al. Hailey Fuchs is a reporter at POLITICO. Alice Ollstein is a health care reporter for POLITICO Pro, covering the Capitol Hill beat, BA from Oberlin. Megan Wilson is a reporter for POLITICO. "Drug industry banks on its Covid clout to halt Dems’ push on prices." POLITICO, 2 Sept. 2021, [www.politico.com/news/2021/09/02/drug-prices-democrats-lobbying-508127](http://www.politico.com/news/2021/09/02/drug-prices-democrats-lobbying-508127).

As the fight on and off Capitol Hill ramps up in the coming weeks, the White House is fully aware that tackling drug costs could be pivotal for Biden’s legacy and Democrats’ efforts to hold onto their House and Senate majorities. And it’s particularly salient after Trump’s pledges to take on the industry largely fell flat.

#### Leads to rampant Trumpism and populism

Kilgore 8/31 Kilgore, Ed. Ed Kilgore is a political columnist for New York magazine and the managing editor of the Democratic Strategist, an online magazine. "The Midterms Could Give the Senate a MAGA Makeover." Intelligencer, 31 Aug. 2021, nymag.com/intelligencer/2021/08/2022-midterms-could-add-more-trump-republicans-to-senate.html.

Those hoping or fearing that Trumpism will become consolidated as the ideological creed of the Republican Party going forward are understandably focused on the 45th president’s activities and utterances. But there are growing signs that his malignant worldview is developing a life of its own, and will take a giant leap toward control of the GOP in 2022 Senate primaries to replace retiring Establishment types. As Politico’s Marc Caputo observes: “The 2022 midterms could usher in a wave of full-spectrum MAGA supporters who would turn the GOP conference an even deeper shade of red — and make the Senate a lot more like the fractious House.”

Five Republican senators have already announced retirements next year: Missouri’s Roy Blunt, North Carolina’s Richard Burr, Ohio’s Rob Portman, Alabama’s Richard Shelby, and Pennsylvania’s Pat Toomey. Burr and Toomey voted to convict Trump in the 2021 impeachment trial, an obviously unforgivable offense to the GOP base. Blunt, Burr, and Portman also supported the bipartisan infrastructure bill that recently passed in the Senate, to the great fury of Republicans who viewed this action as either a betrayal of True Conservatism or as a larcenous misappropriation of a triumph denied to America’s real president. As the chairman of the socialistic Appropriations Committee, a close friend of Mitch McConnell, and a supporter of the treacherous Jeff Sessions’s 2018 comeback bid, Shelby is deemed unacceptably swampy.

All of these less-than-Trumpy lawmakers could be replaced (as Senate nominees if not necessarily elected U.S. senators) by loud-and-proud proponents of the America First cause, reports Caputo:

The three top candidates to succeed Sen. Richard Burr in North Carolina have all denounced his vote to convict Trump in his last impeachment trial. In Pennsylvania, the four leading candidates to succeed Sen. Pat Toomey — who, like Burr, was formally rebuked by the state party for his impeachment vote — have embraced Trump’s calls for an “audit” of the state’s presidential election results, to varying degrees …

The bipartisan infrastructure deal Ohio’s Sen. Rob Portman helped broker? Six of the top GOP candidates vying to replace him have rejected it.

In some of these states with retiring “moderates,” there are Trumpier-than-thou competitions underway (notably in Ohio, where Josh Mandel, Jane Timken, and J.D. Vance are fighting for the 45th president’s favor). In others, one or more major candidates are going maximum MAGA to an extent that makes Republicans nervous about their general-election prospects in a year where there is no margin for error if the GOP is to retake Senate control. In the latter category is Missouri, where disgraced former Governor Eric Greitens may be too Trumpy for Trump himself (the former president is reportedly annoyed that his son’s significant other, Kimberly Guilfoyle, has been named national campaign chair for Greitens). In Alabama, the ever-fiery Mo Brooks, who spearheaded the challenge to Joe Biden’s Electoral College victory in Congress on January 6 and spoke at the notorious “Stop the Steal” rally on the National Mall that very day, recently benefited from a Trump attack on Shelby and his designated successor Katie Britt: “I see that the RINO Senator from Alabama, close friend of Old Crow Mitch McConnell, Richard Shelby, is pushing hard to have his ‘assistant’ fight the great Mo Brooks for his Senate seat.”

The potential MAGA makeover of the Senate Republican Conference isn’t limited to the states of the five previously announced retirees. Trump nemesis Lisa Murkowski of Alaska is up next year and has not announced her intentions. If she does run, Alaska’s new top-four primary system all but guarantees the incumbent a spot in the general election, but she is vulnerable to a loss of Republican support to Kelly Tshibaka, a former state-level administrator who already has Trump’s endorsement (Sarah Palin also keeps hinting at participation in this contest as well). Eighty-seven-year-old Chuck Grassley’s future is also in limbo, and even if he runs for an eighth term in 2022, he will be opposed by state senator Jim Carlin, a Trump bravo who wants to investigate nonexistent 2020 election fraud and vows to fight “mammoth challenges from China, the disintegration of families, the decline of rural Iowa and the threat to free speech from big tech monopolies.” And South Dakota’s John Thune, who has drawn the ire of Trump supporters by mocking his 2020 Big Lie, could step down or attract a primary challenger next year (Governor Kristi Noem has said she’s not interested in taking down Thune for Trump, but could change her mind).

Any way you slice it, it’s very likely Senate Republicans overall will be less “traditional” in their conservatism in 2023. Whether or not they win back control of the chamber in the midterms, that’s bad news for any residual bipartisan plans Joe Biden might have for the balance of his first term, and good news for Trump or potential successors to the leadership of the right-wing “populist” political movement he has created.

#### Extinction

Calland 20 Calland, Richard. "Countering climate denialism requires taking on right-wing populism. Here's how." Conversation February 12, 2020, theconversation.com/countering-climate-denialism-requires-taking-on-right-wing-populism-heres-how-131693.

Increasingly, there is an understanding that the climate emergency is not an environmental problem. It has grave ecological implications, but it’s a human development issue above all. And, it has profound implications for technology and infrastructure, for the world of investment and finance, and for global security.

To make sense of these challenges and work towards solutions, it is necessary to understand these links, tensions and trade-offs. This is why the international research organisation Future Earth has produced Our Future on Earth 2020. It’s a landmark new report of a dozen sustainability-focused essays. They are written by experts across academia and across the globe.

The consensus among scientists is that we are now in the eleventh hour. That humanity has just ten years to take the transformational steps necessary to avoid catastrophe.

Political analysis, without partisanship

Will it get its act together?

Unfortunately, there is a harsh political economy. My own contribution to the Our Future on Earth report focuses on the impact of the global rise in right-wing populism on climate action. This breed of politics exploits peoples’ fears during times of economic decline and growing inequality, and focuses on nationalist tendencies.

Right-wing populism and denialism

In a complex world facing complex problems, it is seductive for politicians to identify a single culprit (like immigrants) or an evil force (like universal healthcare) to blame for the erosion of society, the economy, and the welfare of the masses.

This is hardly ever true, but it is compelling. Take the bewilderingly complicated set of relationships between food, energy, urban infrastructure, and exponential demographic growth and change (at least in the developing world). Climate change and its effects are perhaps the epitome of a complex issue of interlinked social, political, and physical forces. That makes it an easy target for this sort of denialism.

So, populism ends up denying not just the science of climate change but also the complexity of the entire issue – which is critical for both diagnosing the problem and determining the prognosis and the prescription.

Populism strips issues of nuance, and thereby obstructs progress.

A 2019 study mapping the climate agendas of right-wing populist parties in Europe contains some revealing evidence: two thirds of right-wing populist members of the European Parliament “regularly vote against climate and energy policy measures”. Half of all votes against resolutions on climate and energy in the European Parliament come from right-wing populist party members.

Of the 21 right-wing populist parties analysed, seven were found to

deny climate change, its anthropogenic causes, and negative consequences.

According to estimates based on the World Resources Institute’s global greenhouse-gas emissions data, about 30% of global emissions come from countries with populist leaders.

At the very moment when global cooperation is essential if climate action is to be effective, many of the leaders of these right-wing populist forces are trying to dismantle or weaken multilateral organisations such as the United Nations or the European Union.

These political groups threaten to derail progress on the global response to climate change, and on new thinking about how to rewire the economy in pursuit of a more sustainable world.

More hopefully, as grassroots organisations emerge as a potentially strong, countervailing force, the trick will be to effectively connect these movements to matters of global social justice. They should also be given enough coherence to be effective. Thus, again, shifting the lens for the climate crisis away from an environmental preoccupation towards human development and social justice.

For example, how can Thunberg and the student strike movement in the global north connect with the 1.6 million children that are displaced in Malawi, Zimbabwe, and Mozambique from cyclones? Such connections need to be made to turn these nascent movements into powerful advocates for climate justice.

Tipping the scale

Regardless of whether the political will needed take transformational action to drastically reduce carbon emission and adapt economies and societies, especially in the global South, will be summoned by 2030, it is clear that by the end of this century life on earth will be very different to how it is now. It will certainly be more difficult and dangerous.

This applies to everyone, but especially the poorest and most vulnerable members of a human society that is set to peak at around 9,8 billion by 2050 (up from the current 7,8bn).

This is the human development challenge for sub-Saharan Africa.

It’s not all doom and gloom. There are huge opportunities amid the grave threats. A first step to responding appropriately – individually and collectively – is understanding that the challenge is multi-dimensional. Only then can a multi-dimensional strategy be executed, across sectors and across national boundaries.

But it is likely that the greatest impediment to taking action will not be technological know-how or even raising the money required. Instead it will be the lack of enough political will, given the obstructionism of right-wing populists in power around the globe.

Hence, a political struggle will need to be won. And the fight for climate justice in the face of right-wing populist climate denialism is a titanic one.

Trump-like trajectories into the “post-truth” world of climate change denial, charged by the amplifying impact of social media, distract from and obstruct the necessary action. Yet despite its flaws, the digital age presents a huge opportunity to impose a counter-narrative, and for recruiting new activists.

People can connect more easily across seas and time zones. Climate denialism can be rebutted and populist rhetoric rebuffed. Protests can be arranged quickly. And the young will do it best, not least because they have the deepest vested interest of all: their future is at stake.

## Case

### 1NC – Solvency

#### Gene editing decouples Ghana’s cocoa industry from climate change and enables its survival

Gakpo 19 Joseph Opoku Gakpo, June 13, 2019 "Gene editing could save Ghana’s cocoa from extinction, scientists say - Alliance for Science." Alliance for Science, allianceforscience.cornell.edu/blog/2019/06/gene-editing-save-ghanas-cocoa-extinction-scientists-say.

A new study warns that climate change could drive Ghana’s cocoa (cacao) industry to extinction — a fate that scientists say could be reversed through gene editing. A study by the Climate Change Unit of Ghana’s Environmental Protection Agency (EPA) and the Cocoa Research Institute of Ghana is predicting the country’s environment will no longer be conducive to growing cocoa by 2080 if current climate change trends continue. The study supports a 2017 prediction by scientists that cocoa could go extinct across the world in 40 years. Ghana is the world’s second largest producer of cocoa, which is the main ingredient in the production of chocolate. Cocoa is the primary ingredient in chocolate. The Ghana study found that the reduced rainfall and increased temperatures resulting from climate change will make the country’s cocoa belt unsuitable for production of the crop by 2080, Angelina Mensah, public affairs director of Ghana’s Environmental Protection Agency, told a Ghana newspaper. “In the study, it was identified that due to warm temperature conditions being experienced currently in the country, the dry season, which spans from September to March, has exacerbated. This means cocoa, which is very sensitive to drought, in terms of growth and yields, would be affected,” she explained. “(Soil) moisture level in the years ahead will not be adequate for profitable cocoa production. Unless immediate interventions are rolled out to tackle climate change, cocoa would only be in the history books for the next generation to read.” If such interventions are not forthcoming, gene editing could be the solution to breeding new cocoa varieties that can survive the changing conditions. “Gene editing has the potential to accelerate the breeding of new cocoa varieties with resistance to climate stress and pests and diseases,” said Mark Guiltinan, professor of molecular biology at Pennsylvania State University, in an interview with the Alliance for Science. He noted that gene editing has already been used to develop other crops with improved resistance to some of the same climate-related stresses that cocoa is facing. “A key advantage of this approach is that it could be used to edit varieties with special characteristics and locally adapted to environmental conditions, which will avoid the very time-consuming process of moving traits from one access into another, which could take decades,” Guiltinan added. Ongoing work with CRISPR Guiltinan is leading a research project at Penn State that will help produce better cocoa plants using the CRISPR-Cas9 gene editing tool. CRISPR (clustered regularly interspaced short palindromic repeats) is a DNA sequence found in single-celled organisms. It can be used to introduce an enzyme called Cas9 in organisms to precisely edit their genomes and delete, silence or replace specific DNA regions. The researchers have used CRISPR-Cas9 to knock out a cocoa gene called TcNPR3 that suppresses the plant’s disease response. The researchers also created gene-edited cocoa embryos which they hope will grow into mature trees to test the effectiveness of this approach at a whole plant level. “We have regenerated some CRISPR-mediated gene-edited plants with mutations in a repressor of the pathogen defense system,” Guiltinan said. “These plants show strong resistance in lab tests. The plants are now about 2 feet tall and growing fast. Soon we will be able to perform further testing.” Low cocoa productivity in Africa In addition to climate change, cocoa growers in developing nations are facing other challenges, including lack of irrigation and the inability to purchase inputs like pesticides and fertilizers. In Ghana, cocoa orchards are also being displaced by more profitable rubber plantations. An estimated 30 percent of all cocoa produced in West Africa is destroyed by disease before it can get off the farm, which creates an enormous financial burden for farmers. In Ghana, the world’s second-largest cocoa producing country, state regulator COCOBOD revised the expected cocoa output for 2019 downward earlier this year because of an increase in pest attacks and disease. The increased pest and disease attacks have have been exacerbated partly by climate change, which encourages the rampant spread of disease-causing organisms that become more active in warmer weather. The Cocoa Swollen Shoot Virus (CSSV) disease, for example, has destroyed more than 200 million cocoa trees in West Africa and continues to spread on farms in the sub-region. Although it will take some time, Guiltinan is confident that gene editing technology will in due course be able to help farmers deal with diseases on cocoa farms. “The cocoa farmers around the world should know that it will be many years before these efforts find their way to their fields because on top of the technical challenges, there are also legal regulations and the public acceptance of these products that need to be addressed as well,” he said. “In the meantime, we are working to develop transgene-free gene editing in cacao and we are targeting several other genes for traits of interest, such as disease-resistance and quality traits. One trait of special interest for West Africa is CSSV resistance.” If all goes well, Guiltinan said, “I see a strong possibility of the first gene-edited cacao being ready for farmers in about five to 10 years.”

#### Destroys Ghana’s rainforest biodiversity

Omponsah and Tayki 20 Amponsah, Owusu [ Senior Lecturer, Department of planning, Kwame Nkrumah University of Science and Technology (KNUST) ] and Stephen Appiah Takyi [ Lecturer, Planning, Kwame Nkrumah University of Science and Technology (KNUST) ]. "Ghana's cocoa production relies on the environment, which needs better protection." Conversation, April 5, 2020, theconversation.com/ghanas-cocoa-production-relies-on-the-environment-which-needs-better-protection-134557.

Cocoa production has been the backbone of Ghana’s economy since the 1870s. It dominates the agricultural sector and contributes about 30% of the country’s export earnings. Cocoa employs about 800,000 farmers directly. It also supports the livelihoods of others in the commerce, service and industrial sectors of the Ghanaian economy. This makes it an important generator of revenue. Most studies of cocoa production have focused on its economic benefits. Less attention has been paid to its environmental impacts. But cocoa farming has enormous environmental consequences. This is because it can only take place in Ghana’s forest agro-ecological zone. In this zone, the rainfall is ideal for cocoa at 1500-2000mm, with a dry season of about four months. Also, cocoa trees thrive under shade. But with rising demand for cocoa on the world market, large areas of forest cover have been lost to its cultivation. The expansion and cultivation of new parcels of forest land, the replacement of old cocoa trees and the abandonment of old cocoa farmlands due to loss of soil fertility, have depleted the country’s forest cover. Between 2010 and 2015, 117,240 hectares of forest were cleared. Do experts have something to add to public debate? This loss is a threat to the very industry that is causing it. Over the years researchers, policy makers and practitioners in Ghana’s agricultural and environmental sectors have underestimated the environmental impacts of agricultural activities such as cocoa production. The link between low productivity in the cocoa sector and environmental impacts is contributing to uncertainty in the sector’s long-term sustainability. There is, therefore, an urgent need for more research, policies and strategies that will help minimise the environmental impacts of cocoa production. We undertook a study to assess these environmental impacts. We focused particularly on practices such as the clearing of cocoa farms and the use of insecticides and fertilisers.

**Key to prevent extinction**

**Owusu-Afriyie, 2 ---** Aburi Botanic Gardens staff

(George, "The Potential Role of African Botanic Gardens in Environmental Awareness Programmes and the Need to be Involved," 10-1-2, www.bgci.org/education/1703/, accessed 1-15-12)

Today some of the 60 botanic gardens and arboreta in Africa are among those botanic gardens that are leading the worldwide fight to save plant diversity, as well as creating an understanding and awareness for the promotion of methods of conservation and development of plant resources. Despite financial constraints, a number of African botanic gardens are implementing major reforms under the auspices of Botanic Gardens Conservation International, to enable them play a more purposeful role in conservation. The Creation of Environmental Awareness Among the Populace **African's biological diversity is** not only of continental economic importance but is also **of global significance**. Unfortunately, existing arrangements for the utilization of the continent's biodiversity cannot be considered sustainable and this is having serious repercussions on development programmes in Africa. The rich plant diversity in Africa is indiscriminately harvested for a number of purposes including: cultivation and production of food and cash crops for domestic and external interests herbal medicine construction. Luckily, in spite of their continued exploitation, botanic gardens and other habitats still contain some of the **richest assemblages of plant life known on this planet.** Thus African gardens are appropriate institutions with the necessary capacities and plant diversities for use in environmental awareness programmes. The success of environmental awareness programmes will largely depend upon the communities' understanding of the functioning of the environment, the problems it presents, and their expected contribution to its protection and improvement. The pursuit of conservation-oriented practices to halt the degradation and extinction of plant resources will depend not only on their acceptability, but also on the active support and involvement of the populace at large. In addition, people need to be well informed, sensitized and motivated towards adopting specific plant conservation practices and the sustainable use of plant resources. It is well known that plants are the **key to life on Earth** and the **prime element in biodiversity**. They dominate our landscape, providing the framework of natural ecosystems that provide the habitats for animal species and **make life on earth possible for humans** as well as other living beings. Yet in spite of this common knowledge of the importance of plants in human survival, plant life is being lost at an increasing rate not only in Africa, but also throughout the whole world. This is the result of economic pressure on the developing countries and careless human activities. Until unfair transactions, particularly in trading systems, are addressed and humans made the centre of attention, only a limited impact will be made in our effort to control the excessive utilization of resources and the regenerability of the various life-sustaining systems on the Earth.

**Prefer the specificity our evidence to African biodiversity- its key to prevent extinction- key region and species to global life-support systems**

**Richard, 10** -- science and technology editor

(Michael Graham, "The True Size and Importance of Africa," 10-13-10, www.treehugger.com/clean-technology/the-true-size-and-importance-of-africa-map.html, accessed 1-16-12)

Don't Overlook Africa! Because of the way flat maps distort the size of countries (the closer they are to the poles, the more distorted they are), most people don't really know just how big the African continent is. This leads many people - and the smart and powerful aren't immune to this - to underestimate Africa's importance. The map above shows just how wrong our perception can be (unless we've already seen a map like this before). It shows that you could fit the whole USA, China, India, Spain, France, Germany, the UK, Italy, Switzerland, Japan, and Eastern Europe, inside of Africa and still have some room left. We're All Inter-Connected Africa matters a lot because of the number of people who live there (about 1 billion as of 2005, with projections of 2 billion by 2050), but also because of the **number of indigenous animal and plant species**, because of the vast expanses of land that aren't being protected, because of the huge ecosystems that are uniquely found there, because of the impact that it can have on the global climate (especially deforestation and desertification), because of all the solar power potential and other natural resources, etc. It is one of the **key regions** that needs to improve on many levels for the welfare of its people and **to safeguard the integrity of our planet's life-support systems.** Africa is too often the forgotten continent, but it shouldn't be, and humanitarian problems should make us forget environmental issues because both go hand in hand. The degradation of the environment will affect the most vulnerable people there.

#### No effective gene editing governance, certainly not in the squo – tech evolves too fast, no institutional checks, no one cares

Monast 18 Monast, Jonas J. C. Boyden Gray Distinguished Fellow, Assistant Professor and Director of the Center on Climate, Energy, Environment & Economics at UNC. J.D., Georgetown University (2002) B.A., Appalachian State University (1995). "Governing Extinction in the Era of Gene Editing." NCL Rev. 97 (2018): 1329.

With CRISPR, the critical question is no longer whether humans can alter genes to eradicate some species and make others resilient to factors that may cause extinction. Instead, the questions are whether we should and, if so, under what circumstances. While the potential benefits are profound, CRISPR could also foment similarly profound, and potentially irreversible, negative impacts for the target species and the broader ecosystems in which they exist.10 Existing laws are not designed to grapple with these important value choices. Gene editing raises many of the hallmark challenges with emerging technology governance.11 These recent advances in biotechnology may fall outside the scope of existing regulatory schemes designed for earlier understandings of technologies. They may also require responses by multiple agencies operating under different bodies of law.12 The pace of scientific developments is occurring much faster than traditional regulation can typically respond.13 There are calls for flexibility and adaptability to allow the technologies to evolve.14 Continued research is necessary to develop new, potentially beneficial uses for the technology, but the research also creates unknown risks. The technology is widely accessible, allowing individual research labs to create and release edited organisms with potentially wide-ranging impacts.15 Nonbinding soft law measures, such as professional standards and codes of conduct, will play important roles in overseeing research and development of CRISPR-edited organisms. Gene editing implicates diverse and deep- seated values, but engaging a broad range of stakeholders is difficult. Developers seek rapid regulatory approval for releasing new genetically engineered (“GE”) organisms.

### 1NC – Innovation

#### No way CRISPR solves all disease - lifestyle factors, mistakes

Radcliffe 17 Radcliffe, Shawn. Shawn Radcliffe is a science writer and yoga teacher in Ontario, Canada. "Will Gene Editing Allow Us to Rid the World of Diseases?" Healthline, 26 Aug. 2017, www.healthline.com/health-news/will-gene-editing-allow-us-to-rid-world-of-diseases.

CRISPR-Cas9 is a powerful tool, but it also raises several concerns. “There’s a lot of discussion right now about how best to detect so-called ‘off-target effects,’” said Hochstrasser. “This is what happens when the [Cas9] protein cuts somewhere similar to where you want it to cut.” Off-target cuts could lead to unexpected genetic problems that cause an embryo to die. An edit in the wrong gene could also create an entirely new genetic disease that would be passed onto future generations. Even using CRISPR-Cas9 to modify mosquitoes and other insects raises safety concerns — like what happens when you make large-scale changes to an ecosystem or a trait in a population that gets out of control. There are also many ethical issues that come with modifying human embryos. So will CRISPR-Cas9 help rid the world of disease? There’s no doubt that it will make a sizeable dent in many diseases, but it’s unlikely to cure all of them any time soon. We already have tools for avoiding genetic diseases — like early genetic screening of fetuses and embryos — but these are not universally used. “We still don’t avoid tons of genetic diseases, because a lot of people don’t know that they harbor mutations that can be inherited,” said Hochstrasser. Some genetic mutations also happen spontaneously. This is the case with many cancers that result from environmental factorsTrusted Source such as UV rays, tobacco smoke, and certain chemicals. People also make choices that increase their risk of heart disease, stroke, obesity, and diabetes. So unless scientists can use CRISPR-Cas9 to find treatments for these lifestyle diseases — or genetically engineer people to stop smoking and start biking to work — these diseases will linger in human society. “Things like that are always going to need to be treated,” said Hochstrasser. “I don’t think it’s realistic to think we would ever prevent every disease from happening in a human.”

#### Gene editing wrecks genetic diversity – extinction

Christian Wolfe 9, Associate Editor for American Association of Inside Sales Professionals, "Human Genetic Diversity and the Threat to the Survivability of Human Populations", https://www.ohio.edu/ethics/2003-conferences/human-genetic-diversity-and-the-threat-to-the-survivability-of-human-populations/

Through advances in reproductive technologies humans will eventually have the ability to utilize nearly fully artificial selection on human populations. These technologies raise many ethical and theological concerns. I will address one of the pragmatic ethical concerns, the potential loss of genetic diversity. Genetic diversity has a direct relation to the fitness and survivability of various species and populations; as genetic diversity decreases within a population, so does the fitness and survivability of that population. An examination of the genetic diversity argument (GDA) reveals that there is not strongly persuasive evidence regarding the effects on genetic diversity of the reproductive technologies on human populations. The only method available to produce the required evidence is through a very complex form of human experimentation. The type of human experiment that would produce the evidence is incompatible with present ethical codes of conduct. Therefore, any implementation of these technologies on human populations should be banned. There are many emerging technologies that could potentially affect genetic diversity. These include genetic testing and screening, selective breeding, population control, sterilization, selective abortion, embryo testing and selection, sperm donation, egg donation, embryo donation, surrogate pregnancy, fertility drugs, contraception, cloning embryos, and germ line or somatic cell manipulation (Resnik 2000, 454). Each of these reproductive technologies affects the composition of the human gene pool by increasing or decreasing the frequency of different genotypes or combinations of genotypes (Resnik 2000, 454). The germ-cell line, or just germ-line, constitutes a cell line through which genes are passed from generation to generation (World of Genetics 322). Germ-line therapy is often differentiated from somatic cell therapy, which is the alteration of non-reproductive cells. This distinction is not as clear as much of the literature supposes, but the problems with the germ-line/somatic cell distinction are beyond the scope of this paper. The focus of this paper includes the screening of embryos with the possibility of destruction of certain embryos, the modification of DNA (deoxyribonucleic acid) of early stage embryos through in-vitro fertilization (IVF), and the modification of parent gametes (Zimmerman 594-5). These technologies pose the clearest threat to genetic diversity of human populations. Genetic testing and screening examines the genetic information contained in a person’s cells to determine whether that person has or will develop a certain disease, is more susceptible to certain environmental risks, or could pass a disease on to his or her offspring (World 305). Parents could subject themselves to testing to determine whether or not to reproduce based on the likelihood of their potential children inheriting their genetic maladies. Also, embryos can be subjected to testing and screening to determine the likelihood that the future individual will develop a genetic disease. From that information, parents can decide to destroy the embryo, alter the embryo, or leave the embryo unmodified and risk that the child will develop a genetic disease. Germ-line gene therapy (GLGT) is germ-line manipulation on the genetic level in order to prevent genetic diseases in future persons (Richter and Bacchetta 304). The goal of GLGT is to treat human diseases by correcting the genetic defects that underlie the genetic disorders (Anderson and Friedmann 907). Therapy presents an alternative to destroying embryos likely to develop genetic disease by actually correcting genetic defects. Also available is the alteration of parent gametes in order to eliminate the possibility of passing on genetic disease to their offspring. GLGT allows for the alteration of either the early stage embryo or the parent gametes to prevent genetic disease. By either eliminating those genotypes that are likely to produce genetic disease or by altering the genome to actually prevent the genetic disease from developing, these technologies have great potential to affect the genetic diversity of a population. Genetic diversity is the variety and frequency of different genotypes or combinations of different genotypes within a population. A population is a geographically, socially, or culturally linked group whose reproductive decisions affect those within the group. Genetic diversity is measured by genetic variability, which diminishes in a population when the number of different phenotypes or the number of different combinations of genotypes decreases. Since populations are composed of individuals that carry genotypes, individual reproductive outcomes affect the genetic variability within specific populations (Resnik 2000, 452). Genetic diversity provides the resource for phenotypic variation that is integral in determining the rate of evolutionary change in an environment. A population that lacks genetic diversity will be poorly equipped to meet environmental changes and demands (Resnik 2000, 452). The importance of genetic diversity is undeniable; the survivability of a population is directly related to genetic diversity. While genetic diversity has no intrinsic value, genetic diversity has a clear instrumental value. Humans place positive value in genetic diversity as it promotes the extrinsic value of survivability. There is an ethical duty to prevent decreases in the genetic diversity of populations because of its importance in the survivability of those populations. Decreases in genetic diversity in populations are ethically undesirable because actions that reduce the survivability of the population are unethical. The genetic diversity argument (GDA) starts from the fact that scientific and technological developments in the realm of genetics and human reproduction will greatly affect the genetic diversity of human populations. There are both pessimistic and optimistic versions of the argument. I will briefly describe both versions of the GDA. The pessimistic version of the argument contends that the increased ability to control human reproduction will result in a loss of genetic diversity that will threaten the health and survivability of human populations (Resnik 2000, 451). This threat to health and survivability is due to a decrease in the populations’ ability to adapt to environmental changes and demands. In effect, these technologies have the potential to make the pool of available phenotypic traits limited enough so that human populations will not be able to respond to changes in environmental demand. This version of the GDA warns that germ-line altering reproductive technologies will reduce populations’ gene pools and eliminate potentially useful genes. Genetic diversity provides a resource of these useful genes. Evolutionary change is blind and has no way to know which genes are useful, therefore it is potentially damaging to population survivability to eliminate genes of any sort. As Glenn McGee notes, “The point of the GDA is that human beings also have no way of knowing which genes will be useful in the future or in different environments” (cited in Resnik 2000, 456). For instance, genetically homogenous populations of corn face problems with blight due to lack of genetic diversity. Although human populations have an ever-increasing level of control over the environment, the pessimistic response still turns on the inability to determine which genes will be useful in the future. The optimistic version of the genetic diversity argument contends that these reproductive technologies could lead to increases in human health and survivability resulting in an improvement of the well being of populations (Resnik 2000, 457). The basis for this response rests on the historical fact that advances in technology increase humans’ ability to control nature. The ability to control nature often leads to positive changes in the adaptability and survivability of human populations. The optimistic GDA relies on this historical fact and the seemingly obvious inference that the above technologies will increase the ability to affect the genetic diversity of human populations (Resnik 2000, 457). A commonly cited example of how genetic diversity can be increased with the implementation of such technologies is the incredible diversity of canines. Of course, there are important dissimilarities such as the explicit intention to increase phenotypic diversity. A major factor in whether these reproductive technologies will increase or decrease genetic diversity is what model they are implemented under, free market or state control. Each model addresses the concerns and motivations of those affected differently. The free market model is based upon the reproductive decisions of a diverse group of potential parents with separate interests, motivations, and means. The free market is the method by which many consumer decisions are made in the United States. This model is fundamentally based on the interaction between supply and demand. If a market demands diversity of a product, then the market will often supply the desired diversity. If the market demands the standardization of goods, such as building supplies, then that homogeneity is likely to be supplied. Also, markets create new preferences and demands by introducing new goods and services to the market. Most often, advancements in technology increase market variability, except of course if that development results in the formation of a monopoly. The diversity of goods in the free market system of America seemingly justifies the inference that a free market model for reproductive technologies would lead to increases, not decreases, in the genetic diversity of human populations. Both J. Glover and W. Gardner’s individual studies conclude, “Increases in our ability to control human reproduction will result in more genetic diversity in the human population because parents will have a variety of preferences and values that they can use in selecting offspring” (cited in Resnik 2000, 458). Just as technological advancements have increased the availability of diverse consumer products, germ-line altering technologies could increase the available options in reproduction and therefore increase the diversity of human populations. Nevertheless, confounding factors such homogeneity of desirable characteristics makes the above inference much more dubious than it first appears. The major problem with the free market model is the potential emergence of the homogeneity of desirable characteristics. Many characteristics such as intelligence, athleticism, and health, are almost universally accepted as desirable. Other characteristics such as height, eye color, and hair color, also have particular value attached to them. Genetic homogeneity could arise if the consumers of reproductive technologies have similar preferences for traits. As Resnik states, “If most people want tall, intelligent, healthy children with blonde hair and blue eyes, then parental choices could produce a phenotypically and genetically homogeneous population” (2000, 459). This problem is only exacerbated when one considers the phenomenon of fads. Societal pressures and obligations may also produce conformity. While these social effects may not take hold immediately, it seems possible, if not probable that these pressures would eventually affect reproductive decisions. Genetic homogeneity may be an unintended consequence of a population sharing common values (Resnik 2000, 459). If most people within a population have similar characteristic preferences and a desire to conform, genetic homogeneity is almost inevitable. Of course much of this line of reasoning depends on genetic determinism, which is incredibly naïve and misinformed. Environmental factors often play a decisive role in which phenotypes are displayed. If certain desirable traits, such as intelligence or health, were strongly linked to environmental factors regardless of genotype, then the inference from individual choices to phenotypic characteristics would be dramatically weakened (Resnik 2000, 465). On the other hand, if certain genes or series of genes are linked to a trait, and that genotype is most frequently selected, it would still poses the potential threat of a genetically homogeneous population, although not phenotypically homogeneous. There are good reasons to believe that the free market system will create greater genetic diversity within human populations. On the other hand, the influences of societal pressures and expectations should not be underestimated or ignored (Resnik 2000, 459). State control involves the local or federal government dictating the standards of practice in certain industries, such as the power industry, education, and mass transit. This model of control in implementing genetic technologies appears likely to lead to decreases in genetic diversity within a population. It is imaginable that the government would develop specific standards to which all human beings produced in that state would be subject. The effects of state control of reproductive technologies are not clearly predictable. A state controlled system could lead to a genetic caste system. For instance, if the state determined that all people should be a certain height, weight, IQ, color, sexual orientation, etc., then those who diverge from those state determined standards could be forced into different strata of the genetic caste system. Such scenarios are certainly plausible, if not likely under state controlled conditions. Under free market conditions, reproductive technologies could lead to increases or decreases genetic diversity. On the other hand, state control would almost inevitably lead to decreases in genetic diversity, but the extent of such effects is not clear. As David Resnik claims, “the consequences of not exerting social or governmental control over human genetics may be just as troubling, since parents will in all likelihood attempt to provide their children with genetic advantages, and the long-term results of parental control over human genetics may further exacerbate existing social and economic inequalities and create a genetic caste system” (1997, 428). The inability to produce definitive evidence of the effects of reproductive technologies under either control model points to urgency of the issue and the minimal knowledge of these technologies’ implications for the future of humanity. Each version of the GDA provides ground for arguments that could support or undermine the utilization of germ-line altering reproductive technologies. The most obvious conclusion from examining both versions is that there is no definitive evidence that implementing the above technologies will have positive or negative consequences for the survivability of human populations. Furthermore, an examination of the two most plausible options for methods of implementing the technologies within a population does not produce strong evidence that implementation will result in either increases or decreases in genetic diversity. This leaves medical science at an ethical crossroads between either continuing with the technologies and dealing with the results afterwards, or abstaining from research, or at least clinical trials, until such evidence arises. Neither of these paths seems to be positive, or even tenable. The only method for producing clear evidence about the potential threat to survivability that these reproductive technologies pose would be to continue research and perform a massive clinical trial. Animal experimentation is not a viable alternative to human experimentation because it completely eliminates many of the confounding factors such as social influences. Since the arguments on either side of the GDA cannot produce conclusive results, and given the potential harm done to populations if the reproductive technologies are implemented and genetic diversity does decrease, some form of human experimentation seems necessary before the technologies should be implemented. Of course, there are many questions that arise in response to such a claim, including the justification of the inference to the necessity of human experimentation. I will discuss these concerns below. To clarify the inference, one should be reminded of what is at stake with respect to genetic diversity. The cautionary tales of the GDA describe potentially analogous situations, such as the effects of artificial selection on the survivability of maize and the variety of canines that have been produced by artificial selection. It is not at all clear what effects the above reproductive technologies will have on a population’s genetic diversity. Their implementation could result in increases in disease susceptibility like the result of artificial selection on maize, or it could result in populations with incredible arrays of genetically distinct individuals, such as in the canine example. What is clear though is that genetic diversity has an inverse relationship with the adaptability and survivability of populations. Since human populations value their own survivability, it is clear that technologies that pose a great potential threat to genetic diversity should be closely examined before being implemented. Due to the great potential threat these technologies present to humans, it is necessary to produce very strong, if not definitive, evidence about the effects of these technologies on genetic diversity. The only way to produce such evidence is human experimentation. There are many factors that must be accounted for in a human experiment that would produce definitive evidence. The number and diversity of subjects would have to emulate a population that would be affected by the technologies. The experiment would have to be extensive enough to determine the effects on future generations. To account for potential homogeneity of desirable characteristics, the experiment should account for both diverse cultural and societal pressures. Furthermore, the experiment should be carried out under the two control models mentioned above, free market and state control. Also, there would have to be a method of curtailing influences from the non-experimental population. Finally, in the event that something goes awry with the experiment, there must be a method of destroying the test subjects. Given present ethical standards concerning human experimentation, the ethics of such an experiment are, at best, deeply problematic. While ethical norms can dramatically change with time through changes in societal norms and beliefs, the means necessary to employ such an experiment are almost incomprehensible. For instance, it is not at all clear how the experiment would quarantine the subjects or how to handle the necessity of multiple generations of researchers. The role of informed consent is unclear with such an experiment. In the proposed experiment, an unethical researcher could use informed consent in a manner to produce the results that the researcher desires and undermine the purpose of the experiment. Additionally, an integral part of informed consent is the ability to withdraw from the experiment at any time. This element could pose a serious problem for this type of research. Therefore informed consent must either be eliminated or be drastically altered. Under present ethical norms it is clear that the kind of experiment necessary to provide strongly persuasive evidence of the effects of germ-line altering reproductive technologies would be unethical. Ethical considerations aside, the pragmatics of such an experiment are daunting to say the least. The use of germ-line altering technologies should not be implemented until strongly persuasive evidence regarding the effects on genetic diversity is concretely established. Decreases in the genetic diversity of a population would put at risk the survivability of that population. Humans place a clear value in the survivability of populations. Therefore anything that threatens the survivability of populations is unethical. Germ-line altering reproductive technologies may potentially decrease genetic diversity within a population. Until there is concrete evidence demonstrating that such technologies will not lead to decreases in a population’s genetic diversity, those technologies should not be utilized. The only method of assessment to produce such evidence is through human experimentation. The nature of the necessary experimentation involves unacceptable ethical violations and unavoidable pragmatic difficulties. Without strong proof that such technologies do not pose a threat to genetic diversity, and therefore population survivability, those technologies should not be implemented. Due to the fact that such evidence is not possible, germ-line altering technologies should be banned.

#### No il to warming

### 1NC – WTO Cred

#### Trade doesn’t solve war

Kat 15 — Mazhid Kat, Ph.D. Candidate in International Relations at King's College London, (“A Conceptual Analysis of Realism in International Political Economy,” *E-IR*, April 16th, Accessible Online at [http://www.e-ir.info...itical-economy/](http://www.e-ir.info/2015/04/16/a-conceptual-analysis-of-realism-in-international-political-economy/), Accessed On 02-08-2016)

The main critics of realism are liberals. They argue that growing integration of the world economy and interdependence among states will create a more peaceful and stable global order because aggressive actions will lead to huge economic losses. However, this concept misses several points. Firstly, even greatly economically interdependent states may start wars with one another, as was seen with the British Empire and Germany in the beginning of the 20th century.[xxix] Moreover, interdependence is usually not perfectly symmetrical. In many cases, weak states become more dependent on major powers.[xxx] Leading powers, in turn, use their economic power to promote global regimes more favourable to themselves. Also, interdependence can led to economic crises becoming more wide spread, which in turn leads to negative consequences in different parts of the world.[xxxi] For instance, the Great Depression in the United States during the 1930s was one of the reasons for huge economic problems in Germany, which were used by Hitler in his rise to power. Finally, some states have ideologies which prevail over economic interests. For example, North Korea conducts a Juche policy of self-sufficiency and Russia continues to experience significant economic losses because of its imperialistic turn.

#### Trade can just as easily cause more war even between nuclear states

Spaniel and Malone 3/5/19 [William Spaniel, Department of Political Science, University of Pittsburgh. Iris Malone, Department of Political Science, Stanford. The Uncertainty Tradeoff: Re-Examining Opportunity Costs and War. March 5, 2019. <https://wjspaniel.files.wordpress.com/2019/03/uncertainty-tradeoff-final.pdf>]

This paper’s main contribution is to identify the precise conditions under which the probability of war increases despite rising opportunity costs. We show that, unlike other mechanisms, rising opportunity costs may counter-intuitively make war more likely because it also increases the difference between reservation points for unresolved versus resolved opponents. As a result, these informational asymmetries can lead states to screen their opponents and risk war. This new finding reshapes our understanding about the relationship between opportunity costs and war. It introduces a more nu-anced mechanism about when and how this relationship operates, sometimes contrary to expectations.

Our work advances economic interdependence theories of war in several ways. First, it provides new insight on the causes of war at odds with traditional cases where opportunity costs increased, yet conflict still erupted. Second, it demonstrates how and when competing effects of economic instruments predominate, driving changes in the probability of conflict. In contrast to previous work, we identify specific conditions under which increasing opportunity costs shifts the probability of conflict, consistent with the empirical evidence. Finally, it demonstrates the important, but subtle, effects of changing instruments, like trade flows, in the presence of uncertainty. The model advances a growing line of research that various sources of uncertainty have disparate effects on crisis bargaining.

This paper has more general implications for trade-conflict research. It complements growing calls to disaggregate the effects of instruments like trade (Martin et al. 2008). Empirical analyses must carefully trace what precisely parties do not know about each other to draw the correct inference. It also suggests states should be careful in interpreting how other states value or benefit from mutual trade flows. A free trade agreement championed by one state may be perceived as relatively less beneficial in another state. This uncertainty may undermine the credibility to abide by the agreement in the long-run.

We also highlight the need for future research to consider screening incentives in trade deals themselves. Although the proposer benefits from greater trade—both from the direct economic benefit and indirect ability to steal more surplus from the receiver— trade can harm unresolved receivers and incentivize screening. This could generate some constraints in the deals a state is willing to sign, in fear that the rearranged incentives under uncertainty could hurt its ability to effectively bluff later. A more unified approach to trade and crisis negotiations would yield additional interesting insights.

Moving forward, the results speak to other lines of research in international relations theory predicated on changing costs of conflict. We couched our results in the interdependence literature due its clear application. However, the comparative static speaks to cases where the receiver’s costs increase more generally.23 Framed this way, the results have clear implications for other literatures. For example, standard nuclear deterrence theory argues that possessing nuclear weapons increases the costs of war for potential challengers due to the risk of a retaliatory nuclear response (Morgenthau 1961, 280; Gilpin 1983, 213-219). The logic of alliance formation similarly relics on the assumption that entering these pacts induces peace by raising an opponent’s costs of conflict (Morrow 1994). Together, these mechanisms assume raising the costs of war should decrease conflict. Our results demonstrate this effect is likely more conditional than previously realized. We find increased costs of conflict can exacerbate issues with uncertainty over resolve even if both states possess destructive weaponry. This promises to shed new insights into how raising costs affects deterrence and coercive bargaining in other contexts.

#### Globalization induces a race to the bottom that causes warming

Paul 15 (Joel R. Paul, Professor of Law @ UC Hastings, attended Amherst College, B.A. History, Economics and Political Science; the London School of Economics and Political Science; and Harvard Law School, J.D.; Fletcher School of Law and Diplomacy, MALD in international law and economic development, *The Cost of Free Trade*, Fall 2015, XXII Brown Journal of World Affairs, p. 16-17)

Globalization affects more than working conditions and incomes. The growth in consumption and transportation depletes natural resources and increases carbon emissions. If a factory produces toxic byproducts that pollute the air or the water, those costs fall on the public rather than on the producer. Economists would say that these are “external social costs.” When the government requires the plant to clean up the damage or use technologies to reduce pollution, it forces producers to internalize these external social costs. Producers typically pass the added cost of regulation on to consumers, so that the price of their products more accurately reflects the true total cost of production. Consumers can choose to pay the higher price, buy a cheaper cleaner substitute, or reduce their consumption.

By forcing industries to internalize the real environmental costs of production, the government protects environmental values. However, in raising the price of a domestic product, the government also implicitly confers a cost advantage on foreign competitors who are not subject to the same regulatory burden. For example, in the United States, the cost of operating pollution control equipment necessary to comply with the 1990 amendments to the Clean Air Act added 5 percent to steel production costs or about $10–20 per ton.32 If the Chinese steel industry had to meet the same environmental standards as U.S. steel companies, it would have cost Chinese companies more than $1.7 billion in 2006.33 The point is that Chinese steel producers do not have to meet the same rigorous environmental standards, so Chinese steel is dirtier and cheaper to produce than U.S. steel. U.S. environmental regulations in effect have conferred a comparative advantage on Chinese steel producers, but this is not the kind of comparative advantage that the theory envisioned. Rather, it is a kind of constructed comparative advantage that distorts the pattern of trade. When U.S. consumers purchase Chinese rather than U.S. steel, the environmental cost of producing that steel falls on everyone who breathes. Chinese steel producers have no incentive to reduce their pollution given the diffuse nature of its costs.

Naturally, U.S. producers complain that regulatory costs disadvantage them

in international trade. As we lower trade barriers, U.S. producers have the opportunity to relocate production to countries with less regulation. U.S. steel producers may find that it is less expensive to move plants to Latin America and ship their product back to the United States than it is to comply with U.S. environmental standards. When capital goes abroad, the United States loses jobs and tax revenues. This risk puts pressure on U.S. regulators to reduce the regulatory burden on U.S. producers. Throughout the world, regulatory authorities may be forced to lower environmental standards in order to compete in attracting and retaining capital investment. Regulatory competition leads, once again, to a race to the bottom.34