## 1AC – Util

### ROTB

#### The role of the ballot is to evaluate the simulated consequences of the topical aff policy. Prefer this

#### 1. The state is inevitable- speaking the language of power through policymaking is the only way to create social change in debate.

Coverstone 5 Alan Coverstone (masters in communication from Wake Forest, longtime debate coach) “Acting on Activism: Realizing the Vision of Debate with Pro-social Impact” Paper presented at the National Communication Association Annual Conference November 17th 2005 JW 11/18/15

An important concern emerges when Mitchell describes reflexive fiat as a contest strategy capable of “eschewing the power to directly control external actors” (1998b, p. 20). Describing debates about what our government should do as attempts to control outside actors is debilitating and disempowering. Control of the US government is exactly what an active, participatory citizenry is supposed to be all about. After all, if democracy means anything, it means that citizens not only have the right, they also bear the obligation to discuss and debate what the government should be doing. Absent that discussion and debate, much of the motivation for personal political activism is also lost. Those who have co-opted Mitchell’s argument for individual advocacy often quickly respond that nothing we do in a debate round can actually change government policy, and unfortunately, an entire generation of debaters has now swallowed this assertion as an article of faith. The best most will muster is, “Of course not, but you don’t either!” The assertion that nothing we do in debate has any impact on government policy is one that carries the potential to undermine Mitchell’s entire project. If there is nothing we can do in a debate round to change government policy, then we are left with precious little in the way of pro-social options for addressing problems we face. At best, we can pursue some Pilot-like hand washing that can purify us as individuals through quixotic activism but offer little to society as a whole. It is very important to note that Mitchell (1998b) tries carefully to limit and bound his notion of reflexive fiat by maintaining that because it “views fiat as a concrete course of action, it is bounded by the limits of pragmatism” (p. 20). Pursued properly, the debates that Mitchell would like to see are those in which the relative efficacy of concrete political strategies for pro-social change is debated. In a few noteworthy examples, this approach has been employed successfully, and I must say that I have thoroughly enjoyed judging and coaching those debates. The students in my program have learned to stretch their understanding of their role in the political process because of the experience. Therefore, those who say I am opposed to Mitchell’s goals here should take care at such a blanket assertion. However, contest debate teaches students to combine personal experience with the language of political power. Powerful personal narratives unconnected to political power are regularly co-opted by those who do learn the language of power. One need look no further than the annual state of the Union Address where personal story after personal story is used to support the political agenda of those in power. The so-called role-playing that public policy contest debates encourage promotes active learning of the vocabulary and levers of power in America. Imagining the ability to use our own arguments to influence government action is one of the great virtues of academic debate. Gerald Graff (2003) analyzed the decline of argumentation in academic discourse and found a source of student antipathy to public argument in an interesting place. I’m up against…their aversion to the role of public spokesperson that formal writing presupposes. It’s as if such students can’t imagine any rewards for being a public actor or even imagining themselves in such a role. This lack of interest in the public sphere may in turn reflect a loss of confidence in the possibility that the arguments we make in public will have an effect on the world. Today’s students’ lack of faith in the power of persuasion reflects the waning of the ideal of civic participation that led educators for centuries to place rhetorical and argumentative training at the center of the school and college curriculum. (Graff, 2003, p. 57) The power to imagine public advocacy that actually makes a difference is one of the great virtues of the traditional notion of fiat that critics deride as mere simulation. Simulation of success in the public realm is far more empowering to students than completely abandoning all notions of personal power in the face of governmental hegemony by teaching students that “nothing they can do in a contest debate can ever make any difference in public policy.” Contest debating is well suited to rewarding public activism if it stops accepting as an article of faith that personal agency is somehow undermined by the so-called role playing in debate. Debate is role-playing whether we imagine government action or imagine individual action. Imagining myself starting a socialist revolution in America is no less of a fantasy than imagining myself making a difference on Capitol Hill. Furthermore, both fantasies influenced my personal and political development virtually ensuring a life of active, pro-social, political participation. Neither fantasy reduced the likelihood that I would spend my life trying to make the difference I imagined. One fantasy actually does make a greater difference: the one that speaks the language of political power. The other fantasy disables action by making one a laughingstock to those who wield the language of power. Fantasy motivates and role-playing trains through visualization. Until we can imagine it, we cannot really do it. Role-playing without question teaches students to be comfortable with the language of power, and that language paves the way for genuine and effective political activism. Debates over the relative efficacy of political strategies for pro-social change must confront governmental power at some point. There is a fallacy in arguing that movements represent a better political strategy than voting and person-to-person advocacy. Sure, a full-scale movement would be better than the limited voice I have as a participating citizen going from door to door in a campaign, but so would full-scale government action. Unfortunately, the gap between my individual decision to pursue movement politics and the emergence of a full-scale movement is at least as great as the gap between my vote and democratic change. They both represent utopian fiat. Invocation of Mitchell to support utopian movement fiat is simply not supported by his work, and too often, such invocation discourages the concrete actions he argues for in favor of the personal rejectionism that under girds the political cynicism that is a fundamental cause of voter and participatory abstention in America today.

#### 2. Fairness. Anything else moots 6 minutes of 1ac offense – restarts the 1ar. They get a 13-7 minute advantage which means we have worse discussion, even if the subject of discussion is slightly better.

#### Unfairness denies effective dialogue on kritikal issues.

Galloway 7 Ryan Galloway, Samford Comm prof, Contemporary Argumentation and Debate, Vol. 28, 2007

Debate as a dialogue sets an argumentative table, where all parties receive a relatively fair opportunity to voice their position. Anything that fails to allow participants to have their position articulated denies one side of the argumentative table a fair hearing. The affirmative side is set by the topic and fairness requirements. While affirmative teams have recently resisted affirming the topic, in fact, the topic selection process is rigorous, taking the relative ground of each topic as its central point of departure. Setting the affirmative reciprocally sets the negative. The negative crafts approaches to the topic consistent with affirmative demands. The negative crafts disadvantages, counter-plans, and critical arguments premised on the arguments that the topic allows for the affirmative team. According to fairness norms, each side sits at a relatively balanced argumentative table. When one side takes more than its share, competitive equity suffers. However, it also undermines the respect due to the other involved in the dialogue. When one side excludes the other, it fundamentally denies the personhood of the other participant (Ehninger, 1970, p. 110). A pedagogy of debate as dialogue takes this respect as a fundamental component. A desire to be fair is a fundamental condition of a dialogue that takes the form of a demand for equality of voice. Far from being a banal request for links to a disadvantage, fairness is a demand for respect, a demand to be heard, a demand that a voice backed by literally months upon months of preparation, research, and critical thinking not be silenced. Affirmative cases that suspend basic fairness norms operate to exclude particular negative strategies. Unprepared, one side comes to the argumentative table unable to meaningfully participate in a dialogue. They are unable to “understand what ‘went on…’” and are left to the whims of time and power (Farrell, 1985, p. 114).

#### AND: critique is useless without a concrete policy option that solves for your harms.

Bryant 12 Levi Bryant (Professor of Philosophy at Collin College) “A Critique of the Academic Left” 2012 <https://larvalsubjects.wordpress.com/2012/11/11/underpants-gnomes-a-critique-of-the-academic-left/> JW

Unfortunately, the academic left falls prey to its own form of abstraction. It’s good at carrying out critiques that denounce various social formations, yet very poor at proposing any sort of realistic constructions of alternatives. This because it thinks abstractly in its own way, ignor[es]ing how networks, assemblages, structures, or regimes of attraction would have to be remade to create a workable alternative. Here I’m reminded by the “underpants gnomes” depicted in South Park: The underpants gnomes have a plan for achieving profit that goes like this: Phase 1: Collect Underpants Phase 2: ? Phase 3: Profit! They even have a catchy song to go with their work: Well this is sadly how it often is with the academic left. Our plan seems to be as follows: Phase 1: Ultra-Radical Critique Phase 2: ? Phase 3: Revolution and complete social transformation! Our problem is that we seem perpetually stuck at phase 1 without ever explaining what is to be done at phase 2. Often the critiques articulated at phase 1 are right, but there are nonetheless all sorts of problems with those critiques nonetheless. In order to reach phase 3, we have to produce new collectives. In order for new collectives to be produced, people need to be able to hear and understand the critiques developed at phase 1. Yet this is where everything begins to fall apart. Even though these critiques are often right, we express [critiques] them in ways that only an academic with a PhD in critical theory and post-structural theory can understand. How exactly is Adorno to produce an effect in the world if only PhD’s in the humanities can understand him? Who are these things for? We seem to always ignore these things and then look down our noses with disdain at the Naomi Kleins and David Graebers of the world. To make matters worse, we publish our work in expensive academic journals that only universities can afford, with presses that don’t have a wide distribution, and give our talks at expensive hotels at academic conferences attended only by other academics. Again, who are these things for? Is it an accident that so many activists look away from these things with contempt, thinking their more about an academic industry and tenure, than producing change in the world? If a tree falls in a forest and no one is there to hear it, it doesn’t make a sound! Seriously dudes and dudettes, what are you doing? But finally, and worst of all, us Marxists and anarchists all too often act like assholes. We denounce others, we condemn them, we berate them for not engaging with the questions we want to engage with, and we vilify them when they don’t embrace every bit of the doxa that we endorse. We are every bit as off-putting and unpleasant as the fundamentalist minister or the priest of the inquisition (have people yet understood that Deleuze and Guattari’s Anti-Oedipus was a critique of the French communist party system and the Stalinist party system, and the horrific passions that arise out of parties and identifications in general?). This type of “revolutionary” is the greatest friend of the reactionary and capitalist because they do more to drive people into the embrace of reigning ideology than to undermine reigning ideology. These are the people that keep Rush Limbaugh in business. Well done! But this isn’t where our most serious shortcomings lie. Our most serious shortcomings are to be found at phase 2. We almost never make concrete proposals for how things ought to be restructured, for what new material infrastructures and semiotic fields need to be produced, and when we do, our critique-intoxicated cynics and skeptics immediately jump in with an analysis of all the ways in which these things contain dirty secrets, ugly motives, and are doomed to fail. How, I wonder, are we to do anything at all when we have no concrete proposals? We live on a planet of 6 billion people. These 6 billion people are dependent on a certain network of production and distribution to meet the needs of their consumption. That network of production and distribution does involve the extraction of resources, the production of food, the maintenance of paths of transit and communication, the disposal of waste, the building of shelters, the distribution of medicines, etc., etc., etc.

#### Excessive focus on discourse and representations kills liberalism.

Chait 15 Jonathan Chait “How the language police are perverting liberalism.” NY Magazine January 275h 2015 <http://nymag.com/daily/intelligencer/2015/01/not-a-very-pc-thing-to-say.html> JW

Or maybe not. The p.c. style of politics has one serious, possibly fatal drawback: It is exhausting. Claims of victimhood that are useful within the left-wing subculture may alienate much of America. The movement’s dour puritanism can move people to outrage, but it may [and] prove ill suited to the hopeful mood required of mass politics. Nor does it bode well for the movement’s longevity that many of its allies are worn out. “It seems to me now that the public face of social liberalism has ceased to seem positive, joyful, human, and freeing,” confessed the progressive writer Freddie deBoer. “There are so many ways to step on a land mine now, so many terms that have become forbidden, so many attitudes that will get you cast out if you even appear to hold them. I’m far from alone in feeling that it’s typically not worth it to engage, given the risks.” Goldberg wrote recently about people “who feel emotionally savaged by their involvement in [online feminism] — not because of sexist trolls, but because of the slashing righteousness of other feminists.” Former Feministing editor Samhita Mukhopadhyay told her, “Everyone is so scared to speak right now.” That the new political correctness has bludgeoned even many of its own supporters into despondent silence is a triumph, but one of limited use. Politics in a democracy is still based on getting people to agree with you, not making them afraid to disagree. The historical record of political movements that sought to expand freedom for the oppressed by eliminating it for their enemies is dismal. The historical record of American liberalism, which has extended social freedoms to blacks, Jews, gays, and women, is glorious. And that glory rests in its confidence in the ultimate power of reason, not coercion, to triumph.

### Framework

#### Phenomenal introspection is reliable and proves that util’s true.

Sinhababu Neil (National University of Singapore) “The epistemic argument for hedonism” [http://philpapers.org/archive/SINTEA-3 accessed 2-4-16](http://philpapers.org/archive/SINTEA-3%20accessed%202-4-16) JW

The Odyssey's treatment of these events demonstrates how dramatically ancient Greek moral intuitions differ from ours. It doesn't dwell on the brutality of Telemachus, who killed twelve women for the trivial reasons he states, making them suffer as they die. While gods and men seek vengeance for other great and small offenses in the Odyssey, no one finds this mass murder worth avenging. It's a minor event in the denouement to a happy ending in which Odysseus (who first proposes killing the women) returns home and Telemachus becomes a man. That the[y] Greeks could so easily regard these murders as part of a happy ending for heroes shows how deeply we disagree with them. It's as if we gave them a trolley problem with the 12 women on the side track and no one on the main track, and they judged it permissible for Telemachus to turn the trolley and kill them all. And this isn't some esoteric text of a despised or short-lived sect, but a central literary work of a long-lived and influential culture. Human history offers similarly striking examples of disagreement on a variety of topics. These include sexual morality; the treatment of animals; the treatment of other ethnicities, families, and social classes; the consumption of intoxicating substances; whether and how one may take vengeance; slavery; whether public celebrations are acceptable; and gender roles.12 Moral obligations to commit genocide were accepted not only by some 20th century Germans, but by much of the ancient world, including the culture that gave us the Old Testament. One can only view the human past and much of the present with horror at the depth of human moral error and the harm that has resulted. One might think to explain away much of this disagreement as the result of differing nonmoral beliefs. Those who disagree about nonmoral issues may disagree on the moral rightness of a particular action despite agreeing on the fundamental moral issues. For example, they may agree that healing the sick is right, but disagree about whether a particular medicine will heal or harm. This disagreement about whether to prescribe the medicine won't be fundamentally about morality, and won't support the argument from disagreement. I don't think the moral disagreements listed above are explained by differences in nonmoral belief. This isn't because sexists, racists, and bigots share the nonmoral views of those enlightened by feminism and other egalitarian doctrines – they don't. Rather, their differing views on nonmoral topics often are rationalizations of moral beliefs that fundamentally disagree with ours.13 Those whose fundamental moral judgments include commitments to the authority of men over women, or of one race over another, will easily accept descriptive psychological views that attribute less intelligence or rationality to women or the subjugated race.14 Moral disagreement supposedly arising from moral views in religious texts is similar. Given how rich and many-stranded most religious texts are, interpretive claims about their moral teachings often tell us more about the antecedent moral beliefs of the interpreter than about the text itself. This is why the same texts are interpreted to support so many different moral views. Similar phenomena occur with most moral beliefs. Environmentalists who value a lovely patch of wilderness will easily believe that its destruction will cause disaster, those who feel justified in eating meat will easily believe that the animals they eat don't suffer greatly, and libertarians who feel that redistributing wealth is unjust will easily believe that it raises unemployment. We shouldn't assume that differing moral beliefs on practical questions are caused by fundamental moral agreement combined with differing nonmoral beliefs. Often the differing nonmoral beliefs are caused by fundamental moral disagreement. As we have no precise way of quantifying the breadth of disagreement or determining its epistemic consequences, it's unclear exactly how much disagreement the argument requires. While this makes the argument difficult to evaluate, it shouldn't stop us from proceeding, as we have to use the unclear notion of widespread disagreement in ordinary epistemic practice. If 99.9% of botanists agree on some issue about plants, non-botanists should defer to their authority and believe as most of them do. But if disagreement between botanists is suitably widespread, non-botanists should remain agnostic. A more precise and systematic account of when disagreement is widespread enough to generate particular epistemic consequences would be very helpful. Until we have one, we must employ the unclear notion of widespread disagreement, or some similar notion, throughout epistemic practice. Against the background of widespread moral disagreement, there may still be universal or near-universal agreement on some moral questions. For example, perhaps all cultures agree that one should provide for one’s elderly parents, even though they generally disagree elsewhere. How do these narrow areas of moral agreement affect the argument? This all depends on whether the narrow agreement is reliably or unreliably caused. If narrow agreement results from a reliable process of belief-formation, it lets us avoid error, defeating the argument from disagreement. But widely accepted moral beliefs may result from widely prevailing unreliable processes leading everyone to the same errors. There's no special pressure to explain agreement in terms of reliable processes when disagreement is widespread. Explaining agreement in terms of reliable processes is preferable when we have some reason to think that the processes involved are generally reliable. Then we would want to understand cases of agreement in line with the general reliability of processes producing moral belief. But if disagreement is widespread, error is too. Since moral beliefs are so often false, invoking unreliable processes to explain them is better than invoking reliable ones. The next two sections discuss this in more detail. We have many plausible explanations of narrow agreement on which moral beliefs are unreliably caused. Evolutionary and sociological explanations of why particular moral beliefs are widely accepted often invoke unreliable mechanisms.15 On these explanations, we agree because some moral beliefs were so important for reproductive fitness that natural selection made them innate in us, or so important to the interests controlling moral education in each culture that they were inculcated in everyone. For example, parents' influence over their children's moral education would explain agreement that one should provide for one's elderly parents. Plausible normative ethical theories won't systematically connect these evolutionary and sociological explanations with moral facts. If disagreement and error are widespread, they'll provide useful ways to reconcile unusual cases of widespread agreement with the general unreliability of the processes producing moral belief. 1.3 If there is widespread error about a topic, we should retain only those beliefs about it formed through reliable processes Now I'll defend 3. First I'll show how the falsity of others' beliefs undermines one's own belief. Then I'll clarify the notion of a reliable process. I'll consider a modification to 3 that epistemic internalists might favor, and show that the argument accommodates it. I'll illustrate 3's plausibility by considering cases where it correctly guides our reasoning. Finally, I'll show how 3 is grounded in the intuitive response to grave moral error. First, a simple objection: “Why should I care whether other people have false beliefs? That's a fact about other people, and not about me. Even if most people are wrong about some topic, I may be one of the few right ones, even if there's no apparent reason to think that my way of forming beliefs is any more reliable.” While widespread error leaves open the possibility that one has true beliefs, it reduces the probability that my beliefs are true. Consider a parallel case. I have no direct evidence that I have an appendix, but I know that previous investigations have revealed appendixes in people. So induction suggests that I have an appendix. Similarly, I know on the basis of 1 and 2 that people's moral beliefs are, in general, rife with error. So even if I have no direct evidence of error in my moral beliefs, induction suggests that they are rife with error as well. 3 invokes the reliability of the processes that produce our beliefs. Assessing processes of belief-formation for reliability is an important part of our epistemic practices. If someone tells me that my belief is entirely produced by wishful thinking, I can't simply accept that and maintain the belief. Knowing that wishful thinking is unreliable, I must either deny that my belief is entirely caused by wishful thinking or abandon the belief. But if someone tells me that my belief is entirely the result of visual perception, I'll maintain it, assuming that it concerns sizable nearby objects or something else about which visual perception is reliable. While providing precise criteria for individuating processes of belief-formation is hard, as the literature on the generality problem for reliabilism attests, individuating them somehow is indispensable to our epistemic practices.16 Following Alvin Goldman's remark that “It is clear that our ordinary thought about process types slices them broadly” (346), I'll treat cognitive process types like wishful thinking and visual perception as appropriately broad.17 Trusting particular people and texts, meanwhile, are too narrow. Cognitive science may eventually help us better individuate cognitive process types for the purposes of reliability assessments and discover which processes produce which beliefs. Epistemic internalists might reject 3 as stated, claiming that it isn't widespread error that would justify giving up our beliefs, but our having reason to believe that there is widespread error. They might also claim that our justification for believing the outputs of some process depends not on its reliability, but on what we have reason to believe about its reliability. The argument will still go forward if 3 is modified to suit internalist tastes, changing its antecedent to “If we have reason to believe that there is widespread error about a topic” or changing its consequent to “we should retain only those beliefs about it that we have reason to believe were formed through reliable processes.” While 3's antecedent might itself seem unnecessary on the original formulation, it's required for 3 to remain plausible on the internalist modification. Requiring us to have reason to believe that any of our belief-formation processes are reliable before retaining their outputs might lead to skepticism. The antecedent limits the scope of the requirement to cases of widespread error, averting general skeptical conclusions. The argument will still attain its conclusion under these modifications. Successfully defending the premises of the argument and deriving widespread error (5) and unreliability (7) gives those of us who have heard the defense and derivation reason to believe 5 and 7. This allows us to derive 8. (Thus the pronoun 'we' in 3, 6, and 8.) 3 describes the right response to widespread error in many actual cases. Someone in the 12th century, especially upon hearing the disagreeing views of many cultures regarding the origins of the universe, would do well to recognize that error on this topic was widespread and retreat to agnosticism about it. Only when modern astrophysics extended reliable empirical methods to cosmology would it be rational to move forward from agnosticism and accept a particular account of how the universe began. Similarly, disagreement about which stocks will perform better than average is widespread among investors, suggesting that one's beliefs on the matter have a high likelihood of error. It's wise to remain agnostic about the stock market without an unusually reliable way of forming beliefs – for example, the sort of secret insider information that it's illegal to trade on. 3 permits us to hold onto our moral beliefs in individual cases of moral disagreement, suggesting skeptical conclusions only when moral disagreement is widespread. When we consider a single culture's abhorrent moral views, like the Greeks' acceptance of Telemachus and Odysseus' murders of the servant women, we don't think that maybe the Greeks were right to see nothing wrong and we should reconsider our outrage. Instead, we're horrified by their grave moral error. I think this is the right response. We're similarly horrified by the moral errors of Hindus who burned widows on their husbands' funeral pyres, American Southerners who supported slavery and segregation, our contemporaries who condemn homosexuality, and countless others. The sheer number of cases like this requires us to regard moral error as a pervasive feature of the human condition. Humans typically form moral beliefs through unreliable processes and have appendixes. We are humans, so this should reduce our confidence in our moral judgments. The prevalence of error in a world full of moral disagreement demonstrates how bad humans are at forming true moral beliefs, undermining our own moral beliefs. Knowing that unreliable processes so often lead humans to their moral beliefs, we'll require our moral beliefs to issue from reliable processes. 1.4 If there is widespread error about morality, there are no reliable processes for forming moral beliefs A reliable process for forming moral beliefs would avert skeptical conclusions. I'll consider several processes and argue that they don't help us escape moral skepticism. Ordinary moral intuition, whether it involves a special rational faculty or our emotional responses, is shown to be unreliable by the existence of widespread error. The argument from disagreement either prevents reflective equilibrium from generating moral conclusions or undermines it. Conceptual analysis is reliable, but delivers the wrong kind of knowledge to avert skepticism. If all our processes for forming moral beliefs are unreliable, moral skepticism looms. 4 is false only because of one process – phenomenal introspection, which lets us know of the goodness of pleasure, as the second half of this paper will discuss. Widespread error guarantees the unreliability of any process by which we form all or almost all of our moral beliefs. While widespread error allows some processes responsible for a small share of our moral beliefs to predominantly create true beliefs, it implies that any process generating a very large share of moral belief must be highly error-prone. Since the process produced so many of our moral beliefs, and so many of them are erroneous, it must be responsible for a large share of the error. If more of people's moral beliefs were true, things would be otherwise. Widespread truth would support the reliability of any process that produced most or all of our moral beliefs, since that process would be responsible for so much true belief. But given widespread error, ordinary moral intuition must be unreliable. This point provides a forceful response to Moorean opponents who insist that we can't give up the reliability of a process by which we form all or nearly all of our beliefs on an important topic, since this would permit counterintuitive skeptical conclusions. Even if this Moorean response helps against external world skeptics who employ counterfactual thought experiments involving brains in vats, it doesn't help against moral skeptics who use 1 and 2 to derive widespread actual error. Once we accept that widespread error actually obtains, a great deal of human moral knowledge has already vanished. Insisting on the reliability of the process then seems implausible and pointless. I'll briefly consider two conceptions of moral intuition – as a special rational faculty by which we grasp non-natural moral facts, and as a process by which our emotions lead us to form moral beliefs – and show how widespread error guarantees their unreliability. Some philosophers regard moral intuition as involving a special rational faculty that lets us know non-natural moral facts.18 They argue that knowledge on many topics including mathematics, logic, and modality involves this rational faculty, so moral knowledge might operate similarly. This suggests a way for them to defend the reliability of moral intuition in the face of widespread error: if intuition is reliable about these other things, its overall reliability across moral and nonmoral areas allows us to reliably form moral beliefs by using it. This defense won't work. When an epistemic process is manifestly unreliable on some topic, as widespread error shows any process responsible for most of our moral beliefs to be, the reliability of that process elsewhere won't save it on that topic. Even if testimony is reliable, this doesn't imply the reliability of compulsive gamblers' testimony about the next spin of the roulette wheel. Even if intuition remains reliable elsewhere, widespread disagreement still renders it unreliable in ethics. I see ordinary moral intuition as a process of emotional perception in which our feelings cause us to form moral beliefs.19 Just as visual experiences of color cause beliefs about the colors of surfaces, emotional experiences cause moral beliefs. Pleasant feelings like approval, admiration, or hope in considering actions, persons, or states of affairs lead us to believe they are right, virtuous or good. Unpleasant emotions like guilt, disgust, or horror in considering actions, persons, or states of affairs lead us to believe they are wrong, vicious, or bad. We might have regarded this as a reliable way to know about moral facts, just as visual perception is a reliable way to know about color, if not for widespread error. But because of widespread error, we can only see it as an unreliable process responsible for our dismal epistemic situation. Reflective equilibrium is the prevailing methodology in normative ethics today. It involves modifying our beliefs about particular cases and general principles to make them cohere. Whether or not nonmoral propositions like the premises of the argument from disagreement are admissible in reflective equilibrium, widespread error prevents reflective equilibrium from reliably generating a true moral theory, as I'll explain. If the premises of the argument from disagreement are admitted into reflective equilibrium, the argument can be reconstructed there, and reflective equilibrium will dictate that we give up all of our moral beliefs. To avoid this conclusion, the premises of the argument from disagreement would have to be revised away on moral grounds. These premises are a metaethical claim about the objectivity of morality which seems to be a conceptual truth, an anthropological claim about the existence of disagreement, a very general epistemic claim about when we should revise our beliefs, and a more empirically grounded epistemic claim about our processes of belief-formation and their reliability. While reflective equilibrium may move us to revise substantive moral beliefs in view of other substantive moral beliefs, claims of these other kinds are less amenable to such revision. Unless ambitious arguments for revising these nonmoral claims away succeed, we must follow the argument to its conclusion and accept that reflective equilibrium makes moral skeptics of us.20 If only moral principles and judgments are considered in reflective equilibrium, it won't make moral skeptics of us, but the argument from disagreement will undermine its conclusions. The argument forces us to give up the pre-existing moral beliefs against which we test various moral propositions in reflective equilibrium. While we may be justified in believing something because it coheres with our other beliefs, this justification goes away once we see that those beliefs should be abandoned. Coherence with beliefs that we know we should give up doesn't confer justification. Now I'll consider conceptual analysis. It can produce moral beliefs about conceptual truths – for example, that the moral supervenes on the nonmoral, and that morality is objective. It also may provide judgments about relations between different moral concepts – perhaps, that if the only moral difference between two actions is that one would produce morally better consequences than the other, doing what produces better consequences is right. I regard conceptual analysis as reliable, so that the argument from disagreement does not force us to give up the beliefs about morality it produces. Unfortunately, if analytic naturalism is false, as has been widely held in metaethics since G. E. Moore, conceptual analysis won't provide all the knowledge we need to build a normative ethical theory.21 Even when it relates moral concepts like goodness and rightness to each other, it doesn't tell us that anything is good or right to begin with. That's the knowledge we need to avoid moral skepticism. So far I've argued that our epistemic and anthropological situation, combined with plausible metaethical and epistemic principles, forces us to abandon our moral beliefs. But if a reliable process of moral belief-formation exists, 4 is false, and we can answer the moral skeptic. The rest of this paper discusses the only reliable process I know of. 2.1 Phenomenal introspection reveals pleasure's goodness Phenomenal introspection, a reliable way of forming true beliefs about our experiences, produces the belief that pleasure is good. Even as our other processes of moral belief-formation prove unreliable, it provides reliable access to pleasure's goodness, justifying the positive claims of hedonism. This section clarifies what phenomenal introspection and pleasure are and explains how phenomenal introspection provides reliable access to pleasure's value. Section 2.2 argues that pleasure's goodness is genuine moral value, rather than value of some other kind. In phenomenal introspection we consider our subjective experience, or phenomenology, and determine what it's like. Phenomenal introspection can be reliable while dreaming or hallucinating, as long as we can determine what the dreams or hallucinations are like. By itself, phenomenal introspection doesn't produce beliefs about things outside experience, or about relations between our experiences and non-experiential things. So it doesn't produce judgments about the rightness of actions or the goodness of non-experiential things. It can only tell us about the intrinsic properties of experience itself. Phenomenal introspection is generally reliable, even if mistakes about immediate experience are possible. Experience is rich in detail, so one could get some of the details wrong in belief. Under adverse conditions involving false expectations, misleading evidence about what one's experiences will be, or extreme emotional states that disrupt belief-formation, larger errors are possible. Paradigmatically reliable processes like vision share these failings. Vision sometimes produces false beliefs under adverse conditions, or when we're looking at complex things. Still, it's so reliable as to be indispensible in ordinary life. Regarding phenomenal introspection as unreliable is about as radical as skepticism about the reliability of vision. While contemporary psychologists reject introspection into one's motivations and other psychological causal processes as unreliable, phenomenal introspection fares better. Daniel Kahneman, for example, writes that “experienced utility is best measured by moment-based methods that assess the experience of the present.”22 Even those most skeptical about the reliability of phenomenal introspection, like Eric Schwitzgebel, concede that we can reliably introspect whether we are in serious pain.23 Then we should be able to introspectively determine what pain is like. So I'll assume the reliability of phenomenal introspection. One can form a variety of beliefs using phenomenal introspection. For example, one can believe that one is having sound experiences of particular noises and visual experiences of different shades of color. When looking at a lemon and considering the phenomenal states that are yellow experiences, one can form some beliefs about their intrinsic features – for example, that they're bright experiences. And when considering experiences of pleasure, one can make some judgments about their intrinsic features – for example, that they're good experiences. Just as one can look inward at one's experience of lemon yellow and recognize its brightness, one can look inward at one's experience of pleasure and recognize its goodness.24 When I consider a situation of increasing pleasure, I can form the belief that things are better than they were before, just as I form the belief that there's more brightness in my visual field as lemon yellow replaces black. And when I suddenly experience pain, I can form the belief that things are worse in my experience than they were before. Having pleasure consists in one's experience having a positive hedonic tone. Without descending into metaphor, it's hard to give a further account of what pleasure is like than to say that when one has it, one feels good. As Aaron Smuts writes in defending the view of pleasure as hedonic tone, “to 'feel good' is about as close to an experiential primitive as we get.” 25 Fred Feldman sees pleasure as fundamentally an attitude rather than a hedonic tone.26 But as long as hedonic tones are real components of experience, phenomenal introspection will reveal pleasure's goodness. Opponents of the hedonic tone account of pleasure usually concede that hedonic tones exist, as Feldman seems to in discussing “sensory pleasures,” which he thinks his view helps us understand. Even on his view of pleasure, phenomenal introspection can produce the belief that some hedonic tones are good while others are bad. There are many different kinds of pleasant experiences. There are sensory pleasures, like the pleasure of tasting delicious food, receiving a massage, or resting your tired limbs in a soft bed after a hard day. There are the pleasures of seeing that our desires are satisfied, like the pleasure of winning a game, getting a promotion, or seeing a friend succeed. These experiences differ in many ways, just as the experiences of looking at lemons and the sky on a sunny day differ. It's easy to see the appeal of Feldman's view that pleasures “have just about nothing in common phenomenologically” (79). But just as our experiences in looking at lemons and the sky on a sunny day have brightness in common, pleasant experiences all have “a certain common quality – feeling good,” as Roger Crisp argues (109).27 As the analogy with brightness suggests, hedonic tone is phenomenologically very thin, and usually mixed with a variety of other experiences.28 Pleasure of any kind feels good, and displeasure of any kind feels bad. These feelings may or may not have bodily location or be combined with other sensory states like warmth or pressure. “Pleasure” and “displeasure” mean these thin phenomenal states of feeling good and feeling bad. As Joseph Mendola writes, “the pleasantness of physical pleasure is a kind of hedonic value, a single homogenous sensory property, differing merely in intensity as well as in extent and duration, which is yet a kind of goodness” (442).29 What if Feldman is right and hedonic states feel good in fundamentally different ways? Then phenomenal introspection suggests a pluralist variety of hedonism. Each fundamental flavor of pleasure will have a fundamentally different kind of goodness, as phenomenal introspection more accurate than mine will reveal. This isn't my view, but I suggest it to those convinced that hedonic tones are fundamentally heterogenous. If phenomenal introspection reliably informs us that pleasure is good, how can anyone believe that their pleasures are bad? Other processes of moral belief-formation are responsible for these beliefs. Someone who feels disgust or guilt about sex may not only regard sex as immoral, but the pleasure it produces as bad. Even if phenomenal introspection on sexual pleasure disposes one to believe that it's good, stronger negative emotional responses to it may more strongly dispose one to believe that it's bad, following the emotional perception model suggested in section 1.4. Explaining disagreement about pleasure's value in terms of other processes lets hedonists maintain that phenomenal introspection univocally supports pleasure's goodness. As long as negative judgments of pleasure come from unreliable processes instead of phenomenal introspection, the argument from disagreement eliminates them. The parallel between yellow’s brightness and pleasure’s goodness demonstrates the objectivity of the value detected in phenomenal introspection. Just as anyone's yellow experiences objectively are bright experiences, anyone's pleasure objectively is a good experience.30 While one's phenomenology is often called one's “subjective experience”, facts about it are still objective. “Subjective” in “subjective experience” means “internal to the mind”, not “ontologically dependent on attitudes towards it.” My yellow-experiences objectively have brightness. Anyone who thought my yellow-experiences lacked brightness would be mistaken. Pleasure similarly is objectively good. It's true that anyone's pleasure is good. Anyone who denies this is mistaken. As Mendola writes, the value detected in phenomenal introspection is “a plausible candidate for objective value” (712). Even though phenomenal introspection only tells me about my own phenomenal states, I can know that others' pleasure is good. Of course, I can't phenomenally introspect their pleasures, just as I can't phenomenally introspect pleasures that I'll experience next year. But if I consider my experiences of lemon yellow and ask what it would be like if others had the same experiences, I must think that they would be having bright experiences. Similarly, if in a pleasant moment I consider what it's like for others to have exactly the experience I'm having, I must think that they're having good experiences. If they have exactly the same experiences I'm having, their experiences will have exactly the same intrinsic properties as mine. This is also how I know that if I have the same experience in the future, it'll have the same intrinsic properties. Even though the only pleasure I can introspect is mine now, I should believe that others' pleasures and my pleasures at other times are good, just as I should believe that yellow experienced by others and myself at other times is bright. My argument thus favors the kind of universal hedonism that supports utilitarianism, not egoistic hedonism.

#### Thus, the standard is maximizing happiness. Prefer the standard:

#### 1. Ethical frameworks must be theoretically legitimate. Any standard is an interpretation of the word ought-thus framework is functionally a topicality argument about how to define the terms of the resolution. Definitions should be subject to theoretical contestation in the same way other words should be. My framework interprets ought as maximizing happiness. Prefer this definition:

#### A. Ground- every impact functions under util whereas other ethics flow to one side exclusively, kills fairness since we both need arguments to win.

#### B. Topic lit- most articles are written through the lens of util because they’re crafted for policymakers and the general public who take consequences to be important, not philosophy majors. Key to fairness and education- the lit is where we do research and determines how we engage in the round.

#### Fairness is a voter since debate is a competitive activity-no debater ought to have an advantage otherwise you’re picking the better cheater. Education is a voter since it’s why schools fund debate and also provides portable skills for the real world. This is a framework warrant, not a reason to drop the debater.

#### 2. No intent foresight distinction – by willing any action with knowledge that it could cause X harm, we necessarily intend X to happen because we could always decide not to act. Thus, means-based frameworks devolve to the aff.

#### 3. Actor specificity. Policymaking must be consequentialist since collective action results in conflicts that only util can resolve. Side constraints paralyze state action since policy makers have to consider tradeoffs between multiple people. States lack intentionality since they're composed of multiple individuals—there is no act-omission distinction for them since they create permissions and prohibitions in terms of policies so authorizing action could never be considered an omission since the state assumes culpability in regulating the public domain.

#### 4. Reductionism: personal identity doesn’t exist.

Olson Eric T. (Professor of Philosophy at the University of Sheffield) “Personal Identity” Stanford Encyclopedia of Philosophy Aug 20, 2002; substantive revision Oct 28, 2010 <http://plato.stanford.edu/entries/identity-personal/#PsyApp> JW

Whatever psychological continuity may amount to, a more serious worry for the Psychological Approach is that you could be psychologically continuous with two past or future people at once. **If your cerebrum**—the upper part of the brain largely responsible for mental features—**were transplanted, the recipient would be** psychologically continuous with **you** by anyone's lights (even if there would also be important psychological differences). The Psychological Approach implies that she would be you. If we destroyed one of your cerebral hemispheres, the resulting being would also be psychologically continuous with you. (Hemispherectomy—even the removal of the left hemisphere, which controls speech—is considered a drastic but acceptable treatment for otherwise-inoperable brain tumors: see Rigterink 1980.) What **if we** did both at once, **destroy**ing **one hemisphere and transplant**ing **the other**? Then too, **the one who got the transplant**ed hemisphere would be psychologically continuous with you, and according to the Psychological Approach **would be you.** But now **suppose** that **both hemispheres are transplanted, each into a different empty head.** (We needn't pretend, as some authors do, that the hemispheres are exactly alike.) **The two recipients**—call them Lefty and Righty—**will each be** psychologically continuous with **you.** The Psychological Approach as I have stated it implies that any future being who is psychologically continuous with you must be you. It follows that you are Lefty and also that you are Righty. **But that cannot be**: Lefty and Righty are two, and **one thing cannot be** numerically identical with **two things.** Suppose Lefty is hungry at a time when Righty isn't. If you are Lefty, you are hungry at that time. If you are Righty, you aren't. If you are Lefty and Righty, you are both hungry and not hungry at once: **a contradiction.**

#### This means consequentialism – moral theories can’t focus on individuals since there’s nothing that unifies them across time. Only states of affairs can have value.

#### 5. Determinism is true: our bodies are controlled by biological principles only – there’s no room for free will.

Drescher Gary L. (Visiting Fellow at the Center for Cognitive Studies at Tufts University, PhD in Computer Science from MIT) “Good and Real: Demystifying Paradoxes from Physics to Ethics” Bradford Books May 5th 2006

One prominent notion is that we have both a ghostlike component (our consciousness or soul) and a mechanical component (everything else, including our body). The mechanical component is governed by the usual physical laws. The ghostlike component, unconstrained by those laws, can be said to be extraphysical. That is, the ghostlike component is something in addition to the kinds of things that exist in the physical realm, something ontologically extra.1 This so-called dualist view was advanced by Descartes in the 1600s. Dualism is a tempting compromise, but an awkward one, for reasons that are well known. The problem is that the mechanical principles that govern each particle of our bodies (and of the things around us) already specify how each of those particles behaves, which in turn specifies how each of us behaves as a whole. But in that case, there is no room for the ghostlike component to have any influence—if it did so, it would have to make some of the particles sometimes violate the principles that all particles are always observed to obey whenever we check carefully. (Descartes was admirably precise about the locus of this supposed intervention—he proposed that the interface between the ghostlike component and the physical world occurs within the brain in the pineal gland.)2 Thus, we have the mind– body problem: how can we reconcile the nature of the mind with the mechanical nature of the body? Some see quantum-mechanical uncertainty as the wiggle room that could let a ghostlike consciousness nudge some of the particles in our body without violating the rules of physics. But in fact—even apart from the newer, deterministic interpretation of quantum mechanics discussed in chapter 4—any such nudging would at least constitute a change in the probability distribution for some of the particles in our body, and even that would break the (probabilistic) rules that particles always seem to obey. Granted, it could be the case that particles somewhere in our brains behave differently than particles ever do when we watch them carefully, violating otherwise exceptionless rules (be they deterministic or probabilistic rules). But since the rules are otherwise exceptionless (as far as we can tell), there should be a strong presumption that there’s no exception in our brains either—especially in view of the longstanding retreat of other beliefs about the alleged physically exceptional behavior of conscious or living organisms. The doctrine of vitalism, for instance, supposed that there is some distinctive ‘‘life force’’ that animates living things, enabling them to grow and move. But the more we learned of biochemistry—DNA and RNA, ATP energy cycles, neurotransmitters, and the like—the more we understood that the growth and movement of living things is explicable in terms of the same molecular building blocks, following the same exceptionless rules, as when those building blocks exist outside of animate objects. And the more we learn about computation and neuroscience, the more we discover how cognitive processes that were once supposed to require an ethereal spirit—perception, motor control, memory, spatial reasoning, even key aspects of more general reasoning (e.g., deduction, induction, planning)—can be implemented by basic switching elements (e.g., neurons or transistors) that need not themselves be conscious, or even animate. By monitoring brain activity, we can see different regions of the brain performing computations when different sorts of cognitive functions are performed (language, singing, spatial imaging, etc.). And when certain brain regions are damaged by injury or illness, the corresponding cognitive abilities degrade or vanish. To be sure, we are still far from understanding human cognition as a whole. But the trend in our knowledge does not lend comfort to the expectation that any particles in our brain will, at long last, ever be found to deviate sometimes from the same rules that such particles otherwise always obey.

#### Only consequentialism is consistent with determinism.

Greene and Cohen Joshua Greene and Jonathan Cohen (Department of Psychology, Center for the Study of Brain, Mind, and Behavior, Princeton University) “For the law, neuroscience changes nothing and everything” November 26th 2004 Phil.Trans.R.Soc.Lond.B (2004)359,1775–1785 <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1693457/pdf/15590618.pdf> JW

The forward-looking–consequentialist approach to punishment works with all three responses to the problem of free will, including hard determinism. This is because consequentialists are not concerned with whether anyone is really innocent or guilty in some ultimate sense that might depend on people’s having free will, but only with the likely effects of punishment. (Of course, one might wonder what it means for a hard determinist to justify any sort of choice. We will return to this issue in x 8.) The retributivist approach, by contrast, is plausibly regarded as requiring free will and the rejection of hard determinism. Retributivists want to know whether the defendant truly deserves to be punished. Assuming one can deserve to be punished only for actions that are freely willed, hard determinism implies that no one really deserves to be punished. Thus, hard determinism combined with retributivism requires the elimination of all punishment, which does not seem reasonable. This leaves retributivists with two options: compatibilism and libertarianism. Libertarianism, for reasons given above, and despite its intuitive appeal, is scientifically suspect. At the very least, the law should not depend on it. It seems, then, that retributivism requires compatibilism. Accordingly, the standard legal account of punishment is compatibilist.

### Contention

#### No uniqueness for disads—nuclear power will naturally phase out without a prohibition.

Romm 8/4 Joe (Founding Editor of Climate Progress, “the indispensable blog,” as NY Times columnist Tom Friedman describes it.) “Nuclear Power Is Losing Money At An Astonishing Rate” Think Progress August 4th 2016 <https://thinkprogress.org/nuclear-power-is-losing-money-at-an-astonishing-rate-e9473d62acc5#.l778f6k4l> JW

Half of existing nuclear power plants are no longer profitable. The New York Times and others have tried to blame renewable energy for this, but the admittedly astounding price drops of renewables aren’t the primary cause of the industry’s woes — cheap fracked gas is. The point of blaming renewables, which currently receive significant government subsidies, is apparently to argue that existing nukes deserve some sort of additional subsidy to keep running — beyond the staggering $100+ billion in subsidies the nuclear industry has received over the decades. But a major reason solar and wind energy receive federal subsidies — which are being phased out over the next few years — is because they are emerging technologies whose prices are still rapidly coming down the learning curve, whereas nuclear is an incumbent technology with a negative learning curve. The renewable red herring aside, existing nukes can make a reasonable case for a modest subsidy on the basis of climate change — though only because they are often replaced by carbon-spewing gas plants. That said, the “$7.6 billion bailout” New York state just decided to give its nuclear plants appears to be way too large, as we’ll see. What’s Causing Nuclear Power’s Economic Death Spiral? A July Bloomberg New Energy Finance analysis concluded that nukes producing 56 percent of U.S. nuclear power “would be unprofitable over the next three years.” As you can imagine, if existing nuclear power plants have become unprofitable, then new nuclear power plants make no economic sense whatsoever. Perhaps no surprise, then, that a Reuters headline blared last month, “New Nuclear Reactor Builds Fall To Zero In First Half Of 2016 — Report.” The utility consultancy Brattle Group came to a similar view on existing nukes in a 2014 analysis, concluding that 51 percent of the merchant (deregulated) nuclear fleet, some 23 Gigawatts, could be unprofitable by 2015. In researching this post, I spoke at length with economist Peter Fox-Penner, one of the country’s leading experts on both the electric grid and decarbonization, the author of Smart Power: Climate Change, the Smart Grid, and the Future of Electric Utilities. Fox-Penner is the former chair of the Brattle Group. I asked Fox-Penner, who is currently director of Boston University’s Institute for Sustainable Energy, to comment on Eduardo Porter’s argument in the business section of the Times, “How Renewable Energy Is Blowing Climate Change Efforts Off Course,” which I debunked last week. He replied: Porter frames his article as blaming wind and solar for causing low prices that have unintended harmful consequences. While I agree that premature closure of safely operating existing nuclear is a terrible idea from the climate policy standpoint, he overlooks the fact that this consequence is neither “unintended” nor the “fault” of solar and wind. This is the very-much-intended result of the way electric markets were designed, and you can be sure this design was not formulated by wind and solar producers and is in so sense their fault. It is the design of these markets that should change, not the amount of wind and solar we will deploy to meet climate policy goals. He also overlooks the much larger role cheap natural gas has played in eroding nuclear plant economics. The primary reason existing nuclear power plants are in trouble is because of cheap natural gas. This is widely understood. In fact, the New York Public Service Commission (NYPSC) staff itself, in its July proposal to bail out ailing nukes, explained: Staff’s analysis shows that due to low natural gas prices, forecasted wholesale market prices are significantly lower than the average operating costs of the upstate nuclear units. Another major reason nuclear power is in trouble is that we don’t have a price on carbon pollution, which would make many existing nukes more profitable, as I discuss below. Ironically, or, rather, tragically, some of the people complaining the loudest now about the need for nuclear subsidies are those who fought the hardest to kill the best chance this country ever had to enact a carbon price, the 2009 climate and energy bill. Another major reason nuclear power is in trouble is the industry itself. “The industry hasn’t done itself any favors,” as a Bloomberg article, “The U.S. Nuclear Power Industry’s Dim Future,” explained back in 2013. “A radioactive steam leak and a botched repair job have led to the permanent closure of three reactors in the last several months, two in California operated by Southern California Edison, and another in Florida run by Duke Energy. “ Another major reason nuclear power is in trouble is that U.S. electricity demand growth has been flat for nearly a decade, thanks in large part to state and federal energy efficiency policies. That is not a trend that is likely to change in the next decade, thanks in part to the LED lighting revolution, as I explained earlier this week. Flat demand growth inevitably means lower power prices. Finally, yes, the rapidly dropping price of solar and wind power has started to create problems for inflexible and costly power sources like nuclear power. While their market penetration is vastly lower than nuclear power, there are times during the day when there is an excess of very-low-cost renewables — since they don’t have the high fueling and operations and maintenance (O&M;) costs nuclear has.

#### Thus, the plan:

#### Resolved: the United States federal government will prohibit the production of nuclear power.

### Fish Adv.

#### Nuclear power kills billions of aquatic creatures.

Sovacool and Cooper 8 Benjamin Sovacool (Research Fellow in the Energy Governance Program at the Centre on Asia and Globaliaztion, part of the Lee Kuan Yew School of Public Policy at the National University of Singapore, adjunct professor at the Virginia Polytechnic Institute & State University) and Christopher Cooper (Principal Partner for Oomph Consulting, LLC, former Executive Director of the Network for New Energy Choices) “Nuclear Nonsense: Why Nuclear Power is No Answer to Climate Change and the World's Post- Kyoto Energy Challenges” William & Mary Environmental Law and Policy Review Volume 33 Issue 1 Article 2 2008 h p://scholarship.law.wm.edu/wmelpr/vol33/iss1/2 JW

Nuclear plants do not just use water-they also contaminate it at multiple points of the cooling cycle: at the point of intake, at the point of discharge, and during unexpected accidents. At the point of intake, nuclear plants bring water into the cooling cycle through filtering structures. To minimize the entry of debris, water is often drawn through screens.374 Seals, sea lions, endangered manatees, American crocodiles, sea turtles, fish, larvae, shellfish, and other riparian or marine organisms are frequently killed as they are trapped against the screens in a process known as impingement.375 Organisms small enough to pass through the screens can be swept up in the water flow where they are subject to mechanical, thermal and toxic stress in a process known as entrainment.376 Billions of smaller marine organisms, essential to the food web, are sucked into nuclear reactor systems and destroyed. Smaller fish, fish larvae, spawn, and a tremendous volume of other marine organisms are frequently pulverized by reactor condenser systems. One study estimated that more than 90% are scalded and discharged back into the water as lifeless sediment that clouds the water around the discharge area, blocking light from reaching the ocean or river floor, which further kills plant and animal life by curtailing photosynthesis and the production of oxygen.377 During periods of low water levels, power plants induce even more environmental damage. Nuclear plants must extend intake pipes further into rivers and lakes, but as they approach the bottom of the water source, "they [often] suck up sediment, fish, and other debris... "371 Impingement and entrainment consequently account for substantial losses of fish and exact severe environmental consequences during the riparian environment's most vulnerable times. For example, federal environmental studies of entrainment during the 1980s at five power plants on the Hudson River in New York estimated grave year-class reductions in fish populations-the percent offish killed within a given age class.379 One study concluded that the power plants were responsible for age reductions as high as 79%for some species.8 ° "An updated analysis [of entrainment] completed in 2000 at three of these plants estimated year-class reductions of 20 percent for striped bass, 25 percent for bay anchovy, and 43 percent for Atlantic tom cod. . ...,' Another study "evaluated entrainment and impingement impacts at nine . . . facilities along a 500 mile stretch of the Ohio River."3 2 The authors estimated that approximately 11.6 million fish were killed annually through impingement and 24.4 million fish from entrainment.3 The study calculated recreational related losses at about $8.1 million per year.3 4 The U.S. Environmental Protection Agency ("EPA") calculated impingement losses at the Delaware Estuary Watershed at more than 9.6 million age-one equivalents of fish every year, or a loss of 332,000 pounds offishery yield.385 The EPA calculated that entrainment related losses were even larger at 616 million fish, or a loss of sixteen million pounds ofcatch.38 Put into monetary value, the recreational fishing loss from impingement and entrainment at nuclear facilities was estimated to be about $5 million per year.38 ' Scientists also calculated that the cooling intake systems at the Crystal River Power Plant in Florida, ajoint nuclear and coal facility, kill about twenty-three tons offish and shellfish every year.88 Top predators, such as gulf flounder and stingray "have either disappeared or changed their feeding patterns.3 8 9 In other parts of Florida, the economic losses induced from four power plants-Big Bend, PL Bartow, FJ Gannon, and Hookers Point-are estimated to be as high as $18.1 million.3s Similarly, in Southern California, marine biologists and ecologists found "that the San Onofre nuclear plant impinged nearly 3.5 million fish in 2003 ....391 As a less noticed but equally important impact, water intake and discharge often alter natural patterns of water levels and flows. Such flows, part ofthe hydrological cycle, have a natural variability that differs daily, weekly, and seasonally.392 Plants and animals have adapted to these fluctuations, and such variability is a key component of ecosystem health.39 3 Withdrawals and discharges alter this natural cycle by removing water during drought conditions or discharging it at different times ofthe year with potentially serious, albeit not well-understood, consequences to eco- system and habitat health.3 94 Interestingly, in some cases the environment has fought back, literally. "In September 1984, a flotilla of jellyfish 'attacked' the St. Lucie nuclear plant in Florida, forcing both of its reactors to shut down for several days due to lack of cooling water."395 At the point of discharge, nuclear plant operators often treat cooling water with chlorine, anti-fouling, anti-microbial, and water conditioning agents "to limit the growth ofmineral and microbial deposits that reduce... [its] heat transfer efficiency,"396 while "re-circulating water is treated with chlorine and biocides" to improve efficiency and eliminate nuisance organisms.39 7 What makes such treated water so effective in kill- ing unwanted species, however, also makes it a potent "kill[er ofl non- target organisms as well."398 Chlorine, biocides, and "their byproducts... present in discharged water plumes... [are often] toxic to aquatic life even at low concentrations."3 99 In addition, discharged cooling water is usually higher in temperature than intake waters, "making electric utilities the largest thermal discharger in the U.S."4 °° Significant temperature differences between the intake water and its discharge, or temperature deltas, "can contribute to destruction of vegetation, increased algae growth, oxygen depletion and strain the temperature range tolerance of organisms."4 °' Further, "[impacts can be multiple and widespread, affecting numerous species at numerous life cycle stages."4 2 "In some cases, plants and animals are not able to survive in or adapt to higher temperature waters .. .403 In other cases, "warmer tem- peratures can send the wrong signals to species," disrupting natural cycles, while some species that thrive in warmer waters "move into the plume and then become susceptible to the 'cold shocks' that occur during periodic plant shutdowns."4' ' In still other cases, the warmer temperature plumes attract invasive or unwanted species that drive out indigenous species and alter habitats, sometimes irreparably.4 5 Both spikes ofhigh temper- ature and the persistent, increasing stress offluctuations in temperature affect aquatic organisms.40 6 The problem is especially acute in "shallower waters that turn over more slowly [and therefore] have a harder time absorbing thermal impact[s]."4 °7 In some cases, the thermal pollution from nuclear plants can induce eutrophication-a process where the warmer temperature alters the chemical composition of the water, resulting in a rapid increase of nutrients such as nitrogen and phosphorous.4 8 Rather than improving the ecosystem, such alterations usually cause "algal blooms, surface scums, floating plant mats" and other weedy growths that severely reduce water quality.40 9 In riparian environments, the enhanced growth of such chok- ing algae and vegetation can collapse entire ecosystems.4 10 "This form of thermal pollution has been known to decrease the aesthetic and recre- ational value of rivers, lakes, and estuaries and complicate drinking water treatment."411

#### Fish feel pain – best evidence goes aff. Sandcastles prove.

Griffiths 14 Sarah “Fish have feelings too: Expert claims creatures experience pain in the same way humans do - and should be treated better” June 19th 2014 Daily Mail <http://www.dailymail.co.uk/sciencetech/article-2662297/Fish-feelings-Expert-claims-creatures-experience-pain-way-humans-better-treated.html> JW

Fishing may not seem like such a relaxing sport anymore, as scientists claim to have found that fish feel pain, just like humans. One researcher believes fish have the same intelligence as other animals and consequently, people should care more for their welfare. Flying in the face of what is considered popular opinion, he added fish have good memories and exhibit behaviour seen in primates, such as building complicated structures like specially-shaped sandcastles, as well as using tools. Associate Professor Culum Brown of Macquarie University in Australia, said fish have very good memories, live in complex social communities where they keep track of individuals and can learn from one another. They develop cultural traditions and can even recognise themselves and others. They also show signs of Machiavellian intelligence, such as cooperation and reconciliation, according to the study, which focuses on bony fish and is published in Springer’s journal Animal Cognition. Professor Brown said the primary senses of the fish are 'just as good' and in some cases better than that of humans. The level of mental complexity that fish display is on a par with most other vertebrates, while there is mounting evidence that they can feel pain in a manner similar to humans. While the brains of fish differ from other vertebrates, fish have many comparable structures that perform similar functions. Professor Brown believes that if some comparable animals are sentient, fish must be considered to be so, too, and therefore their welfare needs should be reconsidered. ‘Although scientists cannot provide a definitive answer on the level of consciousness for any non-human vertebrate, the extensive evidence of fish behavioural and cognitive sophistication and pain perception suggests that best practice would be to lend fish the same level of protection as any other vertebrate,’ he said.

### Terrorism Adv.

#### Two scenarios:

#### A. Power plant attacks.

#### Nuclear power plants are vulnerable to attacks – causes huge blackouts that devastate the economy.

Sovacool and Cooper 8 Benjamin Sovacool (Research Fellow in the Energy Governance Program at the Centre on Asia and Globaliaztion, part of the Lee Kuan Yew School of Public Policy at the National University of Singapore, adjunct professor at the Virginia Polytechnic Institute & State University) and Christopher Cooper (Principal Partner for Oomph Consulting, LLC, former Executive Director of the Network for New Energy Choices) “Nuclear Nonsense: Why Nuclear Power is No Answer to Climate Change and the World's Post- Kyoto Energy Challenges” William & Mary Environmental Law and Policy Review Volume 33 Issue 1 Article 2 2008 h p://scholarship.law.wm.edu/wmelpr/vol33/iss1/2 JW

G. Security Nuclear plants face at least three types of security risks: they rely on a brittle and inefficient "T&D" network prone to accidents, attack and sabotage; power plants and reactor cores themselves offer tempting tar- gets for terrorists; and the fissile material produced from nuclear reactions can be used to make radioactive weapons of mass destruction, for use by rogue states or terrorists regimes bent on producing the greatest amounts of human carnage. 1. T&D Vulnerability A comprehensive, three-year Department of Defense ("DOD") study "concluded that relying on centralized nuclear plants to transmit and distribute electric power created unavoidable (and costly) vulnerabilities. The study noted that T&D systems constituted brittle infrastructure' that could be easily disrupted, curtailed, or attacked."524 One ofthe authors ofthe DOD study, Amory Lovins, has long advanced the idea that power systems which are inefficient and centralized are, by design, prone to major failures.525 "In Britain during the coalminer strikes of 1976, a leader of the power engineers famously told Lovins that the miners brought the country to its knees in 8 weeks, we could do it in 8 minutes." 26 Centralized generation power requires an overly complex distribution system, "subject to cascading failures easily induced by severe weather, human error, sabo- tage, or even the interference ofsmall animals."52 7"Continuous electrical supply," notes Lovins, "now depends on many large and precise machines, rotating in exact synchrony across half a continent, and strung together by an easily severed network of aerial arteries whose failure is instantly disruptive." 2 ' The DOD's conclusions complement a similar study undertaken by the IEA, which noted that centralized energy facilities create tempting targets for terrorists because they would need to attack only a few, poorly guarded facilities to cause large, catastrophic power outages.529 Thomas Homer-Dixon, Chair of Peace and Conflict Studies at the University of Toronto, cautions that it would take merely a few motivated people with minivans, a limited number of mortars and few dozen standard balloons to strafe substations, disrupt transmission lines and cause a "cascade of power failures across the country," costing billions of dollars in direct and indirect damage. 3 ° A deliberate, aggressive, well coordinated assault on the electric power grid could devastate the electricity sector and leave critical sectors of the economy without reliable sources of energy for a long time.53' Paul Gilman, former Executive Assistant to the Secretary of Energy, has argued that the time needed to replace affected infrastructure would be "on the order of Iraq, not on the order of a lineman putting things up a pole."532 The security issues facing the modern electric utility grid are almost as serious as they are invisible. In 1975, the New World Liberation Front bombed assets of the Pacific Gas and Electric Company more than ten times, and members of the Ku Klux Klan and San Joaquin Militia have been convicted of attempting to attack electricity infrastructure." aInternationally, organized paramilitaries such as the Farabundo-Marti National Liberation Front were able to interrupt more than ninety percent ofelec- tric service in El Salvador and penned manuals for successfully attacking power systems. 534 A natural gas pipeline in Colombia has been shot so many times that operators fondly refer to it as "the flute."535 The vulnerabilities of centralized generation systems to accidental or intentional disaster has never been so apparent as in Iraq, where de- termined insurgents destroy critical infrastructure faster than American contractors can rebuild it. James Robb, a former "black ops" agent and expert in counter-terrorism, warns that a terrorist-criminal symbiosis is developing out of the situation in Iraq.536 There, terrorists have learned to fight nation-states strategically, without weapons ofmass destruction using a new method of"systems disruption," a simple way of attacking elec- tricity and natural gas networks that require centralized coordination.5 37 In the last three years of the U.S. occupation of Iraq, relatively simple attacks on oil and electricity networks reduced or held delivery of these services to prewar levels, with a disastrous affect on the country's infant democracy and economy.538 Insurgents were not the first to use such tactics. In its initial wave ofprecision air strikes in January 1991 and March 2003 in Iraq, the U.S. military targeted energy infrastructure, including three nuclear plants, both to disrupt military systems and to enhance the overall psychological 39 and economic impact ofthe attacks." Similarly, under its unilateral and multilateral sanctions regime, the U.S. has barred entry of materials used to build or repair electricity generators, knowing full well how essential such technologies are to a country's economic well-being.540 "Such disrup- tions are designed to erode the target state's legitimacy by keeping it from providing the services it must deliver to command the allegiance of its citizens."5 4' Several recent trends in the electric utility industry have increased the vulnerability ofT&D infrastructure, and thereby made nuclear gen- eration riskier and less reliable. To improve their operational efficiency, many utilities and system operators have increased their reliance on auto- mation and computerization.542 "Low margins and various competitive priorities have encouraged industry consolidation, with fewer and bigger facilities and intensive use of assets.. ." centralized in one geographical area.543 As the National Research Council noted, "[power control systems are] more centralized, spare parts inventories have been reduced, and sub- systems are highly integrated across the entire business. " ' Restructuring and consolidation has resulted in lower investment in security in recent years, as cash-strapped utilities seek to minimize costs and maximize revenue available for other areas. 4 5 2. Plant and Reactor Insecurity Stringent security regulations enacted after September 11th have reduced the risk offorcible entry, car or truck bombings, cyber-terrorism, and aerial bombardment ofnuclear plants.' Yet the NRC found that thirty- seven of eighty-one nuclear plants tested failed their 2002 Operational Safeguards Readiness Evaluation. 7 And while the industry purports that plant structures housing reactor fuel can withstand aircraft impact, multiple reports have cautioned that for too many plants the vital control building-the building that, if hit, could lead to a meltdown-is still located outside protective structures and is vulnerable to attack.54 Furthermore, when the National Research Council surveyed the safety ofthe country's nuclear storage facilities in 2006, they concluded that terrorist attacks were entirely still possible, and that if an attack induced a zirconium cladding fire, it would result in large releases of hazardous radioactive material. 9 The National Research Council emphasized that these vulner- abilities could not be eliminated by dry cask storage technologies because newly discharged fuel rods must be stored onsite." °

#### US is key to global economy; growth solves multiple existential threats.

Haass 13 Richard (President of the Council on Foreign Relations) “The World Without America” April 30th 2013 <http://www.project-syndicate.org/commentary/repairing-the-roots-of-american-power-by-richard-n--haass>

Let me posit a radical idea: The most critical threat facing the United States now and for the foreseeable future is not a rising China, a reckless North Korea, a nuclear Iran, modern terrorism, or climate change. Although all of these constitute potential or actual threats, the biggest challenges facing the US are its burgeoning debt, crumbling infrastructure, second-rate primary and secondary schools, outdated immigration system, and slow economic growth – in short, the domestic foundations of American power. Readers in other countries may be tempted to react to this judgment with a dose of schadenfreude, finding more than a little satisfaction in America’s difficulties. Such a response should not be surprising. The US and those representing it have been guilty of hubris (the US may often be the indispensable nation, but it would be better if others pointed this out), and examples of inconsistency between America’s practices and its principles understandably provoke charges of hypocrisy. When America does not adhere to the principles that it preaches to others, it breeds resentment. But, like most temptations, the urge to gloat at America’s imperfections and struggles ought to be resisted. People around the globe should be careful what they wish for. America’s failure to deal with its internal challenges would come at a steep price. Indeed, the rest of the world’s stake in American success is nearly as large as that of the US itself. Part of the reason is economic. The US economy still accounts for about one-quarter of global output. If US growth accelerates, America’s capacity to consume other countries’ goods and services will increase, thereby boosting growth around the world. At a time when Europe is drifting and Asia is slowing, only the US (or, more broadly, North America) has the potential to drive global economic recovery. The US remains a unique source of innovation. Most of the world’s citizens communicate with mobile devices based on technology developed in Silicon Valley; likewise, the Internet was made in America. More recently, new technologies developed in the US greatly increase the ability to extract oil and natural gas from underground formations. This technology is now making its way around the globe, allowing other societies to increase their energy production and decrease both their reliance on costly imports and their carbon emissions. The US is also an invaluable source of ideas. Its world-class universities educate a significant percentage of future world leaders. More fundamentally, the US has long been a leading example of what market economies and democratic politics can accomplish. People and governments around the world are far more likely to become more open if the American model is perceived to be succeeding. Finally, the world faces many serious challenges, ranging from the need to halt the spread of weapons of mass destruction, fight climate change, and maintain a functioning world economic order that promotes trade and investment to regulating practices in cyberspace, improving global health, and preventing armed conflicts. These problems will not simply go away or sort themselves out. While Adam Smith’s “invisible hand” may ensure the success of free markets, it is powerless in the world of geopolitics. Order requires the visible hand of leadership to formulate and realize global responses to global challenges. Don’t get me wrong: None of this is meant to suggest that the US can deal effectively with the world’s problems on its own. Unilateralism rarely works. It is not just that the US lacks the means; the very nature of contemporary global problems suggests that only collective responses stand a good chance of succeeding. But multilateralism is much easier to advocate than to design and implement. Right now there is only one candidate for this role: the US. No other country has the necessary combination of capability and outlook. This brings me back to the argument that the US must put its house in order – economically, physically, socially, and politically – if it is to have the resources needed to promote order in the world. Everyone should hope that it does: The alternative to a world led by the US is not a world led by China, Europe, Russia, Japan, India, or any other country, but rather a world that is not led at all. Such a world would almost certainly be characterized by chronic crisis and conflict. That would be bad not just for Americans, but for the vast majority of the planet’s inhabitants.

#### B. Dirty bombs.

#### Nuclear facilities allow terrorists to acquire plutonium—they can make nukes and dirty bombs.

Sovacool and Cooper 8 Benjamin Sovacool (Research Fellow in the Energy Governance Program at the Centre on Asia and Globaliaztion, part of the Lee Kuan Yew School of Public Policy at the National University of Singapore, adjunct professor at the Virginia Polytechnic Institute & State University) and Christopher Cooper (Principal Partner for Oomph Consulting, LLC, former Executive Director of the Network for New Energy Choices) “Nuclear Nonsense: Why Nuclear Power is No Answer to Climate Change and the World's Post- Kyoto Energy Challenges” William & Mary Environmental Law and Policy Review Volume 33 Issue 1 Article 2 2008 h p://scholarship.law.wm.edu/wmelpr/vol33/iss1/2 JW

3. Fissile Material Availability and Weapons Proliferation The Nobel Prize winning nuclear physicist Hannes Alfven has been noted as saying that "[a]toms for peace and atoms for war are Siamese twins."5 ' Because slightly less than twenty pounds, or 9.07 kilograms, of plutonium is needed to make a nuclear weapon, 52 every ton of separated plutonium waste has enough material for 110 nuclear weapons. The European Union alone produces 2500 tons of spent fuel produced an- nually, containing about twenty-five tons of separated plutonium, along with 3.5 tons of minor actinides such as neptunium, americium, and curium and three tons oflong-lived fission products553---enough fissile material for 2750 new nuclear weapons every year. The four countries with the largest reprocessing fleets-Belgium, France, Germany, and UK-declared more than 190 tons of separated plutonium in 2007, mostly stored in plutonium dioxide powder at above ground sites and fuel manufacturing complexes 5 - enough for 20,900 nuclear weapons. Put another way, the typical nuclear reactor produces enough plutonium every two months to create a nuclear weapon.555 Taken as a whole, commercial nuclear reactors already create, every four years, an amount of plutonium equal to the entire global military stockpile. 56 And the manufacturing of nuclear weapons from spent fuel is not the only risk: one kilogram ofplutonium is equivalent to about twenty-two million kilowatt hours ofheat energy.557 A dirty bomb laced with a kilogram of plutonium can therefore produce an explosion equal to about 20,000 tons of chemical explosive.58 There is no shortage of terrorist groups eager to acquire the nuclear waste or fissile material needed to make a crude nuclear device or a dirty bomb. The risks are not confined to the reactor-site. All stages of the nuclear fuel cycle are vulnerable, including: \* Stealing or otherwise acquiring fissile material at uranium mines; \* Attacking a nuclear power reactor directly; 0 Assaulting spent fuel storage facilities; 0 Infiltrating plutonium stores or processing facilities; \* Intercepting nuclear materials in transit; \* Creating a dirty bomb from radioactive tailings.5 9 After three decades ofsearching, Pacific Gas & Electric is still un- able to locate segments of one of their fuel rods missing from its Humboldt Baynuclearpowerplant.6° Since1993,shortlyafterthecollapseofthe Soviet Union, authorities have documented 917 incidents of nuclear smug- gling in Russia, Germany, France, Turkey, Libya, Jordan, and Iran, and those are only the incidents we know about. 561 A 2004 Jane'sIntelligence Review report concluded that a substantial increase in the number of new nuclear power plants worldwide would directly increase the risks associated with nuclear weapons proliferation.562

#### That’s the most likely existential threat.

Rhodes 9 Richard (a visiting scholar at Harvard and MIT, and currently he is an affiliate of the Center for International Security and Cooperation at Stanford University. Rhodes is the author of The Making of the Atomic Bomb (1986), which won the Pulitzer Prize in Nonfiction, National Book Award, and National Book Critics Circle Award) “Reducing the nuclear threat: The argument for public safety” December 14th 2009 JW

The response was very different among nuclear and national security experts when Indiana Republican Sen. Richard Lugar surveyed PDF them in 2005. This group of 85 experts judged that the possibility of a WMD attack against a city or other target somewhere in the world is real and increasing over time. The median estimate of the risk of a nuclear attack somewhere in the world by 2010 was 10 percent. The risk of an attack by 2015 doubled to 20 percent median. There was strong, though not universal, agreement that a nuclear attack is more likely to be carried out by a terrorist organization than by a government. The group was split 45 to 55 percent on whether terrorists were more likely to obtain an intact working nuclear weapon or manufacture one after obtaining weapon-grade nuclear material. "The proliferation of weapons of mass destruction is not just a security problem," Lugar wrote in the report's introduction. "It is the economic dilemma and the moral challenge of the current age. On September 11, 2001, the world witnessed the destructive potential of international terrorism. But the September 11 attacks do not come close to approximating the destruction that would be unleashed by a nuclear weapon. Weapons of mass destruction have made it possible for a small nation, or even a sub-national group, to kill as many innocent people in a day as national armies killed in months of fighting during World War II. "The bottom line is this," Lugar concluded: "For the foreseeable future, the United States and other nations will face an existential threat from the intersection of terrorism and weapons of mass destruction." It's paradoxical that a diminished threat of a superpower nuclear exchange should somehow have resulted in a world where the danger of at least a single nuclear explosion in a major city has increased (and that city is as likely, or likelier, to be Moscow as it is to be Washington or New York). We tend to think that a terrorist nuclear attack would lead us to drive for the elimination of nuclear weapons. I think the opposite case is at least equally likely: A terrorist nuclear attack would almost certainly be followed by a retaliatory nuclear strike on whatever country we believed to be sheltering the perpetrators. That response would surely initiate a new round of nuclear armament and rearmament in the name of deterrence, however illogical. Think of how much 9/11 frightened us; think of how desperate our leaders were to prevent any further such attacks; think of the fact that we invaded and occupied a country, Iraq, that had nothing to do with those attacks in the name of sending a message.

### Cyberattack Adv.

#### Cyberattacks on our grids are inevitable—Ukraine proves.

Morgan 16 Steve (Steve Morgan is the Founder and CEO at Cybersecurity Ventures and Editor-In-Chief of the Cybersecurity Market Report. The Cybersecurity Market Report is published quarterly and covers the business of cybersecurity, including global market sizing and industry forecasts from consolidated research by IT analyst firms, emerging trends, employment, the federal sector, hot companies to watch, notable M&A, investment and IPO activity, and more) “Major Cyber Attack On U.S. Power Grid Is Likely” Forbes February 7th 2016 <http://www.forbes.com/sites/stevemorgan/2016/02/07/campaign-2016-major-cyber-attack-on-u-s-power-grid-is-likely/#5339e6a6610f>. JW

In his New York Times bestselling investigation, Koppel reveals that a major cyberattack on America’s power grid is not only possible but likely, that it would be devastating, and that the United States is shockingly unprepared. U.S. investigators recently found proof that a cyber attack can take down a power grid. A destructive malware app known as ‘BlackEnergy’ caused a power outage on the Ukranian power grid this past December, resulting in a blackout for hundreds of thousands of people. Ukranian officials have blamed Russia for the cyber attack. A CNN article states that U.S. systems aren’t any more protected than those breached in Ukraine.

#### The threat of cyber-attack is real – multiple countries and terrorists are acquiring capabilities

Habiger 10 (Eugue, Retired Air Force General, Cyberwarfare and Cyberterrorism, The Cyber Security Institute, 2/1, p. 11-19)

However, there are reasons to believe that what is going on now amounts to a fundamental shift as opposed to business as usual. Today’s network exploitation or information operation trespasses possess a number of characteristics that suggest that the line between espionage and conflict has been, or is close to being, crossed. (What that suggests for the proper response is a different matter.) First, the number of cyberattacks we are facing is **growing significantly**. Andrew Palowitch, a former CIA official now consulting with the US Strategic Command (STRATCOM), which oversees the Defense Department’s Joint Task Force‐Global Network Operations, recently told a meeting of experts that the Defense Department has experienced **almost 80,000 computer attacks**, and some number of these assaults have actually “reduced” the military’s “**operational capabilities**.”20 Second, the nature of these attacks is starting to shift from penetration attempts aimed at gathering intelligence (cyber spying) **to offensive efforts** aimed at taking down systems (cyberattacks). Palowitch put this in stark terms last November, “We are currently in a cyberwar and war is going on today.”21 Third, these recent attacks need to be taken in a broader strategic context. Both Russia and China have stepped up their offensive efforts and taken a **much more aggressive cyberwarfare posture**. The Chinese have developed an openly discussed cyberwar strategy aimed at achieving electronic dominance over the U.S. and its allies by 2050. In 2007 the Department of Defense reported that for the first time China has developed **first strike viruses**, marking a **major shift** from prior investments in defensive measures.22 And in the intervening period China has launched a series of offensive cyber operations against U.S. government and private sector networks and infrastructure. In 2007, Gen. James Cartwright, the former head of STRATCOM and now the Vice Chairman of the Joint Chiefs of Staff, told the US‐China Economic and Security Review Commission that China’s ability to launch “denial of service” attacks to overwhelm an IT system is of particular concern. 23 Russia also has already begun to wage offensive cyberwar. At the outset of the recent hostilities with Georgia, Russian assets launched a series of cyberattacks against the Georgian government and its critical infrastructure systems, including media, banking and transportation sites.24 In 2007, cyberattacks that many experts attribute, directly or indirectly, **to Russia shut down the Estonia government’s IT systems**. Fourth, the current geopolitical context must also be factored into any effort to gauge the degree of threat of cyberwar. The start of the new Obama Administration has begun to help reduce tensions between the United States and other nations. And, the new administration has taken initial steps to improve bilateral relations specifically with both China and Russia. However, it must be said that over the last few years the posture of both the Chinese and Russian governments toward America has clearly become **more assertive, and** at times even **aggressive**. Some commentators have talked about the prospects of a cyber Pearl Harbor, and the pattern of Chinese and Russian behavior to date **gives reason for concern** along these lines: both nations have offensive cyberwarfare strategies in place; both nations have taken the cyber equivalent of building up their forces; both nations now regularly probe our cyber defenses looking for gaps to be exploited; both nations have begun taking actions that cross the line from cyberespionage to cyberaggression; and, our bilateral relations with both nations are increasingly **fractious and complicated by** areas of marked, direct **competition**. Clearly, there a sharp differences between current U.S. relations with these two nations and relations between the US and Japan just prior to World War II. However, from a strategic defense perspective, there are enough warning signs to warrant preparation. In addition to the threat of cyberwar, the limited resources required to carry out even a large scale cyberattack also makes **likely the potential for a significant cyberterror attack** against the United States. However, the lack of a long list of specific incidences of cyberterrorism should provide no comfort. There is **strong evidence** to suggest that al Qaeda has the ability to conduct cyberterror attacks against the United States and its allies. Al Qaeda and other terrorist organizations are extremely active in cyberspace, using these technologies to communicate among themselves and others, carry out logistics, recruit members, and wage information warfare. For example, al Qaeda leaders used email to communicate with the 9‐11 terrorists and the 9‐11 terrorists used the Internet to make travel plans and book flights. Osama bin Laden and other al Qaeda members routinely post videos and other messages to online sites to communicate. Moreover, there is evidence of efforts that al Qaeda and other terrorist organizations are **actively developing cyberterrorism capabilities** and seeking to carry out cyberterrorist attacks. For example, the Washington Post has reported that “U.S. investigators have found evidence in the logs that mark a browser's path through the Internet that al Qaeda operators spent time on sites that offer software and programming instructions for the digital switches that run power, water, transport and communications grids. In some interrogations . . . al Qaeda prisoners have described intentions, in general terms, to use those tools.”25 Similarly, a 2002 CIA report on the cyberterror threat to a member of the Senate stated that al Qaeda and Hezbollah have become "more adept at using the internet and computer technologies.”26 The FBI has issued bulletins stating that, “U. S. law enforcement and intelligence agencies have received indications that Al Qaeda members have sought information on Supervisory Control And Data Acquisition (SCADA) systems available on multiple SCADA‐related web sites.”27 In addition a number of jihadist websites, such as 7hj.7hj.com, teach computer attack and hacking skills in the service of Islam.28 While al Qaeda may lack the cyber‐attack capability of nations like Russia and China, there is every reason to believe its operatives, and those of its ilk, are as capable as the cyber criminals and hackers who routinely effect great harm on the world’s digital infrastructure generally and American assets specifically. In fact, perhaps, the most troubling indication of the level of the cyberterrorist threat is the countless, serious non‐terrorist cyberattacks routinely carried out by criminals, hackers, disgruntled insiders, crime syndicates and the like. If run‐of‐the‐mill criminals and hackers can threaten powergrids, hack vital military networks, steal vast sums of money, take down a city’s of traffic lights, compromise the Federal Aviation Administration’s air traffic control systems, among other attacks, it is **overwhelmingly likely** that terrorists can carry out similar, if not more malicious attacks. Moreover, even if the world’s terrorists are unable to breed these skills, they can certainly buy them. There are untold numbers of cybermercenaries around the world—sophisticated hackers with advanced training who would be willing to offer their services for the right price. Finally, given the nature of our understanding of cyber threats, there is always the possibility that we have already been the victim or a cyberterrorist attack, or such an attack has already been set but not yet effectuated, and we don’t know it yet. Instead, a well‐designed cyberattack has the capacity **cause widespread chaos**, sow societal unrest, undermine national governments, spread paralyzing fear and anxiety, and create a state of utter turmoil, all without taking a single life. A sophisticated cyberattack could throw a nation’s banking and finance system into chaos **causing markets to crash**, prompting runs on banks, **degrading confidence in markets**, perhaps even putting the nation’s currency in play and making the government look helpless and hapless. In today’s difficult economy, imagine how Americans would react if vast sums of money were taken from their accounts and their supporting financial records were destroyed. A truly nefarious cyberattacker could carry out an attack in such a way (akin to Robin Hood) as to engender populist support and deepen rifts within our society, thereby making efforts to restore the system all the more difficult. A modestly advanced enemy could use a cyberattack to shut down (if not physically damage) one or more regional power grids. An entire region could be cast into total darkness, power‐dependent systems could be shutdown. An attack on one or more regional power grids could also cause **cascading effects that could jeopardize our entire national grid**. When word leaks that the blackout was caused by a cyberattack, the specter of a foreign enemy capable of sending the entire nation into darkness would only **increase the fear, turmoil and unrest**. While the finance and energy sectors are considered prime targets for a cyberattack, an attack on any of the 17 delineated critical infrastructure sectors could have a major impact on the United States. For example, our healthcare system is already technologically driven and the Obama Administration’s e‐health efforts will only increase that dependency. A cyberattack on the U.S. e‐health infrastructure could send our healthcare system into chaos and put countless of lives at risk. Imagine if emergency room physicians and surgeons were suddenly no longer able to access vital patient information. A cyberattack on our nation’s water systems could likewise cause **widespread disruption**. An attack on the control systems for one or more dams could put entire communities at risk of being inundated, and could **create ripple effects across the water, agriculture, and energy sectors**. Similar water control system attacks could be used to at least temporarily **deny water to** otherwise **arid regions**, impacting everything from the quality of life in these areas to agriculture. In 2007, the U.S. Cyber Consequences Unit determined that the destruction from a single wave of cyberattacks on critical infrastructures could exceed $700 billion, which would be the rough equivalent of 50 Katrina‐esque hurricanes hitting the United States all at the same time.29 Similarly, one IT security source has estimated that the impact of a single day cyberwar attack that focused on and disrupted U.S. credit and debit card transactions would be approximately $35 billion.30 Another way to gauge the potential for harm is in comparison to other similar noncyberattack infrastructure failures. For example, the August 2003 regional power grid blackout is estimated to have cost the U.S. economy up to $10 billion, or roughly .1 percent of the nation’s GDP. 31 That said, a cyberattack of the exact same magnitude would most certainly have a much larger impact. The origin of the 2003 blackout was almost immediately disclosed as an atypical system failure having nothing to do with terrorism. This made the event both less threatening and likely a single time occurrence. Had it been disclosed that the event was the result of an attack that could readily be repeated the impacts would likely have grown substantially, if not exponentially. Additionally, a cyberattack could also be used to **disrupt our nation’s defenses or distract our** national **leaders** in advance of a more traditional conventional or strategic attack. Many military leaders actually believe that such a disruptive cyber pre‐offensive is the most effective use of offensive cyber capabilities. This is, in fact, the way Russia utilized cyberattackers—whether government assets, governmentdirected/ coordinated assets, or allied cyber irregulars—in advance of the invasion of Georgia. Widespread distributed denial of service (DDOS) attacks were launched on the Georgian governments IT systems. Roughly a day later Russian armor **rolled into Georgian territory**. The cyberattacks were used to prepare the battlefield; they denied the Georgian government a critical communications tool isolating it from its citizens and degrading its command and control capabilities precisely at the time of attack. In this way, these attacks were the functional equivalent of conventional air and/or missile strikes on a nation’s communications infrastructure.32 One interesting element of the Georgian cyberattacks has been generally overlooked: On July 20th, weeks before the August cyberattack, the website of Georgian President Mikheil Saakashvili was overwhelmed by a more narrowly focused, but technologically similar DDOS attack.33 This should be particularly chilling to American national security experts as our systems undergo the same sorts of focused, probing attacks on a constant basis. The ability of an enemy to use a cyberattack to counter our offensive capabilities or **soften our defenses for a wider offensive** against the United States is **much more than mere speculation**. In fact, in Iraq it is already happening. Iraq insurgents are now using off‐the‐shelf software (costing just $26) to hack U.S. drones (costing $4.5 million each), allowing them to intercept the video feed from these drones.34 By hacking these drones the insurgents have succeeded in greatly reducing **one of our most valuable sources of real‐time intelligence** and situational awareness. If our enemies in Iraq are capable of such an effective cyberattack against one of our more sophisticated systems, consider what a more technologically advanced enemy could do. At the strategic level, in 2008, as the United States Central Command was leading wars in both Iraq and Afghanistan, a cyber intruder compromised the security of the Command and sat within its IT systems, monitoring everything the Command was doing. 35 This time the attacker simply gathered vast amounts of intelligence. However, it is clear that the attacker could have used this access to wage cyberwar—**altering information, disrupting the flow of information, destroying information, taking down systems**—against the United States forces already at war. Similarly, during 2003 as the United States prepared for and began the War in Iraq, the IT networks of the Department of Defense were hacked 294 times.36 By August of 2004, with America at war, these ongoing attacks compelled then‐Deputy Secretary of Defense Paul Wolfowitz to write in a memo that, "Recent exploits have **reduced operational capabilities on our networks**."37 This wasn’t the first time that our national security IT infrastructure was penetrated immediately in advance of a U.S. military option.38 In February of 1998 the Solar Sunrise attacks systematically compromised a series of Department of Defense networks. What is often overlooked is that these attacks occurred during the ramp up period ahead of potential military action against Iraq. The attackers were able to obtain vast amounts of sensitive information—information that would have certainly been of value to an enemy’s military leaders. There is no way to prove that these actions were purposefully launched with the specific intent to distract American military assets or degrade our capabilities. However, such ambiguities—the inability to specifically attribute actions and motives to actors—are the very nature of cyberspace. Perhaps, these repeated patterns of behavior were mere coincidence, or perhaps they weren’t. The potential that an enemy might use a cyberattack to soften physical defenses, increase the gravity of harms from kinetic attacks, or both, significantly increases the potential harms from a cyberattack. Consider the gravity of the threat and risk if an enemy, rightly or wrongly, believed that it could use a cyberattack to degrade our strategic weapons capabilities. Such an enemy might be convinced that **it could win a war**—conventional or **even nuclear**—against the United States. The effect of this would be to **undermine our deterrence**‐based defenses, making us **significantly more at risk of a major war**.

#### Cyberattack causes nuclear reactor failure and is the largest existential threat. Grids are vulnerable now.

Huff 14 Ethan (staff writer for Natural News) “Nuclear power + grid down event = global extinction for humanity” August 12th 2014 Natural News [http://www.naturalnews.com/046429\_nuclear\_power\_electric\_grid\_global\_extinction.html#](http://www.naturalnews.com/046429_nuclear_power_electric_grid_global_extinction.html) JW

If you think the Fukushima situation is bad, consider the fact that the United States is vulnerable to the exact same meltdown situation, except at 124 separate nuclear reactors throughout the country. If anything should happen to our nation's poorly protected electric power grid, these reactors have a high likelihood of failure, say experts, a catastrophic scenario that would most likely lead to the destruction of all life on our planet, including humans. Though they obviously generate power themselves, nuclear power plants also rely on an extensive system of power backups that ensure the constant flow of cooling water to reactor cores. In the event of an electromagnetic pulse (EMP), for instance, diesel-powered backup generators are designed to immediately engage, ensuring that fuel rods and reactor cores don't overheat and melt, causing unmitigated destruction. But most of these generators were only designed to operate for a maximum period of about 24 hours or less, meaning they are exceptionally temporary in nature. In a real emergency situation, such as one that might be caused by a systematic attack on the power grid, it could take days or even weeks to bring control systems back online. At this point, all those backup generators would have already run out of fuel, leaving nuclear reactors everywhere prone to meltdowns. Cost to retrofit power grid minimal, but government won't do it According to Dave Hodges from The Common Sense Show, it would only cost taxpayers about $2 billion to update the power grid and protect it from attack or shutdown. This is roughly the same price as a single B-1 Stealth Bomber, or the annual sum that the government pays American farmers not to grow crops. In other words, it is a mere drop in the bucket compared to everything else the government spends money on. And yet nothing is being done to protect the power grid against failure or, worse yet, an attack by domestic or foreign enemies. Investment guru Paul Singer warned about this, noting that an electromagnetic surge is the "most significant danger" facing the world today. "Even horrendous nuclear war, except in its most extreme form, can [be] a relatively localized issue," said Singer, "and the threat from asteroids can (possibly) be mitigated."

#### Fukushima proves.

Hodges 14 Dave (The Common Sense Show features a wide variety of important topics that range from the loss of constitutional liberties, to the subsequent implementation of a police state under world governance, to exploring the limits of human potential. The primary purpose of The Common Sense Show is to provide Americans with the tools necessary to reclaim both our individual and national sovereignty) “Nuclear Power Plants Will Become America’s Extinction Level Event” The Common Sense Show April 18th 2014 http://www.thecommonsenseshow.com/2014/04/18/nuclear-power-plants-will-become-americas-extinction-level-event/ JW

Lessons Learned from Fukushima Fukushima is often spoken of by many, as a possible extinction level event because of the radiation threat. Fukushima continues to wreak havoc upon the world and in the United States as we are being bathed in deadly radiation from this event. Coming to a neighborhood near you. Because of Fukushima, fish are becoming inedible and the ocean currents as well as the prevailing ocean winds are carrying deadly radiation. Undoubtedly, by this time, the radioactivity has made its way into the transpiration cycle which means that crops are being dowsed with deadly radiation. The radiation has undoubtedly made its way into the water table in many areas and impacts every aspect of the food supply. The health costs to human beings is incalculable. However, this article is not about the devastation at Fukushima, instead, this article focuses on the fact that North America could have a total of 124 Fukushima events if the necessary conditions were present.

### Safety Adv.

#### More meltdowns are bound to happen – the impact is mass death and tech can’t solve.

Sovacool and Cooper 8 Benjamin Sovacool (Research Fellow in the Energy Governance Program at the Centre on Asia and Globaliaztion, part of the Lee Kuan Yew School of Public Policy at the National University of Singapore, adjunct professor at the Virginia Polytechnic Institute & State University) and Christopher Cooper (Principal Partner for Oomph Consulting, LLC, former Executive Director of the Network for New Energy Choices) “Nuclear Nonsense: Why Nuclear Power is No Answer to Climate Change and the World's Post- Kyoto Energy Challenges” William & Mary Environmental Law and Policy Review Volume 33 Issue 1 Article 2 2008 h p://scholarship.law.wm.edu/wmelpr/vol33/iss1/2 JW

F. Safety While the Chair of the Public Information Committee of the American Nuclear Society has publicly stated that "the industry has provenitselftobethesafestmajorsourceofelectricityintheWestern world,"" 9 the history of nuclear power proves otherwise. The safety record of nuclear plants is lackluster at best. For one salient example, consider that Ukraine still has a Ministry of Emergency, some twenty-two years after the Chernobyl nuclear disaster warranted its creation."' No less than seventy-six nuclear accidents, defined as incidents that either resulted in the loss ofhuman life or more than $50,000 ofproperty damage, totaling more than $19 billion in damages have occurred worldwide from 1947 to 2008."' See Table B. One survey of major energy accidents from 1907 to 2007 found that nuclear plants ranked first in economic cost among all energy accidents, accounting for 41% of all accident related property damage, or $16.6 billion in property loss, even though nuclear power plants did not even begin commercial operation until the 1950s.42These numbers translate tomore than one incident and $332 million in damages every year for the past three decades. Forty-three accidents have occurred since the Chernobyl disaster in 1986, and almost two-thirds of all nuclear accidents have oc- curred in the U.S., refuting the notion that severe accidents are relegated to the past or to countries without America's modern technologies or industry oversight." 3 Even the most conservative estimates find that nuclear power accidents have killed 4100 people,' or more people than have died in commercial U.S. airline accidents since 1982."' "[N]uclear power accidents have involved meltdowns, explosions, fires, and loss of coolant, and have occurred during both normal operation and extreme, emergency conditions such as droughts and earthquakes."4 6 One index of nuclear power accidents that included costs beyond death and property damage-such as injuring and irradiating workers and malfunctions that did not result in shutdowns or leaks--documented 956 incidents from 1942 to 2007." 7 Using some of the most advanced probabilistic risk assessment tools available, an interdisciplinary team at MIT identified possible reactor failures in the U.S. and predicted that the best estimate of core damage frequency was around one every 10,000 reactor years." 8 In terms of the expected growth scenario for nuclear power from 2005 to 2055, the MIT team estimated that at least four serious core damage accidents will occur and concluded that "both the historical and the PRA [probabilistic risk assessment] data show an unacceptable accident frequency."" 9 Further, "[tihe potential impact on the public from safety or waste management failure... make it impossible today to make a credible case for the im- mediate expanded use of nuclear power."4 51 Another assessment conducted by the CEA in France tried to asso- ciate nuclear plant design with human error such that technical innovation could help eliminate the risk of human-induced accidents.45 ' Two types of mistakes were deemed the most egregious: errors committed during field operations, such as maintenance and testing, that can cause an accident, and human errors made during small accidents that cascade to complete failure.452 There may be no feasible way to "design around" these risks. For example, when another group of CEA researchers examined the safety performance ofadvanced French Pressurized Water Reactors, they concluded that human factors would contribute to about one-fourth (twenty-three percent) of the likelihood of a major accident.4 53 Consider that the two most significant nuclear power accidents, Chernobyl and Three Mile Island, were human caused and then exacer- bated by more human mistakes. 1. Chernobyl, Ukraine On the evening of April 25, 1986, evening shift engineers at Chernobyl's number four reactor experimented with the cooling pump system to see if it could still function without auxiliary electricity sup- plies.454 In order to proceed with the test, the operators turned off the automatic shutdown system. 5 At the same time, "they mistakenly lo- wered too many control rods into the reactor core," dropping plant output too quickly.4 56 This stressed the fuel pellets, causing ruptures and explo- sions, bursting "the reactor roof and sweeping the eruption outwards into the sur-rounding atmosphere. As air raced into the shattered reactor, it ignited flammable carbon monoxide gas and created a radioactive fire that burned for nine days."457 Immediately following the accident, 116,000 people were evacuated from a thirty square kilometer exclusive zone constituting parts of Belarus, Ukraine, and Russia.45 The large city ofPripiat, Ukraine, had to be completely abandoned.45 9 The Chernobyl meltdown released more than two hundred times the radiation released by the atom bombs dropped on Nagasaki and Hiroshima.46 ° More than five million people, including 1.6 million chil- dren, were exposed to dangerous levels of radiation, and about 246,000 square kilometers were contaminated with iodine-131, ruthenium-106, cerium-141 and -144, cesium-137, strontium-89 and -90, and plutonium- 238-some ofwhich will remain lethally radioactive for more than 10,000 years. 1 At least 350,000 more people had to be forcibly resettled from the area.462 Cesium and strontium severely contaminated agricultural products, livestock, and soil as far away as Japan and Norway; some milk in Eastern Europe is still undrinkable.463 Human error after the initial accident also exacerbated the situation and needlessly exposed millions of people to unhealthy levels of radiation. For example, the Soviet government did not begin evacuations until April 28, two full days after the accident, because they had planned on covering up the accident until a Swedish radiation monitoring station 800 miles northwest of Chernobyl reported radiation levels forty percent higher than normal.4" Russian and Ukrainian disaster managers mistakenly sent about 1000 buses contaminated with radioactive iodine dur- ing the evacuation back into public transportation service in Kiev.466 Some members of the Russian military personally contaminated themselves, and their families, by rushing back into the disaster area in what they believed was a sign of bravery.' The act extended a long tradi- tion of Soviet troops exposing themselves to radiation as a sign of strength, including tanks intentionally driving through nuclear weapons fallout and aircraft flying back into the fallout from atmospheric weapons test- ing.46 v In what could qualify as a scene from a National Lampoon's movie if the consequences were not so dire, a Russian helicopter crew quickly redeployed from Afghanistan, was assigned to drop boric acid on the ex- posed fissile material above Chernobyl's shattered reactor only to crash into it, causing yet another radioactive explosion.468 After these accidents, "traces of radioactive deposits unique to Chernobyl were found in nearly every country in the northern hemi- sphere."46s The international community sponsored a $1.4 billion decontamination project, including the construction of a massive sarcophagus and 131 hydroelectric installations to prevent contaminated water from flowing downstream on the Pripiat and Dnieper rivers.47 ° See Figure 4. Soviet authorities strongly urged as many as 400,000 abortions in an effort to mitigate the reporting of birth defects.47' The International Atomic Energy Agency, working with the World Health Organization, attributed up to 4000 deaths to the Chernobyl nuclear accident,472 whereas other studies put the numbers at 93,000 fatal cancer deaths throughout Europe, 140,000 in Ukraine and Belarus, and another 60,000 in Russia, for a total of 293,000 [deaths]. 473 Figure 5: Chernobyl Reactor Number Four in 2008, Still Highly Radioactive and Undergoing Multi-Billion Dollar Decommissioning The consequences of the accident at Chernobyl, moreover, are far from over. Fallout from Chernobyl contaminated about six million hectares of forest in the Gomel and Mogilev regions of Belarus, the Kiev region of Ukraine, and the Bryansk region of the Russian Federation.47 4 Three of the contaminants, cesium-137, strontium-90, and plutonium-239, are ex- traordinarily robust and extremely dangerous .17' Ninety-five percent of these contaminants accumulated in living trees,476 but 770 wildfires have occurred in the contaminated zone from 1993 to 200 l 7 each one releasing radioactive emissions far into the atmosphere.4 v8 A single, severe fire in 1992 burned five square kilometers of land contaminated by Chernobyl, including 2.7 square kilometers ofhighly contaminated Red Forest next to the reactor, carrying highly toxic cesium dust particles into the upper atmosphere,4 7 9 distributing radioactive smoke particles thousands ofkilo- meters, and exposing at least 4.5 million people to dangerous levels ofradi- ation.' Radiation levels were so high after the 1992 fire that scientists throughout Europe initially thought there had been a second meltdown at Chernobyl Reactors One or Two, which remained in operation until 2000.481 2. Three Mile Island, Pennsylvania, United States On March 28, 1979, equipment failures and operator error con- tributed to the loss of coolant and a partial core meltdown at the Three Mile Island ("TMI") nuclear reactor in Pennsylvania, causing $2.4 billion in property damages.4 2 Technically, the meltdown at TMI was a "loss of coolant" accident.4' The primary feed-water pumps stopped running at TMI Unit 2, preventing the large steam generators at the reactor site from removing necessary exhaust heat.' As the steam turbines and reactor automatically shut down, contaminated water poured out of open valves and caused the core of the reactor to overheat, inducing a partial core meltdown. 4 5 A commission chartered by President Carter to study the accident, however, found that human error played the most significant factor in the meltdown." 6 The commission stated that the TMI operators were not well trained, operating procedures were confusing, and administrators had failed to learn lessons in safety from past incidents at the plant."7 The commission concluded that "we have stated that fundamental changes must occur in organizations, procedures, and above all, in the attitudes of people. No amount of technical 'fixes' will cure this underlying problem."' Several American regulatory agencies conducted detailed studies of the radiological consequences of the accident, and a consensus has emerged that while the average dose of exposure from the accident was one millirem, or one-sixth the exposure from a full set of chest x-rays,"' the situation came dangerously close to releasing catastrophic amounts of radioactivity.49 °For example, when federal investigators arrived on the scene, they discovered two pieces of alarming news that had not been widely reported. First, the reactor core was more badly damaged than previously thought.491 Falling coolant levels in the reactor core exposed the tops of fuel rods to the air, causing oxidation of the cladding used to protect the rods.492 The result was that radioactive gases like xenon-133, krypton-85 and iodine-131 seeped out of cracks in the reactor.49 3 Second, a gas bubble nearly 1000 cubic feet in size had developed at the top ofthe reactor.4" Apparently the reactor core had reached high enough levels that the coolant water had decomposed into its primary elements: hydrogen and oxygen.495 Investigators feared that the bubble would continue to grow, forcing even more coolant water out of the reactor and allowing the core to reach temperatures of 5000 degrees.4 96 At that point, the uranium fuel would begin to melt, risking a total core meltdown and a catastrophic release of the reactor's radioactive material.497 Although the incident at Three Mile Island avoided this nightmare scenario, barely, it brought about sweeping changes to the industry and forced the permanent closure and decommissioning ofTMI Unit 2."' After the accident, emergency response planning, reactor operator training, human factors engineering, radiation protection, and many other areas of nuclear power plant operations in the U.S. were radically reformed.4 99 3. Newer Reactors are the Riskiest Unfortunately, safety risks such as those at Chernobyl and Three Mile Island are only amplified with new generations of nuclear systems. Nuclear engineer David Lochbaum has noted that almost all serious nuclear accidents occurred with recent technology, making newer systems the riskiest.5" In 1959, the Sodium Research Experiment reactor in California experienced a partial meltdown fourteen months after opening." 1 In 1961, the S1-1 Reactor in Idaho was slightly more than two years old before a fatal accident killed everyone at the site.50 2 The Fermi Unit 1 reactor began commercial operation in August 1966, but had a partial meltdown only two months after opening.50 3 The St. Laurent des Eaux Al Reactor in France started in June 1969, but an online refueling machine malfunc- tioned and melted 400 pounds of fuel four months later."4 The Browns Ferry Unit 1 reactor in Alabama began commercial operation in August 1974 but experienced a fire severely damaging control equipment six months later.5 Three Mile Island Unit 2 began commercial operation in December 1978 but had a partial meltdown three months after it started.0 6 Chernobyl Unit 4 started up in August 1984, and suffered the worst nuclear disaster in history on April 26, 1986 before the two-year anniversary of its operation.0 7 Safety risks may be especially acute for new reactors in the U.S. for three reasons. First, the pressure to build new generators on existing sites to avoid complex issues associated with finding new locations.. only increases the risk of catastrophe, because there is a greater chance that one accident can affect multiple reactors. Second, Generation IV researchers continue to pursue breeder reactor designs that use liquid sodium as cool- ant.5" Liquid sodium, however, can be dangerous, since it can immediately catch fire when exposed to water.510 Third, the domestic nuclear industry lacks qualified and experienced staff and is losing much of the expertise thatitdoeshavetoretirement,attritionanddeath.5 'TheDOEhaswarned that the lack of growth in the domestic nuclear industry has gradually eroded important infrastructural elements such as experienced personnel in nuclear energy operations, engineering, radiation protection, and other professional disciplines; qualified suppliers ofnuclear equipment and com- ponents, including fabrication capability; and contractor, architect, and engineer organizations with personnel, skills, and experience in nuclear design, engineering, and construction.512 Since all commercial American reactors are light water reactors,518 system operators have little experience with newer gas cooled and other advanced reactor designs used through- out the world. Moreover, the Nuclear Energy Institute warned in 2005 that "half of the industry's employees are over 47 years old, and more than a quarter.. .already are eligible to stop working," implying that the industry had far fewer available specialists with the requisite knowledge necessary to facilitate any rapid expansion of nuclear power, let alone a safe one.14

### Underview

#### 1. Prefer a comparing worlds paradigm—the neg must prove proactive desirability of a competitive advocacy. Truth-testing gives the neg an infinite amount of NIBs-they can prove morality doesn’t exist, it’s inaccessible, or read multiple side constraint theories. If they have to prove desirability then they share assumptions with the aff which levels out the playing field, so it’s key to fairness. This takes out textuality standards on T because they assume my burden is to prove the resolution true.

#### 2. Aff gets 1AR theory- otherwise the neg can be infinitely abusive and there’s no way to check against this. 1AR theory is drop the debater- the 1ARs too short to be able to rectify abuse and adequately cover substance- you must be punished.

#### 3. Vote aff if I win a counter interp to neg theory: key to strategy – six minute 2NR can split its time on multiple issues and make it impossible for the 2AR to cover every issue – I need collapse as an option to give me a shot.

## 1AC – SV

### Framework

#### Excessive abstraction entrenches dominant power structures which causes oppression and rips ideal theory of its normative value.

Mills 5 Charles W. Mills (John Evans Professor of Moral and Intellectual Philosophy) ““Ideal Theory” as Ideology” Hypatia vol. 20, no. 3 (Summer 2005) JW

#### Now **what distinguishes ideal theory is not merely** the **use of ideals**, since obviously nonideal theory can and will use ideals also (certainly it will appeal to the moral ideals, if it may be more dubious about the value of invoking idealized human capacities). What distinguishes ideal theory **is the reliance on idealization to the exclusion**, or at least marginalization, **of the actual**. As O’Neill emphasizes, this is not a necessary corollary of the operation of abstraction itself, since one can have abstractions of the ideal-as-descriptive-model type that abstract without idealizing. But **ideal theory** either tacitly **represents the actual as a** simple **deviation from the ideal, not worth theorizing in its own right**, or claims that starting from the ideal is at least the best way of realizing it. Ideal theory as an approach will then utilize as its basic apparatus some or all of the following concepts and assumptions (there is necessarily a certain overlap in the list, since they all intersect with one another): **An idealized social ontology**. Moral theory deals with **the normative**, but it **cannot avoid some characterization of the human beings who make up the society**, and whose interactions with one another are its subject. So some overt or tacit social ontology has to be presupposed. An idealized social ontology of **the modern type** (as against, say, a Platonic or Aristotelian type) **will typically assume the abstract and** undifferentiated **equal atomic individuals** of classical liberalism. Thus **it will abstract away from relations of structural domination, exploitation, coercion, and oppression, which in reality**, of course, **will profoundly shape the ontology of those same individuals, locating them in superior and inferior positions in social hierarchies of various kinds**. • Idealized capacities. The human agents as visualized in the theory will also often have completely unrealistic capacities attributed to them—unrealistic even for the privileged minority, let alone those subordinated in different ways, who would not have had an equal opportunity for their natural capacities to develop, and who would in fact typically be disabled in crucial respects. • Silence on oppression. Almost **by defi nition, it follows from** the focus of **ideal theory that** little or **nothing will be said on actual historic oppression and its legacy** in the present, **or current ongoing oppression**, though these may be gestured at in a vague or promissory way (as something to be dealt with later). Correspondingly, **the ways in which systematic oppression is likely to shape the basic social institutions** (as well as the humans in those institutions) **will not be part of the theory’s concern**, and this will manifest itself in the absence of ideal-as-descriptive-model concepts that would provide the necessary macroand micro-mapping of that oppression, and that are requisite for understanding its reproductive dynamic. • Ideal social institutions. Fundamental social institutions such as the family, the economic structure, the legal system, will therefore be conceptualized in ideal-as-idealized-model terms, with little or no sense of how their actual workings may systematically disadvantage women, the poor, and racial minorities. • An idealized cognitive sphere. Separate from, and in addition to, the idealization of human capacities, what could be termed **an idealized cognitive sphere will** also **be presupposed**. In other words, as a corollary of the general ignoring of oppression, **the consequences of oppression for** f the social cognition of these agents, both the advantaged and **the disadvantaged, will** typically **not be recognized**, let alone theorized. A general **social transparency will be presumed**, with cognitive obstacles minimized as limited to biases of self-interest or the intrinsic difficulties of understanding the world, and little or **no attention paid to the distinctive role of hegemonic ideologies** and group-specifi c experience **in distorting our perceptions and conceptions of the social order.**

#### Ethical frameworks that abstract away from concrete social conditions are violently appropriated – ethics that can be conscious of current deficits in society are key to overcome oppression

Butler 5, Judith. *Giving an Account of Oneself.* Fordham University Press. 2005. NP 10/11/15.

I would like to begin by considering how it might be possible to pose the question of moral philosophy, a question that has to do with conduct and, hence, with doing, within a contemporary social frame. To pose this question in this way is already to admit to a prior thesis, namely, that moral questions not only emerge in the context of social relations, but that the form [of] these questions take changes according to context, and even that context, in some sense, inheres in the form of the question. In Problems of Moral Philosophy, a set of lectures given in the summer of 1963, Adorno writes, ‘‘We can probably say that moral questions have always arisen when moral norms of behaviour have ceased to be self-evident and unquestioned in the life of a community.’’1 In a way, this claim seems to give an account of the conditions under which moral questions arise, but Adorno further specifies the account. There he offers a brief critique of Max Scheler, who laments the Zersetzung of ethical ideas, by which he means the destruction of a common and collective ethical ethos. 3 4 An Account of Oneself Adorno refuses to mourn this loss, worrying that the collective ethos is invariably a conservative one, which postulates a false unity that attempts to suppress the difficulty and discontinuity existing within any contemporary ethos. It is not that there was once a unity that subsequently has come apart, only that there was once an idealiza- tion, indeed, a nationalism, that is no longer credible, and ought not to be. As a result, Adorno cautions against the recourse to ethics as a certain kind of repression and violence. He writes: nothing is more degenerate than the kind of ethics or morality that survives in the shape of collective ideas even after the World Spirit has ceased to inhabit them—to use the Hegelian expression as a kind of shorthand. Once the state of human consciousness and the state of social forces of production have abandoned these collective ideas, these ideas acquire repressive and violent qualities. And what forces philosophy into the kind of reflections that we are expressing here is the element of compulsion which is to be found in traditional customs; it is this violence and evil that brings these customs [Sitten] into conflict with morality [Sittlichkeit]—and not the decline of morals of the kind lamented by the theoreticians of decadence. (PMP, 17) In the first instance, Adorno makes the claim that moral questions arise only when the collective ethos has ceased to hold sway. This implies that moral questions do not have to arise on the basis of a commonly accepted ethos to qualify as such; indeed, there seems to be a tension between ethos and morality, such that a waning of the former is the condition for the waxing of the latter. In the second instance, he makes clear that although the collective ethos is no longer shared—indeed, precisely because the collective ethos, which must now be herded by quotation marks, is not commonly shared—it can impose its claim to commonality only through violent means. In this sense, the collective ethos instrumentalizes violence to maintain the appearance of its collectivity. Moreover, this ethos becomes violence only once it has become an anachronism. What is strange historically—and temporally—about this form of ethical vi- olence is that although the collective ethos has become anachronistic, it has not become past; it insists itself into the present as an anachro- nism. The ethos refuses to become past, and violence is the way in which it imposes itself upon the present. Indeed, it not only imposes itself upon the present, but also seeks to eclipse the present—and this is precisely one of its violent effects. Adorno uses the term violence in relation to ethics in the context of claims about universality. He offers yet another formulation of the emergence of morality, which is always the emergence of certain kinds of moral inquiry, of moral questioning: ‘‘the social problem of the divergence between the universal interest and the particular inter- est, the interests of particular individuals, is what goes to make[s] up the problem of morality’’ (PMP, 19). What are the conditions under which this divergence takes place? He refers to a situation in which ‘‘the universal’’ fails to agree with or include the individual and the claim of universality itself ignores the ‘‘rights’’ of the individual. We can imagine, for instance, the imposition of governments on foreign countries in the name of universal principles of democracy, where the imposition of the government effectively denies the rights of the population at issue to elect its own officials. We might, along these lines, think about President Bush’s proposal for the Palestinian Au- thority or his efforts to replace the government in Iraq. In these instances, to use Adorno’s words, ‘‘the universal . . . appears as some- thing violent and extraneous and has no substantial reality for human beings’’ (PMP, 19). Although Adorno sometimes moves abruptly be- tween ethics and morality, he prefers the term morality, echoed later in Minima Moralia, for his project and insists that any set of maxims or rules must be appropriable by individuals ‘‘in a living way’’ (PMP, 15). Whereas one might reserve ethics for the broad contours of these rules and maxims, or for the relation between selves that is implied by such rules, Adorno insists that an ethical norm that fails to offer An Account of Oneself 5 6 An Account of Oneself a way to live or that turns out, within existing social conditions, to be impossible to appropriate has to become subject to critical revi- sion (PMP, 19). If it ignores the existing social conditions, which are also the conditions under which any ethics might be appropriated, that ethos becomes violent.

Thus the standard is minimizing structural violence. To clarify, structural violence refers to social institutions, structures or systemic problems that disadvantage individuals.

Prefer the standard:

#### 1. Structural violence is a precondition to the instantiation of your ethical theory – we must undermine it to allow freedom

Duquette David A. Duquette (Professor of Philosophy St. Norton’s College) “Hegel: Social and Political Thought” Internet Encyclopedia of Philosophy

According to Hegel, the relationship between self and otherness is the fundamental defining characteristic of human awareness and activity, being rooted as it is in the emotion of desire for objects as well as in the estrangement from those objects, which is part of the primordial human experience of the world. The otherness that consciousness experiences as a barrier to its goal is the external reality of the natural and social world, which prevents individual consciousness from becoming free and independent. However, that otherness cannot be abolished or destroyed, without destroying oneself, and so ideally there must be reconciliation between self and other such that consciousness can “universalize” itself through the other. In the relation of dominance and subservience between two consciousnesses, say lord and bondsman, the basic problem for consciousness is the overcoming of its otherness, or put positively, the achieving of integration with itself. The relation between lord and bondsman leads to a sort of provisional, incomplete resolution of the struggle for recognition between distinct consciousnesses.

2. Oppression harms equality since treatment isn’t merit based but rather arbitrary since things like race and citizenship which aren’t decided by individuals; means a) standards that allow oppression can’t provide binding rules since they apply to different individuals differently, b) inclusion is a prerequisite to correct application of abstract moral theories since people need to be considered moral equals to have moral standards apply to all.

#### *3. Preserving justice means including marginalized groups and rejecting structural violence.*

*Winter and Leighton 99 Deborah DuNann Winter and Dana C. Leighton. Winter: Psychologist that specializes in Social Psych, Counseling Psych, Historical and Contemporary Issues, Peace Psychology. Leighton: PhD graduate student in the Psychology Department at the University of Arkansas. Knowledgable in the fields of social psychology, peace psychology, and ustice and intergroup responses to transgressions of justice) (Peace, conflict, and violence: Peace psychology in the 21st century. Pg 4-5)*

*Finally, to recogniz****e*** *the operation of structural violence forces us to ask questions about how and why we tolerate it, questions which often have painful answers for the privileged elite who unconsciously support it. A final question of this section is how and why we allow ourselves to be so oblivious to structural violence. Susan Opotow offers an intriguing set of answers, in her article Social Injustice. She argues that our normal perceptual/cognitive processes divide people into in-groups and out-groups. Those outside our group lie outside our scope of justice. Injustice that would be instantaneously confronted if it occurred to someone we love or know is barely noticed if it occurs to strangers or those who are invisible or irrelevant. We do not seem to be able to open our minds and our hearts to everyone, so we draw conceptual lines between those who are in and out of our moral circle. Those who fall outside are morally excluded, and become either invisible, or demeaned in some way so that we do not have to acknowledge the injustice they suffer. Moral exclusion is a human failing, but Opotow argues convincingly that it is an outcome of everyday social cognition. To reduce its nefarious effects, we must be vigilant in noticing and listening to oppressed, invisible, outsiders. Inclusionary thinking can be fostered by relationships, communication, and appreciation of diversity.Like Opotow, all the authors in this section point out that structural violence is not inevitable if we become aware of its operation, and build systematic ways to mitigate its effects. Learning about structural violence may be discouraging, overwhelming, or maddening, but these papers encourage[s] us to step beyond guilt and anger, and begin to think about how to reduce [it] structural violence. All the authors in this section note that the same structures (such as global communication and normal social cognition) which feed structural violence, can also be used to empower citizens to reduce it.*

Framing:

1. No act omission distinction for governments – they always face a choice between policies so omissions are not an option. This also means skep and permissibility are mitigatory defense; governments must take some action so deflationary arguments have no impact.
2. A. if a harm is foreseen than we are knowledgeable of it before we take an action, in taking that action we could choose not to act based on this consequence so we intend the effect by taking the action. B. Even if there is a distinction, we should weigh strength of link-intended harms don’t always come first. E.g. if I push over a friend to prevent them from being run over, I may sprain their ankle, but I still took a good action. C. It’s not resolvable – the government’s made up of a composite of actors with different intentions D. Epistemically inaccessible – we don’t know what other people are thinking.

### Advocacy

I defend, Resolved: the United States Federal Government ought to prohibit the production of nuclear power.

### Advantage 1 – Water

#### Continued reliance on nuclear power causes water scarcity—uranium mining and reactor operation are both water-intensive.

Sovacool and Cooper 8 Benjamin Sovacool (Research Fellow in the Energy Governance Program at the Centre on Asia and Globaliaztion, part of the Lee Kuan Yew School of Public Policy at the National University of Singapore, adjunct professor at the Virginia Polytechnic Institute & State University) and Christopher Cooper (Principal Partner for Oomph Consulting, LLC, former Executive Director of the Network for New Energy Choices) “Nuclear Nonsense: Why Nuclear Power is No Answer to Climate Change and the World's Post- Kyoto Energy Challenges” William & Mary Environmental Law and Policy Review Volume 33 Issue 1 Article 2 2008 h p://scholarship.law.wm.edu/wmelpr/vol33/iss1/2 JW

With electricity demand expected to grow by approximately fifty percent in the next twenty-five years, continuing to rely on nuclear generators could create a water scarcity crisis. In 2006, the DOE warned that consumption of water for electricity production could more than double by 2030 to 7.3 billion gallons per day in the U.S., ifnew power plants con- tinue to be built with evaporative cooling.35' This amount is equal to the entire country's water consumption in 1995.352 The nuclear industry's vast appetite for water has serious consequences, both for human consumption and the environment. Assuming the latest Census Bureau projections, the U.S. population is expected to grow by about seventy million people in the next twenty-fiveyears.3 3Such population growth is already threatening to overwhelm existing supplies of fresh and potable water. "Few new reservoirs have been built since 1980... [and] some regions have seen groundwater levels drop as much as 300 to 900 feet over the past fifty years."354 Further, "most state water managers expect either local or regional water shortages within the next 10 years," according to a recent survey, even under "normal" conditions." In fact, about forty-eight percent of the continental U.S. reported drought conditions during the summer of 2002.356 Three stages of the nuclear fuel cycle-uranium milling and minng,plant operation, and nuclear waste storage--consume, withdraw, and contaminate water supplies. As a result of this vast need for water, most nuclear facilities cannot operate during droughts357 and in some cases can actually cause water shortages.358 1. Uranium Mining and Leeching Uranium mining, the process of extracting uranium ore from the ground, is extremely water intensive. Since the necessary concentrations of uranium are mostly prevalent at very low concentrations, uranium mining is volume intensive. The problem is that such mining practices can greatly damage and degrade local water supplies. Early mining techniques were very similar to other hard rock mining such as copper, gold, and silver, and involved the creation of underground mines. Open-pit mining, the most prevalent type of uranium extraction in the world today, ceased in the U.S. in 1992 due to concerns about environmental contami- nation and the quality of uranium, as most ore found in the U.S. was lower grade uranium from sandstone deposits.5 9 Currently, uranium miners use only one type oftechnique to extract uranium ore in Wyoming, Nebraska, and Texas: in-situ leaching. 6° Uranium miners perform in-situ leaching by pumping liquids into the area surrounding uranium deposits. These liquids often include acid or alkaline solutions to weaken the calcium or sandstone surrounding uranium ore.36' Operators then pump the uranium up into recovery wells at the surface, where it is collected. 62 In-situ leaching was deemed more cost effective than underground mining because it avoids the significant expense ofexcavating underground sites and often takes less time to implement. 63 In 2005, nuclear power plants produced an annual output of 781,986 MWh requiring more than thirty million gallons ofwater per day for uranium mining and processing around the world.36' Even though the bulk of these mining and processing facilities are outside of the U.S., the DOE estimates that three to five million gallons ofwater per day are still associated with mining and processing of uranium within the country.365 2. Plant Operation Nuclear reactors also require massive supplies of water to cool reactor cores and spent nuclear fuel rods, and they use the most water compared to all other electricity generating facilities, including conventional coal and natural gas facilities.366 Because much of the water used by nuclear plants is turned to steam, substantial amounts are lost to the local water cycle entirely. One nuclear plant in Georgia, for example, "withdraws an average of 57 million gallons every day from the Altamaha River... [but actually] 'consumes' 33 million gallons per day [from the local supply,] that is lost as water vapor"'3-enough to service more than 179,000 Georgia homes."' The Shearon Harris nuclear reactor, operated by Progress Energy in New Hill, North Carolina, near Raleigh, sucks up thirty-three million gallons a day, and loses seventeen million gallons per day due to evaporation." 9 Duke Energy's McGuire Plant on Lake Norman, North Carolina, uses more than two billion gallons of water per day."' Southern Company's Joseph M. Farley nuclear plant in Dothan, Alabama, consumes about forty-six million gallons of water per day, primarily as evaporative loss.371 In the arid West, where water is scarce, the challenge of cooling nuclear plants is even more daunting. At the Palo Verde plant in Arizona, ninety million gallons of water must be brought to the plant site each day.372 Plant operators must purchase treated effluent from seven cities in the Phoenix metropolitan area, and have had to construct a thirty-five mile pipeline to carry water from a treatment facility to the plant-which uses about twenty billion gallons of water every year.373

#### Nuclear power plants contaminate water, destroy biodiversity, and harm local economies

Sovacool and Cooper 8. Benjamin K. Sovacool and Christopher Cooper, Nuclear Nonsense: Why Nuclear Power is No Answer to Climate Change and the World's Post-Kyoto Energy Challenges, (D r. Benjamin K Sovacool is a Research Fellow in the Energy Governance Program at the Centre on Asia and Globalization, part of the Lee Kuan Yew School of Public Policy at the National University ofSingapore. He is also an Adjunct Assistant Professor at the Virginia Polytechnic Institute & State University. He has worked in advisory and research capacities at the U.S. National Science Foundation's Electric Power Networks Efficiency and Security Program, Virginia Tech Consortium on Energy Restructuring, Virginia Center for Coal and Energy Research, New York State Energy Research and Development Authority, Oak Ridge National Laboratory, and U.S. Department of Energy's Climate Change Technology Program. Mr. Christopher Cooper is Principal Partner for Oomph Consulting, LLC, and the former Executive Director of the Network for New Energy Choices (NNEC), a New York-based nonprofit interest group devoted to analyzing utility policy and making recommendations for increasing efficiency and expanding the use of renewable resources.) 33 Wm. & Mary Envtl. L. & Pol'y Rev. 1 (2008), <http://scholarship.law.wm.edu/wmelpr/vol33/iss1/2>. NP 8/10/16.

Nuclear plants do not just use water-they also contaminate it at multiple points of the cooling cycle: at the point of intake, at the point of discharge, and during unexpected accidents. At the point of intake, nuclear plants bring water into the cooling cycle through filtering structures. To minimize the entry of debris, water is often drawn through screens.374 **Seals, sea lions, endangered manatees**, American crocodiles, sea turtles, fish, larvae, shellfish, and other riparian or marine organisms are frequently killed as they are trapped against the screens in a process known as impingement.375 Organisms small enough to pass through the screens can be swept up in the water flow where they are subject to mechanical, thermal and toxic stress in a process known as entrainment.376 Billions of smaller marine organisms, essential to the food web, are sucked into nuclear reactor systems and destroyed. Smaller fish, fish larvae, spawn, and a tremendous volume of other marine organisms are frequently pulverized by reactor condenser systems. One study esti- mated that more than 90% are scalded and discharged back into the water as lifeless sediment that clouds the water around the discharge area, blocking light from reaching the ocean or river floor, which further kills plant and animal life by curtailing photosynthesis and the production of 377 oxygen. During periods of low water levels, power plants induce even more environmental damage. Nuclear plants must extend intake pipes further into rivers and lakes, but as they approach the bottom of the water source, "they [often] suck up sediment, fish, and other debris... "371 Impingement and entrainment consequently account for substantial losses of fish and exact severe environmental consequences during the riparian environ- ment's most vulnerable times. For example, federal environmental studies of entrainment during the 1980s at five power plants on the Hudson River in New York estimated grave year-class reductions in fish populations-the percent offish killed within a given age class.379 One study concluded that the power plants were responsible for age reductions as high as 79%for some species.8 ° "An updated analysis [of entrainment] completed in 2000 at three of hese plants estimated year-class reductions of 20 percent for striped bass, 25 percent for bay anchovy, and 43 percent for Atlantic tom cod. . ...,' Another study "evaluated entrainment and impingement impacts at nine . . . facilities along a 500 mile stretch of the Ohio River."3 2 The authors estimated that approximately 11.6 million fish were killed an- nually through impingement and 24.4 million fish from entrainment.3 The study calculated recreational related losses at about $8.1 million per year.3 4 The U.S. Environmental Protection Agency ("EPA") calculated impingement losses at the Delaware Estuary Watershed at more than 9.6 million age-one equivalents of fish every year, or a loss of 332,000 pounds offishery yield.385 The EPA calculated that entrainment related losses were even larger at 616 million fish, or a loss of sixteen million pounds ofcatch.38 Put into monetary value, the recreational fishing loss from impingement and entrainment at nuclear facilities was estimated to be about $5 million per year.38 'Scientists also calculated that the cooling intake systems at the Crystal River Power Plant in Florida, ajoint nuclear and coal facility, kill about twenty-three tons offish and shellfish every year.88 Top predators, such as gulf flounder and stingray "have either disappeared or changed their feeding patterns.3 8 9 In other parts of Florida, the economic losses induced from four power plants-Big Bend, PL Bartow, FJ Gannon, and Hookers Point-are estimated to be as high as $18.1 million.3s ￼WM. & MARY ENVTL. L. & POLY REV. [Vol. 33:1 Similarly, in Southern California, marine biologists and ecologists found "that the San Onofre nuclear plant impinged nearly 3.5 million fish in 2003 ....391 As a less noticed but equally important impact, water intake and discharge often alter natural patterns of water levels and flows. Such flows, part of the hydrological cycle, have a natural variability that differs daily, weekly, and seasonally.392 Plants and animals have adapted to these fluctuations, and such variability is a key component of ecosystem health.39 3 Withdrawals and discharges alter this natural cycle by removing water during drought conditions or discharging it at different times ofthe year with potentially serious, albeit not well-understood, consequences to eco- system and habitat health.3 94 Interestingly, in some cases the environment has fought back, literally. "In September 1984, a flotilla ofjellyfish 'attacked' the St. Lucie nuclear plant in Florida, forcing both of its reactors to shut down for several days due to lack of cooling water."395 At the point of discharge, nuclear plant operators often treat cooling water with chlorine, anti-fouling, anti-microbial, and water condi- tioning agents "to limit the growth ofmineral and microbial deposits that reduce... [its] heat transfer efficiency,"396 while "re-circulating water is treated with chlorine and biocides" to improve efficiency and eliminate nuisance organisms.39 7 What makes such treated water so effective in kill- ing unwanted species, however, also makes it a potent "kill[er ofl non- target organisms as well."398 Chlorine, biocides, and "their byproducts... present in discharged water plumes... [are often] toxic to aquatic life even at low concentrations."3 99 In addition, discharged cooling water is usually higher in temperature than intake waters, "making electric utilities the largest thermal discharger in the U.S."4 °° Significant temperature differences between the intake water and its discharge, or temperature deltas, "can contribute to destruction of vegetation, increased algae growth, oxygen depletion and strain the temperature range tolerance of organ- isms."4 °' Further, "[impacts can be multiple and widespread, affecting numerous species at numerous life cycle stages."4 2 "In some cases, plants and animals are not able to survive in or adapt to higher temperature waters .. .403 In other cases, "warmer tem- peratures can send the wrong signals to species," disrupting natural cycles, while some species that thrive in warmer waters "move into the plume and then become susceptible to the 'cold shocks' that occur during periodic plant shutdowns."4' ' In still other cases, the warmer temperature plumes attract invasive or unwanted species that drive out indigenous species and alter habitats, sometimes irreparably.4 5 Both spikes ofhigh temper- ature and the persistent, increasing stress offluctuations in temperature affect aquatic organisms.40 6 The problem is especially acute in "shallower waters that turn over more slowly [and therefore] have a harder time absorbing thermal impact[s]."4 °7 In some cases, the thermal pollution from nuclear plants can induce eutrophication-a process where the warmer temperature alters the chemical composition of the water, resulting in a rapid increase of nutrients such as nitrogen and phosphorous.4 8 Rather than improving the ecosystem, such alterations usually cause "algal blooms, surface scums, floating plant mats" and other weedy growths that severely reduce water quality.40 9 In riparian environments, the enhanced growth of such chok- ing algae and vegetation can collapse entire ecosystems.4 10 "This form of thermal pollution has been known to decrease the aesthetic and recre- ational value of rivers, lakes, and estuaries and complicate drinking water 411 treatment."

#### Nuclear power contaminates drinking water of millions of Americans

EA 12. Environment America, 1-24-2012, "Nuclear Power Plants Threaten Drinking Water for 49 Million Americans," No Publication, http://www.environmentamerica.org/news/ame/nuclear-power-plants-threaten-drinking-water-49-million-americans, accessed 9-17-2016. NP 9/17/16.

Washington, D.C. – The drinking water for 49 million Americans could be at risk of radioactive contamination from a leak or accident at a local nuclear power plant, according to a new study released today by Environment America Research & Policy Center and the US Public Interest Research Group Education Fund. See map here, key below. “The danger of nuclear power is too close to home. The drinking water for 49 million Americans is too close to an active nuclear power plant,” said Courtney Abrams, the Clean Energy Advocate for Environment America. “An accident like the one in Fukushima, Japan or a more routine leak could spew cancer-causing radioactive waste into our drinking water.” The nuclear meltdown in Fukushima, Japan last year drew a spotlight on the many risks associated with nuclear power. After the disaster, airborne radiation left areas around the plant uninhabitable, and even contaminated drinking water sources near Tokyo, 130 miles from the plant. According to the new report, “Too Close to Home: Nuclear Power and the Threat to Drinking Water,” the drinking water for 49 million Americans is within 50 miles of an active nuclear power plant – the distance the Nuclear Regulatory Commission uses to measure risk to food and water supplies. Major cities, including New York, Boston, Philadelphia, San Diego, Cleveland and Detroit receive their drinking water from sources within 50 miles of a nuclear plant. Radiation from a disaster like the one in Fukushima can contaminate drinking water and food supplies, as well as harm our health. But disaster or no disaster, a common leak at a nuclear power plant can also threaten the drinking water for millions of people, and as our nuclear facilities get older, leaks are more common. In fact, 75 percent of U.S. nuclear plants have leaked tritium, a radioactive form of hydrogen that can cause cancer and genetic defects. In the case of the Fukushima meltdown, large quantities of seawater were pumped into the plant to cool it, and contaminated seawater then leaked and was dumped back into the ocean, carrying radioactivity from the plant with it. Waterways like Lake Michigan, the Missouri River, and the Chesapeake Bay are just a few that provide cooling water for nuclear power plants and could be at risk. “With nuclear power, there’s too much at risk and the dangers are too close to home. Americans shouldn’t have to worry about getting cancer from drinking a glass of water,” said Jennifer Kim, Advocate for the US Public Interest Research Group Education Fund and co-author of the report. In order to reduce the risks nuclear power poses to water supplies immediately, the groups recommend completing a thorough safety review of U.S. nuclear power plants, requiring plant operators to implement recommended changes immediately and requiring nuclear plant operators to implement regular groundwater tests in order to catch tritium leaks, among other actions. “There are far cleaner, cheaper, and less-risky ways to get our energy,” concluded Abrams. “The United States should move to a future without nuclear power by retiring existing plants, abandoning plans for new plants, and expanding energy efficiency and the production clean, renewable energy such as wind and solar power.

#### Three impacts:

#### A) lack of fish increases coastal poverty which is a form of marginalization.

Campbell et al 6 J. Campbell, E. Whittingham and P. Townsley IMM Ltd., Innovation Centre, University of Exeter, Exeter, United Kingdom “responding to coastal poverty” 2006 <http://www.iwmi.cgiar.org/Publications/CABI_Publications/CA_CABI_Series/Coastal_Zones/Hoanh_1845931076-Chapter21.pdf> JW

At the interface between land and sea, the coast is arguably one of the most complex and dynamic environments on this planet. Composed of a diversity of interacting natural, socio-cultural, economic and political systems, the coast is in a constant state of change, not only as a result of the constant biophysical forces operating at the coast but also as a result of the significant longer-term changes – population growth, industrial and tourist development, pollution, habitat and biodiversity loss, changes in access rights, markets and technology and the growing reality of climate change – that are increasingly threatening the future sustainability of coastal environments. Although many of these changes occur in other ecosystems, they are particularly concentrated on the coast. In the past, coastal people, and particularly the coastal poor, have adapted to the intrinsically dynamic nature of the coast, but they now find themselves having to respond and cope within an increasingly competitive environment, in which access to the resources they depend on is becoming more and more restricted and opportunities based on the use of natural resources in general are becoming increasingly limited. For many coastal people, particularly those dependent on natural resources, current changes mean that they must adapt or face increased marginalization and displacement from the coastal resources on which they depend.

#### B) Contamination of drinking water exacerbates inequality and harms minority communities

Ross 16. Tracey Ross, Danyelle Solomon, 2-9-2016, "Flint Isn’t the Only Place With Racism in the Water," Nation, https://www.thenation.com/article/flint-isnt-the-only-place-with-racism-in-the-water/, accessed 9-17-2016. NP

Last month, Michigan Governor Rick Snyder (R) delivered his fifth State of the State address, a ceremonious speech that typically presents the governor’s legislative priorities and vision for the year ahead. But instead of talking about pressing priorities—such as the need to reform the state’s public education system, improve its job market, or invest in its infrastructure—Governor Snyder was forced to apologize for his government’s failure to provide clean, safe water to the people of Flint, Michigan. This article originally appeared at TalkPoverty.org. The Flint water crisis began in April 2014 with an effort to cut the budget. Government officials chose to switch water access from the clean Lake Huron to the more corrosive and polluted Flint River. As Curt Guyette, a journalist for the ACLU explained on TalkPoverty Radio, almost immediately residents began complaining of hair loss, rashes, and tap water that looked and tasted strange. Yet, despite calls from concerned residents, city and state officials assured the community that the water was fine. Former Flint mayor Dayne Walling (D) even drank the water on television to dissuade any further concerns. For months, nothing was done. At the heart of current national outrage is the impact that tainted water will have on Flint residents—especially the city’s children. A study by the Centers for Disease Control and Prevention found that even minimal lead exposure can cause cognitive and behavioral issues, including an increased propensity toward violent behavior. In fact, children with lead poisoning are seven times more likely to drop out of school and six times more likely to become involved in the juvenile justice system than those not exposed to lead. Moreover, the impact of lead exposure is irreversible. THE LONG HISTORY OF ENVIRONMENTAL RACISM In the midst of this knowledge, it is hard to ignore the facts that 56 percent of Flint’s population is African American and most of the city’s residents live paycheck to paycheck. According to the 2015 Census, more than 40 percent of residents are living below the federal poverty level. Once the booming Vehicle City where General Motors was born, Flint has since lost its industrial base and, with it, government investment in all forms of infrastructure. Support for the city’s schools, public transportation, and employment has fallen by the wayside. Still, how is it possible that, in 2016, low-income, black Americans are denied access to clean, safe water? Unfortunately, the roots of this injustice run deep. Environmental racism is entwined with the country’s industrial past. At the beginning of the 20th century, zoning ordinances emerged as a way to separate land uses in order to protect people from health hazards. Over time, however, city planning and zoning ordinances focused less on public health and more on creating idyllic communities, protecting property rights, and excluding “undesirables.” In other words: The least desirable communities were reserved for discarding waste and marginalized people alike. By the 1930s, federal leaders began to make large investments in creating stable, affluent, and white communities in the suburbs, while giving local governments the autonomy to neglect low-income communities and communities of color. New highways and waste facilities were constructed in marginalized communities, where they cut through businesses or homes and exposed residents to excessive pollution. In his seminal book, Dumping in Dixie: Race, Class, and Environmental Quality, Professor Robert Bullard, considered the father of environmental justice, wrote: The problem of polluted black communities is not a new phenomenon. Historically, toxic dumping and the location of locally unwanted land uses (LULUs) have followed the “path of least resistance,” meaning black and poor communities have been disproportionately burdened with these types of externalities. Environmental racism is an issue of political power: The negative externalities of industrialization—pollution and hazardous waste—are placed where politicians expect little or no political backlash. For this reason, ZIP codes often has more of an effect on health than genetic codes. Despite legislative efforts to dismantle segregation, it remains a pernicious problem in America today. Affluent communities still adopt exclusionary zoning codes that keep less affluent households from moving in, and African American home buyers are still shown fewer homes than whites and are often steered away from predominantly white neighborhoods. “African Americans, even affluent African Americans are more likely to live closer to and in communities that are more polluted than poor white families that make $10,000 a year,” according to Bullard. In essence, the nation’s laws are executed mostly to protect white households and leave the rest of the country to inhale the toxic fumes of racism. A recent study in Environmental Research Letters noted that the highest polluting facilities in the country are disproportionately located near communities of color. One of the most notorious examples of this disparity is Cancer Alley, the 85-mile stretch between Baton Rouge, Louisiana, and New Orleans that is home to more than 150 industrial plants and refineries. The deadly corridor earned its disreputable name due to the sheer number of cancer cases, inexplicable illnesses, and deaths that have afflicted its residents. The ExxonMobil refinery in Baton Rouge alone is 250 times the size of the Superdome, with a surrounding population that is 78 percent people of color. Black communities and industrial sites are so closely intertwined that a number of Cancer Alley refineries include old black cemeteries that hold the remains of former slaves—a blunt reminder of just how little black lives matter on these grounds. STANDING UP FOR ENVIRONMENTAL JUSTICE IN FLINT AND IN THE NATION The road ahead for Flint is a very long one. After the immediate crisis has been addressed, it will be years before the nation can fully realize how the state affected the lives of the children it poisoned. These families need and deserve a lifetime of support. And while the country’s outrage is correct, the injustice in Flint must be viewed as one example of a widespread problem. In order to address the root causes of environmental racism, the nation must demand government accountability and effective industry regulations, support clean energy, and commit to furthering fair housing. All levels of government must focus on investing in and modernizing infrastructure that will protect the building blocks of our society—specifically in areas where there is historic underinvestment. A $1 billion investment in infrastructure creates about 18,000 jobs, while the same size tax cut would generate 14,000 jobs and no new public asset. There is much work to be done to ensure that all communities are safe, stable places where people can thrive. LIKE THIS? GET MORE OF OUR BEST REPORTING AND ANALYSIS Enter Email SIGN UP! Many Americans believe that racism can be boiled down to a sin marked by slurs and men burning crosses under the cover of night. Flint serves as a stark reminder that racism is in the air we breathe, flowing freely into our homes and down the stretch of blocks riddled with liquor stores but begging for a supermarket. There is a societal cost to this reality. The crisis in Flint has refocused the public spotlight on environmental justice. Voters and policymakers across the country should seize this moment to address the environmental racism that persists in too many communities. If the nation does not stand up against the injustice of environmental racism, communities of color will continue to be targeted. As the country becomes more ethnically and racially diverse, communities of color must have equity in the level and quality of government-provided services. Americans must lend their voices to support not just Flint residents, but also the residents of countless other communities where racism still takes a physical toll. 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#### C) Lack of access to fresh water is a form of eco-tyrannical oppression.

Ecosense 9 “Obama’s oligarchical oppression – no water, lots of pollution” Fight for California October 16th 2009 <https://ecosense9.wordpress.com/2009/10/16/obamas-oligarchical-oppression-no-water-lots-of-pollution/> JW

On Thursday, October 15, 2009 President Obama went to San Francisco for a fund raiser where he accepted upwards of $2 million from the elitist of the elite environmental extremists for his efforts to keep the water away from not just California’s farmers, but everyone in the state. By using his Secretary of the Interior, Ken Salazar, as the merchant of drought, Obama hopes to avoid blame for the catastrophic devastation his policies have wrought on the state of California. The shortages that are being created of our most basic necessity are driving up water rates for everyone who lives here. Even now the federal government is seizing more control over all of California’s water supplies and diverting them away from farms and people. They claim that they are trying to restore the San Joaquin Delta’s eco-system, but in reality they are pumping pollution into the rivers and the estuaries. Each day up to one billion gallons of partially treated sewage is dumped into the Sacramento-San Joaquin Delta and its associated waterways. water can grow crops too! water can grow crops too! The high levels of amonia just from Sacramento are enough to keep the salmon away. Sacramento adds 125,000 gallons of amonia per month to the Delta, far more than any other source. If you want to see what happens to fish in water with high levels of amonia just set up a fish tank without a filter. Your fish will be dead in a week from swimming in their own waste. But it is easily treated with a simple CARBON filter. Yes carbon, no element is more essential to life than carbon. It is the structural basis for many compounds that comprise the living cell. So instead of cleaning up their sewage the politicians in Sacramento swim in it by passing laws to divert water away from the farmers and the people. They say they are protecting the environment when they are actually polluting it and placing the people in great danger by refusing to keep adequate above ground storage. Enormous amounts of runoff flow out to the sea when it could be captured for irrigation. Efficiently capturing carbon for human energy with water and sunlight Efficiently capturing carbon for human energy with water and sunlight It is true that rainfall has been less than average for the past three years, but not that much so. The real reason for the drought is the shut down of the pumps that fill the reservoirs during the rainy season, and the draining of existing storage to flush sewage out to sea. These measures have created a monumental disaster to the environment and the economy of the state and the nation. President Obama callously showed his ability to ignore the truth by flying over the affected areas without one thought of recognition. He shows no signs of easing up on the water restrictions that are turning California from a green state into a brown one. Green no more Green no more The human toll is astounding. The children and grand children of multi-generational family farms are being squeezed out of business by a government that is in the pockets of organizations dedicated to eco-tyranny. These groups will do everything they can to blame farms far upstream from the real cause of danger to the fish. Farms that create jobs and wealth throughout the state. Environmental organizations are engaged in a relentless push to overturn 100 years of progress that made California the most productive farm land in the world. The farms are a source of wealth and pride for this state. It takes hard work and dedication to work the land. Give us our water back, we paid for those dams and aquaducts with our own sweat and tears. Long hours in a hot sun with temperatures often reaching 100 degrees Long hours in a hot sun with temperatures often reaching 100 degrees Jeremy Freitas of Freitas farms shared some of his family’s history with me on my last visit to the Central Valley. All of the people of central California have strong family bonds that pass down their tribal knowledge of farming from generation to generation. These great Americans have sacrified all of their lives to make our country great and strong. They are now under attack by a President determined to bankrupt them with water restrictions as his government works to undermine our economy and our environment. These farmers deserve our admiration and respect for they are the backbone of this state. The efforts of the Federal government to eliminate their water supplies under the guise of conservation is nothing more than a huge land grab by an oppressive oligarchy that is working for foreign interests. By reducing water allocations to 10% the government has cut off the financial ability for these farms to survive for water is money, water is jobs, water is life. Without the ability to produce a crop the land values plunge, depressing real estate prices across the state. This collapse spread through the banking system and was a contributor to the entire financial crisis. Everyone across the country is feeling the effects of this oppression. The President is directing his wrath against America’s greatest citizens as his punitive punishments affect families of all races and all income levels. The food lines increase every week and so do the budget deficits. Volunteers help distribute food to displaced farmworkers in Huron, c Volunteers help distribute food to displaced farmworkers in Huron, CA As his arrogance blinds him to his own incompetence, the President now offers tax increases as the solution. Turn the water on you foolish man. You are hurting America’s people as well as its fish. Your policies have harmed multiple generations. Do you have a heart at all? Why do you use the Endangered Species Act to justify this tyranny? We the people see through you and your party. The water restrictions are your albatross. Stop harming these innocent hard working families. When I first met Jeremy Freitas last summer he was with his dad, Joe, at a meeting with some of the other great people in the Central Valley who are united in this fight against the government. Joe is a Vietnam Veteran who served his country in the Southeast Asian war of the last century. While we talked about the current government oppression, Mr. Freitas, Joe, broke down. The tears welled up and he began to cry as he remembered the men he fought with and watched die for our country and our flag. He knows what it is like to be on the front lines of a war. Jeremy spoke with great respect when he shared the story of his father’s service to our country. Emotions run high with America’s veterans; they see what is happening to our country. Our flag stands for freedom, but President Obama is trying to change that with his policy of water tyranny. Cutting off water is an act of war and has been since the dawn of mankind. Barak Obama you are not Caesar. We do not have an emperor, we only have a president. Stop waging war against us with your environmental police. At first the blame was placed solely on President Bush, who was foolish to believe in anything that came out of the Pelosi House, but once in office President Obama intensified the oppression, seized more water, and eliminated the ability of the farmers to fund their operations. Bank’s won’t lend to a farmer who has no water because dust is not a cash crop. Valuable crop of cotton waiting for harvest Valuable crop of cotton waiting for harvest This is not Bush’s disaster as he kept environmental extremists at bay; it is a direct effort on the part of Speaker Pelosi, President Obama, and the entire progressive movement to undermine our Constitution. This is the reason they have created the Global Warming Fraud and Climate Change Hoax, to steal our land and our freedoms. They will use the EPA to bypass Congress and crush free markets as they work for the enemies of our country. Those who attack capitalism and profits are enemies of the American people. We are now at the mercy of a compassionless President determined to change our way of life from one of a dedicated and productive work ethic to one that is completely dependent on government control. The President’s policies push everyone into poverty as he wipes out the wealth of our nation while increasing pollution in our rivers and streams.

### Advantage 2 - Accidents

#### More nuclear meltdowns are bound to happen – the impact is mass death and tech can’t solve.

Sovacool and Cooper 8 Benjamin Sovacool (Research Fellow in the Energy Governance Program at the Centre on Asia and Globaliaztion, part of the Lee Kuan Yew School of Public Policy at the National University of Singapore, adjunct professor at the Virginia Polytechnic Institute & State University) and Christopher Cooper (Principal Partner for Oomph Consulting, LLC, former Executive Director of the Network for New Energy Choices) “Nuclear Nonsense: Why Nuclear Power is No Answer to Climate Change and the World's Post- Kyoto Energy Challenges” William & Mary Environmental Law and Policy Review Volume 33 Issue 1 Article 2 2008 h p://scholarship.law.wm.edu/wmelpr/vol33/iss1/2 JW

F. Safety While the Chair of the Public Information Committee of the American Nuclear Society has publicly stated that "the industry has provenitselftobethesafestmajorsourceofelectricityintheWestern world,"" 9 the history of nuclear power proves otherwise. The safety record of nuclear plants is lackluster at best. For one salient example, consider that Ukraine still has a Ministry of Emergency, some twenty-two years after the Chernobyl nuclear disaster warranted its creation."' No less than seventy-six nuclear accidents, defined as incidents that either resulted in the loss ofhuman life or more than $50,000 ofproperty damage, totaling more than $19 billion in damages have occurred worldwide from 1947 to 2008."' See Table B. One survey of major energy accidents from 1907 to 2007 found that nuclear plants ranked first in economic cost among all energy accidents, accounting for 41% of all accident related property damage, or $16.6 billion in property loss, even though nuclear power plants did not even begin commercial operation until the 1950s.42These numbers translate tomore than one incident and $332 million in damages every year for the past three decades. Forty-three accidents have occurred since the Chernobyl disaster in 1986, and almost two-thirds of all nuclear accidents have oc- curred in the U.S., refuting the notion that severe accidents are relegated to the past or to countries without America's modern technologies or industry oversight." 3 Even the most conservative estimates find that nuclear power accidents have killed 4100 people,' or more people than have died in commercial U.S. airline accidents since 1982."' "[N]uclear power accidents have involved meltdowns, explosions, fires, and loss of coolant, and have occurred during both normal operation and extreme, emergency conditions such as droughts and earthquakes."4 6 One index of nuclear power accidents that included costs beyond death and property damage-such as injuring and irradiating workers and malfunctions that did not result in shutdowns or leaks--documented 956 incidents from 1942 to 2007." 7 Using some of the most advanced probabilistic risk assessment tools available, an interdisciplinary team at MIT identified possible reactor failures in the U.S. and predicted that the best estimate of core damage frequency was around one every 10,000 reactor years." 8 In terms of the expected growth scenario for nuclear power from 2005 to 2055, the MIT team estimated that at least four serious core damage accidents will occur and concluded that "both the historical and the PRA [probabilistic risk assessment] data show an unacceptable accident frequency."" 9 Further, "[tihe potential impact on the public from safety or waste management failure... make it impossible today to make a credible case for the im- mediate expanded use of nuclear power."4 51 Another assessment conducted by the CEA in France tried to asso- ciate nuclear plant design with human error such that technical innovation could help eliminate the risk of human-induced accidents.45 ' Two types of mistakes were deemed the most egregious: errors committed during field operations, such as maintenance and testing, that can cause an accident, and human errors made during small accidents that cascade to complete failure.452 There may be no feasible way to "design around" these risks. For example, when another group of CEA researchers examined the safety performance ofadvanced French Pressurized Water Reactors, they concluded that human factors would contribute to about one-fourth (twenty-three percent) of the likelihood of a major accident.4 53 Consider that the two most significant nuclear power accidents, Chernobyl and Three Mile Island, were human caused and then exacer- bated by more human mistakes. 1. Chernobyl, Ukraine On the evening of April 25, 1986, evening shift engineers at Chernobyl's number four reactor experimented with the cooling pump system to see if it could still function without auxiliary electricity sup- plies.454 In order to proceed with the test, the operators turned off the automatic shutdown system. 5 At the same time, "they mistakenly lo- wered too many control rods into the reactor core," dropping plant output too quickly.4 56 This stressed the fuel pellets, causing ruptures and explo- sions, bursting "the reactor roof and sweeping the eruption outwards into the sur-rounding atmosphere. As air raced into the shattered reactor, it ignited flammable carbon monoxide gas and created a radioactive fire that burned for nine days."457 Immediately following the accident, 116,000 people were evacuated from a thirty square kilometer exclusive zone constituting parts of Belarus, Ukraine, and Russia.45 The large city ofPripiat, Ukraine, had to be completely abandoned.45 9 The Chernobyl meltdown released more than two hundred times the radiation released by the atom bombs dropped on Nagasaki and Hiroshima.46 ° More than five million people, including 1.6 million chil- dren, were exposed to dangerous levels of radiation, and about 246,000 square kilometers were contaminated with iodine-131, ruthenium-106, cerium-141 and -144, cesium-137, strontium-89 and -90, and plutonium- 238-some ofwhich will remain lethally radioactive for more than 10,000 years. 1 At least 350,000 more people had to be forcibly resettled from the area.462 Cesium and strontium severely contaminated agricultural products, livestock, and soil as far away as Japan and Norway; some milk in Eastern Europe is still undrinkable.463 Human error after the initial accident also exacerbated the situation and needlessly exposed millions of people to unhealthy levels of radiation. For example, the Soviet government did not begin evacuations until April 28, two full days after the accident, because they had planned on covering up the accident until a Swedish radiation monitoring station 800 miles northwest of Chernobyl reported radiation levels forty percent higher than normal.4" Russian and Ukrainian disaster managers mistakenly sent about 1000 buses contaminated with radioactive iodine dur- ing the evacuation back into public transportation service in Kiev.466 Some members of the Russian military personally contaminated themselves, and their families, by rushing back into the disaster area in what they believed was a sign of bravery.' The act extended a long tradi- tion of Soviet troops exposing themselves to radiation as a sign of strength, including tanks intentionally driving through nuclear weapons fallout and aircraft flying back into the fallout from atmospheric weapons test- ing.46 v In what could qualify as a scene from a National Lampoon's movie if the consequences were not so dire, a Russian helicopter crew quickly redeployed from Afghanistan, was assigned to drop boric acid on the ex- posed fissile material above Chernobyl's shattered reactor only to crash into it, causing yet another radioactive explosion.468 After these accidents, "traces of radioactive deposits unique to Chernobyl were found in nearly every country in the northern hemi- sphere."46s The international community sponsored a $1.4 billion decontamination project, including the construction of a massive sarcophagus and 131 hydroelectric installations to prevent contaminated water from flowing downstream on the Pripiat and Dnieper rivers.47 ° See Figure 4. Soviet authorities strongly urged as many as 400,000 abortions in an effort to mitigate the reporting of birth defects.47' The International Atomic Energy Agency, working with the World Health Organization, attributed up to 4000 deaths to the Chernobyl nuclear accident,472 whereas other studies put the numbers at 93,000 fatal cancer deaths throughout Europe, 140,000 in Ukraine and Belarus, and another 60,000 in Russia, for a total of 293,000 [deaths]. 473 Figure 5: Chernobyl Reactor Number Four in 2008, Still Highly Radioactive and Undergoing Multi-Billion Dollar Decommissioning The consequences of the accident at Chernobyl, moreover, are far from over. Fallout from Chernobyl contaminated about six million hectares of forest in the Gomel and Mogilev regions of Belarus, the Kiev region of Ukraine, and the Bryansk region of the Russian Federation.47 4 Three of the contaminants, cesium-137, strontium-90, and plutonium-239, are ex- traordinarily robust and extremely dangerous .17' Ninety-five percent of these contaminants accumulated in living trees,476 but 770 wildfires have occurred in the contaminated zone from 1993 to 200 l 7 each one releasing radioactive emissions far into the atmosphere.4 v8 A single, severe fire in 1992 burned five square kilometers of land contaminated by Chernobyl, including 2.7 square kilometers ofhighly contaminated Red Forest next to the reactor, carrying highly toxic cesium dust particles into the upper atmosphere,4 7 9 distributing radioactive smoke particles thousands ofkilo- meters, and exposing at least 4.5 million people to dangerous levels ofradi- ation.' Radiation levels were so high after the 1992 fire that scientists throughout Europe initially thought there had been a second meltdown at Chernobyl Reactors One or Two, which remained in operation until 2000.481 2. Three Mile Island, Pennsylvania, United States On March 28, 1979, equipment failures and operator error con- tributed to the loss of coolant and a partial core meltdown at the Three Mile Island ("TMI") nuclear reactor in Pennsylvania, causing $2.4 billion in property damages.4 2 Technically, the meltdown at TMI was a "loss of coolant" accident.4' The primary feed-water pumps stopped running at TMI Unit 2, preventing the large steam generators at the reactor site from removing necessary exhaust heat.' As the steam turbines and reactor automatically shut down, contaminated water poured out of open valves and caused the core of the reactor to overheat, inducing a partial core meltdown. 4 5 A commission chartered by President Carter to study the accident, however, found that human error played the most significant factor in the meltdown." 6 The commission stated that the TMI operators were not well trained, operating procedures were confusing, and administrators had failed to learn lessons in safety from past incidents at the plant."7 The commission concluded that "we have stated that fundamental changes must occur in organizations, procedures, and above all, in the attitudes of people. No amount of technical 'fixes' will cure this underlying problem."' Several American regulatory agencies conducted detailed studies of the radiological consequences of the accident, and a consensus has emerged that while the average dose of exposure from the accident was one millirem, or one-sixth the exposure from a full set of chest x-rays,"' the situation came dangerously close to releasing catastrophic amounts of radioactivity.49 °For example, when federal investigators arrived on the scene, they discovered two pieces of alarming news that had not been widely reported. First, the reactor core was more badly damaged than previously thought.491 Falling coolant levels in the reactor core exposed the tops of fuel rods to the air, causing oxidation of the cladding used to protect the rods.492 The result was that radioactive gases like xenon-133, krypton-85 and iodine-131 seeped out of cracks in the reactor.49 3 Second, a gas bubble nearly 1000 cubic feet in size had developed at the top ofthe reactor.4" Apparently the reactor core had reached high enough levels that the coolant water had decomposed into its primary elements: hydrogen and oxygen.495 Investigators feared that the bubble would continue to grow, forcing even more coolant water out of the reactor and allowing the core to reach temperatures of 5000 degrees.4 96 At that point, the uranium fuel would begin to melt, risking a total core meltdown and a catastrophic release of the reactor's radioactive material.497 Although the incident at Three Mile Island avoided this nightmare scenario, barely, it brought about sweeping changes to the industry and forced the permanent closure and decommissioning ofTMI Unit 2."' After the accident, emergency response planning, reactor operator training, human factors engineering, radiation protection, and many other areas of nuclear power plant operations in the U.S. were radically reformed.4 99 3. Newer Reactors are the Riskiest Unfortunately, safety risks such as those at Chernobyl and Three Mile Island are only amplified with new generations of nuclear systems. Nuclear engineer David Lochbaum has noted that almost all serious nuclear accidents occurred with recent technology, making newer systems the riskiest.5" In 1959, the Sodium Research Experiment reactor in California experienced a partial meltdown fourteen months after opening." 1 In 1961, the S1-1 Reactor in Idaho was slightly more than two years old before a fatal accident killed everyone at the site.50 2 The Fermi Unit 1 reactor began commercial operation in August 1966, but had a partial meltdown only two months after opening.50 3 The St. Laurent des Eaux Al Reactor in France started in June 1969, but an online refueling machine malfunc- tioned and melted 400 pounds of fuel four months later."4 The Browns Ferry Unit 1 reactor in Alabama began commercial operation in August 1974 but experienced a fire severely damaging control equipment six months later.5 Three Mile Island Unit 2 began commercial operation in December 1978 but had a partial meltdown three months after it started.0 6 Chernobyl Unit 4 started up in August 1984, and suffered the worst nuclear disaster in history on April 26, 1986 before the two-year anniversary of its operation.0 7 Safety risks may be especially acute for new reactors in the U.S. for three reasons. First, the pressure to build new generators on existing sites to avoid complex issues associated with finding new locations.. only increases the risk of catastrophe, because there is a greater chance *that one accident can affect multiple reactors. Second, Generation IV researchers continue to pursue breeder reactor designs that use liquid sodium as cool- ant.5" Liquid sodium, however, can be dangerous, since it can immediately catch fire when exposed to water.510 Third, the domestic nuclear industry lacks qualified and experienced staff and is losing much of the expertise thatitdoeshavetoretirement,attritionanddeath.5 'TheDOEhaswarned that the lack of growth in the domestic nuclear industry has gradually eroded important infrastructural elements such as experienced personnel in nuclear energy operations, engineering, radiation protection, and other professional disciplines; qualified suppliers ofnuclear equipment and com- ponents, including fabrication capability; and contractor, architect, and engineer organizations with personnel, skills, and experience in nuclear design, engineering, and construction.512 Since all commercial American reactors are light water reactors,518 system operators have little experience with newer gas cooled and other advanced reactor* designs used through- out the world. Moreover, the Nuclear Energy Institute warned in 2005 that "half of the industry's employees are over 47 years old, and more than a quarter.. .already are eligible to stop working," implying that the industry had far fewer available specialists with the requisite knowledge necessary to facilitate any rapid expansion of nuclear power, let alone a safe one.14

#### Accidents harm minority communities most – marginalized communities are the ones closest to reactors

Alldred and Shrader-Frechette 9. *Environmental Injustice in Siting Nuclear Plants* by Mary Alldred and Kristin Shrader-Frechette. (Doctoral student Alldred is in the Department of Ecology and Evolution at the State University of New York at Stony Brook, in Stony Brook, New York. Dr. Shrader-Frechette is O’Neill Fam- ily Endowed Professor, Department of Biological Sciences and Department of Philosophy, and Director of the Center for Envi- ronmental Justice and Children’s Health, all at the University of Notre Dame, Notre Dame, Indiana.) ENVIRONMENTAL JUSTICE Volume 2, Number 2, 2009 © Mary Ann Liebert, Inc. DOI: 10.1089/env.2008.0544. NP 8/13/16.

EXAMINING POSSIBLE environmental injustice (EIJ) asso- ciated with siting commercial US nuclear reactors is important for at least five reasons. 1. Even when reactors operate normally, statistically sig- nificant increases in infant and fetal mortality near US reactors,1 in childhood leukemia near German reac- tors,2 and in cancer near UK reactors,3 suggest that (even without any accidents) those living near reactors could face higher health risks.1,4,5 2. In the event of a reactor accident, those living nearby also could be most at risk, as suggested by increases in lung cancers and leukemias after the 1979 Three Mile Island, Pennsylvania accident.6 Doctoral student. Minority and poverty-level communities often include higher percentages of women and children, both of whom are more sensitive to ionizing radiation, yet most radiation standards are devised to protect only adult males.7,8 4. Because indigenous uranium miners, nuclear workers, and minorities and poor people living near radioac- tive-waste dumps have experienced EIJ (see later para- graphs), it is important to ask whether there also is re- actor-siting-related EIJ. 5. Few scholars have addressed this question, although some citizens’ groups note higher percentages of mi- norities or poor people living near nuclear plants,9 and some scientists suggest children, minorities, and **poverty-level people are more sensitive than others to the roughly 100 radioisotopes routinely emitted by re- actors.**1,4,5

### Underview

1. Aff may read 1ar theory and metatheory – prefer: a. reciprocity – otherwise, only neg gets responsive theory interps, but I don’t, b. strat skew – I can’t predict every way you’ll be abusive, so you’ll have nuanced unfair strategies that I **can’t** engage, which outweighs since there’s no limit to what can be done. Metatheory’s key to engage unfair theory.
2. Truth testing violates LD rules-prefer this since it directly quotes the event description and doesn’t rely on inference.

Nelson Adam Nelson (Director of Lincoln-Douglas Debate at the Harker School) “Towards a Comprehensive Theory of LD” The Lincoln-Douglas Debate Theory Journal April 15th 2008 http://ldtheoryjournal.blogspot.com/2008/04/towards-comprehensive-theory-of-ld-adam.html JW

And that approach has implications for our understanding of the role of the resolution. Unfortunately, it seems many coaches, students, and judges approach the resolution as though it were a truth-statement, giving the affirmative the burden of proving that claim and the negative access to any strategy that denies the truth of the affirmative’s augments.

But the NFL’s new Lincoln Douglas Debate Event Description explicitly repudiates [truth-testing] such a model by placing parallel burdens amongst one of the hallmarks of the activity: No question of values can be determined entirely true or false. This is why the resolution is desirable. Therefore neither debater should be held to a standard of absolute proof. No debater can realistically be expected to prove complete validity or invalidity of the resolution. The better debater is the one who, on the whole, proves his/her [their] side of the resolution more valid as a general principle.2 And the truth-statement model of the resolution imposes an absolute burden of proof on the affirmative: if the resolution is a truth-claim, and the affirmative has the burden of proving that claim, in so far as intuitively we tend to disbelieve truth-claims until we are persuaded otherwise, the affirmative has the burden to prove that statement absolutely true. Indeed, one of the most common theory arguments in LD is conditionality, which argues it is inappropriate for the affirmative to claim only proving the truth of part of the resolution is sufficient to earn the ballot.

#### Vote aff if I win a counter interp to T

A. Reciprocity—otherwise the neg gets T and theory but the aff only gets theory, kills fairness since you have more outs to the ballot, that’s a structural skew that outweighs substantive abuse which can be overcome by better debating.

B. Timeskew—the 2ARs too short to prove I’m T and adequately cover substance

### Underview 2

#### institutional structures that cause oppression-instead focus on a material view of social change.

Giroux 6 Henry “Dirty Democracy and State of Terrorism” Comparative Studies of South Asia 163-177 2006

Abstracted from the ideal of public commitment, **the new authoritarianism represents a** political and economic practice and **form of militarism that loosen the connections among substantive democracy**, critical agency, **and critical education. In opposition** to the rising tide of authoritarianism, **educators** across the globe **must make a case for linking learning to progressive social change** while struggling to pluralize and critically engage the diverse sites where public pedagogy takes place. In part, this suggests forming alliances that can make sure every sphere of social life is recognized as an important site of the political, social, and cultural struggle that is so crucial to any attempt to forge the knowledge, identifications, effective investments, and social relations that constitute political subjects and social agents capable of energizing and spreading the basis for a substantive global democracy. **Such circumstances require** that **pedagogy be embraced as a moral and political practice**, one that is directive and not dogmatic, an outgrowth of struggles designed **to resist the increasing depoliticization of political culture that is the hallmark of the current Bush revolution. Education is the terrain where consciousness is shaped**, needs are constructed, **and the capacity for** individual self-reflection and **broad social change is nurtured** and produced. Education has assumed an unparalleled significance in shaping the language, values, and ideologies that legitimize the structures and organizations that support the imperatives of global capitalism. Efforts to reduce it to a technique or methodology set aside, education remains a crucial site for the production and struggle over those pedagogical and political conditions that provide the possibilities for people to develop forms of agency that enable them individually and collectively to intervene in the processes through which the material relations of power shape the meaning and practices of their everyday lives. Within the current historical context, struggles over power take on a symbolic and discursive as well as a material and institutional form. The struggle over education is about more than the struggle over meaning and identity; it is also about how meaning, knowledge, and values are produced, authorized, and made operational within economic and structural relations of power. Education is not at odds with politics; it is an important and crucial element in any definition of the political and offers not only the theoretical tools for a systematic critique of authoritarianism but also a language of possibility for creating actual movements for democratic social change and a new biopolitics that affirms life rather than death, shared responsibility rather than shared fears, and engaged citizenship rather than the stripped-down values of consumerism. At stake here is combining symbolic forms and processes conducive to democratization with broader social contexts and the institutional formations of power itself. **The key point** here **is to** understand and **engage educational** and pedagogical **practices from the point of** view of **how they are bound up with larger relations of power. Educators**, students, and parents **need to be clearer about how power works** through and in texts, representations, and discourses, **while** at the same time **recognizing that power** cannot be limited **to the study of representations and discourses,** even at the level of public policy. **Changing consciousness is not the same as altering the** institutional basis of oppression; at the same time, institutional reform cannot take place without a change in consciousness capable of recognizing not only injustice but also the very possibility for reform, the capacity to reinvent the conditions [End Page 176] and practices that make a more just future possible. In addition, it is crucial to raise questions about the relationship between pedagogy and civic culture, on the one hand, and what it takes for individuals and social groups to believe that they have any responsibility whatsoever even to address the realities of class, race, gender, and other specific forms of domination, on the other hand. For too long, the progressives have ignored that the strategic dimension of politics is inextricably connected to questions of critical education and pedagogy, to what it means to acknowledge that education is always tangled up with power, ideologies, values, and the acquisition of both particular forms of agency and specific visions of the future.

#### Solutions to critical issues must be discussed through pragmatic approaches within hegemonic power structures.

Kapoor 8, 2008 (Ilan, Associate Professor at the Faculty of Environmental Studies, York University, “The Postcolonial Politics of Development,” p. 138-139)

There are perhaps several other social movement campaigns that could be cited as examples of a ‘hybridizing strategy’.5 But what emerges as important from the Chipko and NBA campaigns is the way in which they treat laws and policies, institutional practices, and ideological apparatuses as deconstructible. That is, they refuse to take dominant authority at face value, and proceed to reveal its contingencies. Sometimes, they expose what the hegemon is trying to disavow or hide (exclusion of affected communities in project design and implementation, faulty information gathering and dissemination). Sometimes, they problematize dominant or naturalized truths (‘development = unlimited economic growth = capitalism’, ‘big is better’, ‘technology can save the environment’). In either case, by contesting, publicizing, and politicizing accepted or hidden truths, they hybridize power, challenging its smugness and triumphalism, revealing its impurities. They show power to be, literally and figuratively, a bastard. While speaking truth to power, a hybridizing strategy also [it] exploits the instabilities of power. In part, this involves showing up and taking advantage of the equivocations of power — conflicting laws, contradictory policies, unfulfilled promises. A lot has to do here with publicly shaming the hegemon, forcing it to remedy injustices and live up to stated commitments in a more accountable and transparent manner. And, in part, this involves nurturing or manipulating the splits and strains within institutions. Such maneuvering can take the form of cultivating allies, forging alliances, or throwing doubt on prevailing orthodoxy. Note, lastly, the way in which a hybridizing strategy works with the dominant discourse. This reflects the negotiative aspect of Bhabha’s performativity. The strategy may outwit the hegemon, but it does so from the interstices of the hegemony. The master may be paralyzed, but his paralysis is induced using his own poison/medicine. It is for this reason that cultivating allies in the adversarial camp is possible: when you speak their language and appeal to their own ethical horizons, you are building a modicum of common ground. It is for this reason also that the master cannot easily dismiss or crush you. Observing his rules and playing [their] his game makes it difficult for him not to take you seriously or grant you a certain legitimacy. The use of non-violent tactics may be crucial in this regard: state repression is easily justified against violent adversaries, but it is vulnerable to public criticism when used against non-violence. Thus, the fact that Chipko and the NBA deployed civil disobedience — pioneered, it must be pointed out, by the ‘father of the nation’ (i.e. Gandhi) — made it difficult for the state to quash them or deflect their claims.

#### Critique is useless without a concrete policy option that solves for the harms you discuss.

Bryant 12 Levi Bryant (Professor of Philosophy at Collin College) “A Critique of the Academic Left” 2012 <https://larvalsubjects.wordpress.com/2012/11/11/underpants-gnomes-a-critique-of-the-academic-left/> JW

Unfortunately, the academic left falls prey to its own form of abstraction. It’s good at carrying out critiques that denounce various social formations, yet very poor at proposing any sort of realistic constructions of alternatives. This because it thinks abstractly in its own way, ignor[es]ing how networks, assemblages, structures, or regimes of attraction would have to be remade to create a workable alternative. Here I’m reminded by the “underpants gnomes” depicted in South Park: The underpants gnomes have a plan for achieving profit that goes like this: Phase 1: Collect Underpants Phase 2: ? Phase 3: Profit! They even have a catchy song to go with their work: Well this is sadly how it often is with the academic left. Our plan seems to be as follows: Phase 1: Ultra-Radical Critique Phase 2: ? Phase 3: Revolution and complete social transformation! Our problem is that we seem perpetually stuck at phase 1 without ever explaining what is to be done at phase 2. Often the critiques articulated at phase 1 are right, but there are nonetheless all sorts of problems with those critiques nonetheless. In order to reach phase 3, we have to produce new collectives. In order for new collectives to be produced, people need to be able to hear and understand the critiques developed at phase 1. Yet this is where everything begins to fall apart. Even though these critiques are often right, we express [critiques] them in ways that only an academic with a PhD in critical theory and post-structural theory can understand. How exactly is Adorno to produce an effect in the world if only PhD’s in the humanities can understand him? Who are these things for? We seem to always ignore these things and then look down our noses with disdain at the Naomi Kleins and David Graebers of the world. To make matters worse, we publish our work in expensive academic journals that only universities can afford, with presses that don’t have a wide distribution, and give our talks at expensive hotels at academic conferences attended only by other academics. Again, who are these things for? Is it an accident that so many activists look away from these things with contempt, thinking their more about an academic industry and tenure, than producing change in the world? If a tree falls in a forest and no one is there to hear it, it doesn’t make a sound! Seriously dudes and dudettes, what are you doing? But finally, and worst of all, us Marxists and anarchists all too often act like assholes. We denounce others, we condemn them, we berate them for not engaging with the questions we want to engage with, and we vilify them when they don’t embrace every bit of the doxa that we endorse. We are every bit as off-putting and unpleasant as the fundamentalist minister or the priest of the inquisition (have people yet understood that Deleuze and Guattari’s Anti-Oedipus was a critique of the French communist party system and the Stalinist party system, and the horrific passions that arise out of parties and identifications in general?). This type of “revolutionary” is the greatest friend of the reactionary and capitalist because they do more to drive people into the embrace of reigning ideology than to undermine reigning ideology. These are the people that keep Rush Limbaugh in business. Well done! But this isn’t where our most serious shortcomings lie. Our most serious shortcomings are to be found at phase 2. We almost never make concrete proposals for how things ought to be restructured, for what new material infrastructures and semiotic fields need to be produced, and when we do, our critique-intoxicated cynics and skeptics immediately jump in with an analysis of all the ways in which these things contain dirty secrets, ugly motives, and are doomed to fail. How, I wonder, are we to do anything at all when we have no concrete proposals? We live on a planet of 6 billion people. These 6 billion people are dependent on a certain network of production and distribution to meet the needs of their consumption. That network of production and distribution does involve the extraction of resources, the production of food, the maintenance of paths of transit and communication, the disposal of waste, the building of shelters, the distribution of medicines, etc., etc., etc.

#### Oppression is created by social systems so only a focus on material conditions can solve.

Johnson no date Allan Johnson (PhD in sociology, he joined the sociology department at Wesleyan University) <http://www.cabrillo.edu/~lroberts/AlanJohnsonWhatCanWeDO001.pdf> JW

Privilege is a feature of social systems, not individuals. People have or don't have privilege depending on the system they're in and the social categories other people put them in. To say, then, that I have race privilege says less about me personally than it does about the society we all live in and how it is organized to assign privilege on the basis of a socially defined set of racial categories that change historically and often overlap. The challenge facing me as an individual has more to do with how I participate in society as a recipient of race privilege and how those choices oppose or support the system itself. In dealing with the problem of privilege, we have to get used to being surrounded by paradox. Very often those who have privilege don't know it, for example, which is a key aspect of privilege. Also paradoxical is the fact that privilege doesn't necessarily lead to a "good life," which can prompt people in privileged groups to deny resentfully that they even have it. But privilege doesn't equate with being happy. It involves having what others don't have and the struggle to hang on to it at their expense, neither of which is a recipe for joy, personal fulfillment, or spiritual contentment.... To be an effective part of the solution, we have to realize that privilege and oppression are not a thing of the past. It's [is] happening right now. It isn't just a collection of wounds inflicted long ago that now need to be healed. The wounding goes on as I write these words and as you read them, and unless people work to change the system that promotes it, personal healing by itself cannot be the answer. Healing wounds is no more a solution to the oppression that causes the wounding than military hospitals are a solution to war. Healing is a necessary process, but it isn't enough.... Since privilege is rooted primarily in systems—such as families, schools, and workplaces—change isn't simply a matter of changing people. People, of course, will have to change in order for systems to change, but the most important point is that changing people isn't enough. The solution also has to include entire systems, such as capitalism, whose paths of least resistance shape how we feel, think, and behave as individuals, how we see ourselves and one another.

# 1AR Frontlines

## Fish Adv.

### Fish 1st

#### Prefer impacts to fish:

#### 1. They’ve been historically excluded from our impact calc which means other groups have gotten the benefits of more utility in the past – evening out the playing field ensures more happiness overall

#### 2. Fish lay hundreds of eggs at a time which means every birthing fish you kill destroys the potential for hundreds more down the line that would have huge amounts of happiness – humans at best have 8 or 9 kids.

### High Probability 1st

#### High probability impacts come first.

1. Magnitude-lack of credible specific brink means that we don’t know when the neg impacts will occur but the aff impact aggregates every day, the magnitude will be greater by the time your scenario occurs.

2. Reversibility-systemic impacts create irreversible harms to people-we can’t un-murder someone, but intervening actors can solve impacts that rely on lots of link chains.

3. Timeframe-violence happens daily whereas your DAs go through a series of steps. New political developments can drastically change the probability of your link chain, but there are no comparable variables that will likely change the probability of violence.

4. Extinction first causes policy paralysis – any action by changing states of affairs has a miniscule risk of extinction, but we have good reasons to take actions like picking up a pen.

5. Expert predictions are incorrect.

Menand 05 Louis Menand (the Anne T. and Robert M. Bass Professor of English at Harvard University) “Everybody’s An Expert” The New Yorker 2005 http://www.newyorker.com/magazine/2005/12/05/everybodys-an-expert

“Expert Political Judgment” is not a work of media criticism. Tetlock is a psychologist—he teaches at Berkeley—and his conclusions are based on a long-term study that he began twenty years ago. He picked two hundred and eighty-four people who made their living “commenting or offering advice on political and economic trends,” and he started asking them to assess the probability that various things would or would not come to pass, both in the areas of the world in which they specialized and in areas about which they were not expert. Would there be a nonviolent end to apartheid in South Africa? Would Gorbachev be ousted in a coup? Would the United States go to war in the Persian Gulf? Would Canada disintegrate? (Many experts believed that it would, on the ground that Quebec would succeed in seceding.) And so on. By the end of the study, in 2003, the experts had made 82,361 forecasts. Tetlock also asked questions designed to determine how they reached their judgments, how they reacted when their predictions proved to be wrong, how they evaluated new information that did not support their views, and how they assessed the probability that rival theories and predictions were accurate. Tetlock got a statistical handle on his task by putting most of the forecasting questions into a “three possible futures” form. The respondents were asked to rate the probability of three alternative outcomes: the persistence of the status quo, more of something (political freedom, economic growth), or less of something (repression, recession). And he measured his experts on two dimensions: how good they were at guessing probabilities (did all the things they said had an x per cent chance of happening happen x per cent of the time?), and how accurate they were at predicting specific outcomes. The results were unimpressive. On the first scale, the experts performed worse than they would have if they had simply assigned an equal probability to all three outcomes—if they had given each possible future a thirty-three-per-cent chance of occurring. Human beings who spend their lives studying the state of the world, in other words, are poorer forecasters than dart-throwing monkeys, who would have distributed their picks evenly over the three choices.

## Cyberattacks Adv.

### Extinction First

#### Tiny risk of extinction outweighs everything because of lost potential for future generations.

Bostrom 11 Nick Bostrom (Future of Humanity Institute, Oxford Martin School & Faculty of Philosophy, University of Oxford), “THE CONCEPT OF EXISTENTIAL RISK”, 2011 http://www.existential-risk.org/concept.html

Even if we use **the most conservative** of these **estimates,** which entirely ignores the possibility of space colonization and software minds, we **find that the expected loss of an existential catastrophe is greater than** the value of **1018**human **lives.  This implies that** the expected value of **reducing existential risk by** a mere**one millionth of one percentage point is** at least **ten times** the value of **a billion** human **lives.**  The more technologically comprehensive estimate of 1054 human-brain-emulation subjective life-years (or 1052 lives of ordinary length) makes the same point even more starkly.  Even if we give this allegedly lower bound on the cumulative output potential of a technologically mature civilization a mere 1% chance of being correct, we find that the expected value of reducing existential risk by a mere one billionth of one billionth of one percentage point is worth a hundred billion times as much as a billion human lives.

### Grid Vulnerable

#### The threat of cyber-attack is real – multiple countries and terrorists are acquiring capabilities

Habiger 10 (Eugue, Retired Air Force General, Cyberwarfare and Cyberterrorism, The Cyber Security Institute, 2/1, p. 11-19)

However, there are reasons to believe that what is going on now amounts to a fundamental shift as opposed to business as usual. Today’s network exploitation or information operation trespasses possess a number of characteristics that suggest that the line between espionage and conflict has been, or is close to being, crossed. (What that suggests for the proper response is a different matter.) First, the number of cyberattacks we are facing is **growing significantly**. Andrew Palowitch, a former CIA official now consulting with the US Strategic Command (STRATCOM), which oversees the Defense Department’s Joint Task Force‐Global Network Operations, recently told a meeting of experts that the Defense Department has experienced **almost 80,000 computer attacks**, and some number of these assaults have actually “reduced” the military’s “**operational capabilities**.”20 Second, the nature of these attacks is starting to shift from penetration attempts aimed at gathering intelligence (cyber spying) **to offensive efforts** aimed at taking down systems (cyberattacks). Palowitch put this in stark terms last November, “We are currently in a cyberwar and war is going on today.”21 Third, these recent attacks need to be taken in a broader strategic context. Both Russia and China have stepped up their offensive efforts and taken a **much more aggressive cyberwarfare posture**. The Chinese have developed an openly discussed cyberwar strategy aimed at achieving electronic dominance over the U.S. and its allies by 2050. In 2007 the Department of Defense reported that for the first time China has developed **first strike viruses**, marking a **major shift** from prior investments in defensive measures.22 And in the intervening period China has launched a series of offensive cyber operations against U.S. government and private sector networks and infrastructure. In 2007, Gen. James Cartwright, the former head of STRATCOM and now the Vice Chairman of the Joint Chiefs of Staff, told the US‐China Economic and Security Review Commission that China’s ability to launch “denial of service” attacks to overwhelm an IT system is of particular concern. 23 Russia also has already begun to wage offensive cyberwar. At the outset of the recent hostilities with Georgia, Russian assets launched a series of cyberattacks against the Georgian government and its critical infrastructure systems, including media, banking and transportation sites.24 In 2007, cyberattacks that many experts attribute, directly or indirectly, **to Russia shut down the Estonia government’s IT systems**. Fourth, the current geopolitical context must also be factored into any effort to gauge the degree of threat of cyberwar. The start of the new Obama Administration has begun to help reduce tensions between the United States and other nations. And, the new administration has taken initial steps to improve bilateral relations specifically with both China and Russia. However, it must be said that over the last few years the posture of both the Chinese and Russian governments toward America has clearly become **more assertive, and** at times even **aggressive**. Some commentators have talked about the prospects of a cyber Pearl Harbor, and the pattern of Chinese and Russian behavior to date **gives reason for concern** along these lines: both nations have offensive cyberwarfare strategies in place; both nations have taken the cyber equivalent of building up their forces; both nations now regularly probe our cyber defenses looking for gaps to be exploited; both nations have begun taking actions that cross the line from cyberespionage to cyberaggression; and, our bilateral relations with both nations are increasingly **fractious and complicated by** areas of marked, direct **competition**. Clearly, there a sharp differences between current U.S. relations with these two nations and relations between the US and Japan just prior to World War II. However, from a strategic defense perspective, there are enough warning signs to warrant preparation. In addition to the threat of cyberwar, the limited resources required to carry out even a large scale cyberattack also makes **likely the potential for a significant cyberterror attack** against the United States. However, the lack of a long list of specific incidences of cyberterrorism should provide no comfort. There is **strong evidence** to suggest that al Qaeda has the ability to conduct cyberterror attacks against the United States and its allies. Al Qaeda and other terrorist organizations are extremely active in cyberspace, using these technologies to communicate among themselves and others, carry out logistics, recruit members, and wage information warfare. For example, al Qaeda leaders used email to communicate with the 9‐11 terrorists and the 9‐11 terrorists used the Internet to make travel plans and book flights. Osama bin Laden and other al Qaeda members routinely post videos and other messages to online sites to communicate. Moreover, there is evidence of efforts that al Qaeda and other terrorist organizations are **actively developing cyberterrorism capabilities** and seeking to carry out cyberterrorist attacks. For example, the Washington Post has reported that “U.S. investigators have found evidence in the logs that mark a browser's path through the Internet that al Qaeda operators spent time on sites that offer software and programming instructions for the digital switches that run power, water, transport and communications grids. In some interrogations . . . al Qaeda prisoners have described intentions, in general terms, to use those tools.”25 Similarly, a 2002 CIA report on the cyberterror threat to a member of the Senate stated that al Qaeda and Hezbollah have become "more adept at using the internet and computer technologies.”26 The FBI has issued bulletins stating that, “U. S. law enforcement and intelligence agencies have received indications that Al Qaeda members have sought information on Supervisory Control And Data Acquisition (SCADA) systems available on multiple SCADA‐related web sites.”27 In addition a number of jihadist websites, such as 7hj.7hj.com, teach computer attack and hacking skills in the service of Islam.28 While al Qaeda may lack the cyber‐attack capability of nations like Russia and China, there is every reason to believe its operatives, and those of its ilk, are as capable as the cyber criminals and hackers who routinely effect great harm on the world’s digital infrastructure generally and American assets specifically. In fact, perhaps, the most troubling indication of the level of the cyberterrorist threat is the countless, serious non‐terrorist cyberattacks routinely carried out by criminals, hackers, disgruntled insiders, crime syndicates and the like. If run‐of‐the‐mill criminals and hackers can threaten powergrids, hack vital military networks, steal vast sums of money, take down a city’s of traffic lights, compromise the Federal Aviation Administration’s air traffic control systems, among other attacks, it is **overwhelmingly likely** that terrorists can carry out similar, if not more malicious attacks. Moreover, even if the world’s terrorists are unable to breed these skills, they can certainly buy them. There are untold numbers of cybermercenaries around the world—sophisticated hackers with advanced training who would be willing to offer their services for the right price. Finally, given the nature of our understanding of cyber threats, there is always the possibility that we have already been the victim or a cyberterrorist attack, or such an attack has already been set but not yet effectuated, and we don’t know it yet. Instead, a well‐designed cyberattack has the capacity **cause widespread chaos**, sow societal unrest, undermine national governments, spread paralyzing fear and anxiety, and create a state of utter turmoil, all without taking a single life. A sophisticated cyberattack could throw a nation’s banking and finance system into chaos **causing markets to crash**, prompting runs on banks, **degrading confidence in markets**, perhaps even putting the nation’s currency in play and making the government look helpless and hapless. In today’s difficult economy, imagine how Americans would react if vast sums of money were taken from their accounts and their supporting financial records were destroyed. A truly nefarious cyberattacker could carry out an attack in such a way (akin to Robin Hood) as to engender populist support and deepen rifts within our society, thereby making efforts to restore the system all the more difficult. A modestly advanced enemy could use a cyberattack to shut down (if not physically damage) one or more regional power grids. An entire region could be cast into total darkness, power‐dependent systems could be shutdown. An attack on one or more regional power grids could also cause **cascading effects that could jeopardize our entire national grid**. When word leaks that the blackout was caused by a cyberattack, the specter of a foreign enemy capable of sending the entire nation into darkness would only **increase the fear, turmoil and unrest**. While the finance and energy sectors are considered prime targets for a cyberattack, an attack on any of the 17 delineated critical infrastructure sectors could have a major impact on the United States. For example, our healthcare system is already technologically driven and the Obama Administration’s e‐health efforts will only increase that dependency. A cyberattack on the U.S. e‐health infrastructure could send our healthcare system into chaos and put countless of lives at risk. Imagine if emergency room physicians and surgeons were suddenly no longer able to access vital patient information. A cyberattack on our nation’s water systems could likewise cause **widespread disruption**. An attack on the control systems for one or more dams could put entire communities at risk of being inundated, and could **create ripple effects across the water, agriculture, and energy sectors**. Similar water control system attacks could be used to at least temporarily **deny water to** otherwise **arid regions**, impacting everything from the quality of life in these areas to agriculture. In 2007, the U.S. Cyber Consequences Unit determined that the destruction from a single wave of cyberattacks on critical infrastructures could exceed $700 billion, which would be the rough equivalent of 50 Katrina‐esque hurricanes hitting the United States all at the same time.29 Similarly, one IT security source has estimated that the impact of a single day cyberwar attack that focused on and disrupted U.S. credit and debit card transactions would be approximately $35 billion.30 Another way to gauge the potential for harm is in comparison to other similar noncyberattack infrastructure failures. For example, the August 2003 regional power grid blackout is estimated to have cost the U.S. economy up to $10 billion, or roughly .1 percent of the nation’s GDP. 31 That said, a cyberattack of the exact same magnitude would most certainly have a much larger impact. The origin of the 2003 blackout was almost immediately disclosed as an atypical system failure having nothing to do with terrorism. This made the event both less threatening and likely a single time occurrence. Had it been disclosed that the event was the result of an attack that could readily be repeated the impacts would likely have grown substantially, if not exponentially. Additionally, a cyberattack could also be used to **disrupt our nation’s defenses or distract our** national **leaders** in advance of a more traditional conventional or strategic attack. Many military leaders actually believe that such a disruptive cyber pre‐offensive is the most effective use of offensive cyber capabilities. This is, in fact, the way Russia utilized cyberattackers—whether government assets, governmentdirected/ coordinated assets, or allied cyber irregulars—in advance of the invasion of Georgia. Widespread distributed denial of service (DDOS) attacks were launched on the Georgian governments IT systems. Roughly a day later Russian armor **rolled into Georgian territory**. The cyberattacks were used to prepare the battlefield; they denied the Georgian government a critical communications tool isolating it from its citizens and degrading its command and control capabilities precisely at the time of attack. In this way, these attacks were the functional equivalent of conventional air and/or missile strikes on a nation’s communications infrastructure.32 One interesting element of the Georgian cyberattacks has been generally overlooked: On July 20th, weeks before the August cyberattack, the website of Georgian President Mikheil Saakashvili was overwhelmed by a more narrowly focused, but technologically similar DDOS attack.33 This should be particularly chilling to American national security experts as our systems undergo the same sorts of focused, probing attacks on a constant basis. The ability of an enemy to use a cyberattack to counter our offensive capabilities or **soften our defenses for a wider offensive** against the United States is **much more than mere speculation**. In fact, in Iraq it is already happening. Iraq insurgents are now using off‐the‐shelf software (costing just $26) to hack U.S. drones (costing $4.5 million each), allowing them to intercept the video feed from these drones.34 By hacking these drones the insurgents have succeeded in greatly reducing **one of our most valuable sources of real‐time intelligence** and situational awareness. If our enemies in Iraq are capable of such an effective cyberattack against one of our more sophisticated systems, consider what a more technologically advanced enemy could do. At the strategic level, in 2008, as the United States Central Command was leading wars in both Iraq and Afghanistan, a cyber intruder compromised the security of the Command and sat within its IT systems, monitoring everything the Command was doing. 35 This time the attacker simply gathered vast amounts of intelligence. However, it is clear that the attacker could have used this access to wage cyberwar—**altering information, disrupting the flow of information, destroying information, taking down systems**—against the United States forces already at war. Similarly, during 2003 as the United States prepared for and began the War in Iraq, the IT networks of the Department of Defense were hacked 294 times.36 By August of 2004, with America at war, these ongoing attacks compelled then‐Deputy Secretary of Defense Paul Wolfowitz to write in a memo that, "Recent exploits have **reduced operational capabilities on our networks**."37 This wasn’t the first time that our national security IT infrastructure was penetrated immediately in advance of a U.S. military option.38 In February of 1998 the Solar Sunrise attacks systematically compromised a series of Department of Defense networks. What is often overlooked is that these attacks occurred during the ramp up period ahead of potential military action against Iraq. The attackers were able to obtain vast amounts of sensitive information—information that would have certainly been of value to an enemy’s military leaders. There is no way to prove that these actions were purposefully launched with the specific intent to distract American military assets or degrade our capabilities. However, such ambiguities—the inability to specifically attribute actions and motives to actors—are the very nature of cyberspace. Perhaps, these repeated patterns of behavior were mere coincidence, or perhaps they weren’t. The potential that an enemy might use a cyberattack to soften physical defenses, increase the gravity of harms from kinetic attacks, or both, significantly increases the potential harms from a cyberattack. Consider the gravity of the threat and risk if an enemy, rightly or wrongly, believed that it could use a cyberattack to degrade our strategic weapons capabilities. Such an enemy might be convinced that **it could win a war**—conventional or **even nuclear**—against the United States. The effect of this would be to **undermine our deterrence**‐based defenses, making us **significantly more at risk of a major war**.

## AT: Econ DA

#### No longer cost competitive – that’s Romm 8/4.

## AT: Desalination DA

### Link Level

#### Control UQ: drought’s bad now and desalination tech IS THE SQUO. That’s your evidence.

#### TURN: Continued reliance on nuclear power causes water scarcity—uranium mining and reactor operation are both water-intensive.

Sovacool and Cooper 8 Benjamin Sovacool (Research Fellow in the Energy Governance Program at the Centre on Asia and Globaliaztion, part of the Lee Kuan Yew School of Public Policy at the National University of Singapore, adjunct professor at the Virginia Polytechnic Institute & State University) and Christopher Cooper (Principal Partner for Oomph Consulting, LLC, former Executive Director of the Network for New Energy Choices) “Nuclear Nonsense: Why Nuclear Power is No Answer to Climate Change and the World's Post- Kyoto Energy Challenges” William & Mary Environmental Law and Policy Review Volume 33 Issue 1 Article 2 2008 h p://scholarship.law.wm.edu/wmelpr/vol33/iss1/2 JW

With electricity demand expected to grow by approximately fifty percent in the next twenty-five years, continuing to rely on nuclear generators could create a water scarcity crisis. In 2006, the DOE warned that consumption of water for electricity production could more than double by 2030 to 7.3 billion gallons per day in the U.S., ifnew power plants con- tinue to be built with evaporative cooling.35' This amount is equal to the entire country's water consumption in 1995.352 The nuclear industry's vast appetite for water has serious consequences, both for human consumption and the environment. Assuming the latest Census Bureau projections, the U.S. population is expected to grow by about seventy million people in the next twenty-fiveyears.3 3Such population growth is already threatening to overwhelm existing supplies of fresh and potable water. "Few new reservoirs have been built since 1980... [and] some regions have seen groundwater levels drop as much as 300 to 900 feet over the past fifty years."354 Further, "most state water managers expect either local or regional water shortages within the next 10 years," according to a recent survey, even under "normal" conditions." In fact, about forty-eight percent of the continental U.S. reported drought conditions during the summer of 2002.356 Three stages of the nuclear fuel cycle-uranium milling and minng,plant operation, and nuclear waste storage--consume, withdraw, and contaminate water supplies. As a result of this vast need for water, most nuclear facilities cannot operate during droughts357 and in some cases can actually cause water shortages.358 1. Uranium Mining and Leeching Uranium mining, the process of extracting uranium ore from the ground, is extremely water intensive. Since the necessary concentrations of uranium are mostly prevalent at very low concentrations, uranium mining is volume intensive. The problem is that such mining practices can greatly damage and degrade local water supplies. Early mining techniques were very similar to other hard rock mining such as copper, gold, and silver, and involved the creation of underground mines. Open-pit mining, the most prevalent type of uranium extraction in the world today, ceased in the U.S. in 1992 due to concerns about environmental contami- nation and the quality of uranium, as most ore found in the U.S. was lower grade uranium from sandstone deposits.5 9 Currently, uranium miners use only one type oftechnique to extract uranium ore in Wyoming, Nebraska, and Texas: in-situ leaching. 6° Uranium miners perform in-situ leaching by pumping liquids into the area surrounding uranium deposits. These liquids often include acid or alkaline solutions to weaken the calcium or sandstone surrounding uranium ore.36' Operators then pump the uranium up into recovery wells at the surface, where it is collected. 62 In-situ leaching was deemed more cost effective than underground mining because it avoids the significant expense ofexcavating underground sites and often takes less time to implement. 63 In 2005, nuclear power plants produced an annual output of 781,986 MWh requiring more than thirty million gallons ofwater per day for uranium mining and processing around the world.36' Even though the bulk of these mining and processing facilities are outside of the U.S., the DOE estimates that three to five million gallons ofwater per day are still associated with mining and processing of uranium within the country.365 2. Plant Operation Nuclear reactors also require massive supplies of water to cool reactor cores and spent nuclear fuel rods, and they use the most water compared to all other electricity generating facilities, including conventional coal and natural gas facilities.366 Because much of the water used by nuclear plants is turned to steam, substantial amounts are lost to the local water cycle entirely. One nuclear plant in Georgia, for example, "withdraws an average of 57 million gallons every day from the Altamaha River... [but actually] 'consumes' 33 million gallons per day [from the local supply,] that is lost as water vapor"'3-enough to service more than 179,000 Georgia homes."' The Shearon Harris nuclear reactor, operated by Progress Energy in New Hill, North Carolina, near Raleigh, sucks up thirty-three million gallons a day, and loses seventeen million gallons per day due to evaporation." 9 Duke Energy's McGuire Plant on Lake Norman, North Carolina, uses more than two billion gallons of water per day."' Southern Company's Joseph M. Farley nuclear plant in Dothan, Alabama, consumes about forty-six million gallons of water per day, primarily as evaporative loss.371 In the arid West, where water is scarce, the challenge of cooling nuclear plants is even more daunting. At the Palo Verde plant in Arizona, ninety million gallons of water must be brought to the plant site each day.372 Plant operators must purchase treated effluent from seven cities in the Phoenix metropolitan area, and have had to construct a thirty-five mile pipeline to carry water from a treatment facility to the plant-which uses about twenty billion gallons of water every year.373

#### This outweighs: A. controls the internal link – in order for desal plants to work, they need freshwater to make freshwater. That presumes they have a supply to start with, which they don’t. B. magnitude – even if desal plants are overall better for water, they’re outweighed by the hundreds of nuclear power plants that don’t do desal and consume millions of gallons of water per day.

#### Desalination tech isn’t used in the US and can contaminate water supplies.

Sanchez 16, Dana, 9-10-2016, "Is Desalination The Answer For Africa's Water Shortages?," AFKInsider, http://afkinsider.com/128871/is-desalination-the-answer-for-africas-water-shortages/, accessed 9-9-2016. NP

South Africa’s 3,000-kilometer coastline could support a whole fleet of eco-friendly desalination plants that will solve the country’s water shortages and produce a new industry, says Kgalema Motlanthe. The former South African deputy president, Motlanthe served as president for eight months following Thabo Mbeki’s resignation. He spoke at round table event on black industrialists in the green economy, encouraging exploration of desalination technology, MiningWeekly reports. South Africa in 2015 recorded its lowest annual rainfall since record keeping began in 1904. A drought, attributed to El Nino, put millions at risk of food shortage, according to Reuters. The country is over-dependent on surface water, said Nomvula Paula Mokonyane, South Africa’s Minister of Water Affairs. Globally, capacity is growing for seawater reverse osmosis desalination at an annual rate of 13.6 percent and this is expected to continue the next five years, according to Research and Markets. New technology is helping the industry grow by leveraging renewable energy and innovative membrane upgrades such as ceramic and polymeric membranes. But desalination technology hasn’t caught up to demand. Desalination is extremely expensive and prone to contamination, Frost & Sullivan reported in October, 2015. More than 17,000 desalination plants operate in 150 countries worldwide, a capacity that is expected to double by 2020, according to Frost & Sullivan’s Analysis of Global Desalination Market. The market earned $11.66 billion in 2015 and it’s expected to reach $19.08 billion in 2019. “Environmentally-conscious countries in Europe and the Americas are hesitant to practice desalination owing to its harsh effects on sea water,” said Vandhana Ravi, a Frost & Sullivan consultant. “Eco-friendly desalination systems that do not use chemicals will be well-received among municipalities.” While several desalination projects are under construction in the U.S., India, United Arab Emirates, Saudi Arabia and Mexico, adoption is slow in other drought-stricken parts of the world. Lack of regulatory support limits uptake. Thermal desalination technology uses large amounts of energy and releases highly salty liquid brine back into the sea or other bodies of water, impacting the environment negatively. Brine disposal remains a prime challenge until the technology is upgraded, according to Frost & Sullivan. The goal is to reduce operating costs. Sub-Saharan Africa is largely dependent on rainfall, which has been erratic, and new partnerships are being forged from necessity. In May, South Africa announced a partnership with Iran to develop desalination plants along all coastal communities to boost water supplies. President Jacob Zuma visited Iran in April. Mossel Bay in the Western Cape is the site of South Africa’s largest desalination plant, converting salty seawater to drinkable water and helping supply water to state oil company PetroSA’s gas-to-fuel refinery. South Africa is the main user of desalination technology in sub-Saharan Africa. Ghana and Namibia also have operational plants. Algeria is using desalination on a large scale. In April 2015, West Africa’s first desalination plant opened in Ghana. Accra Sea Water Desalination plant has capacity to supply 60,000 cubic meters a day of fresh water, enough for 500,000 residents in the Accra vicinity, WaterWorld reported. In late 2015, Algeria’s Skikda desalination plant reached a milestone with a 200 million cubic meters of drinking water produced since starting operations in 2009, according to WaterWorld. Desalinated water is used as drinking water for the city of Skikda, and feeds the local petrochemical complex. The Spanish company Abengoa Water runs the facility, along with two more desalination plants in Algeria at Honaine and Ténès. Prime Minister Benjamin Netanyahu plans a trip in July to four East African countries — Uganda, Kenya, Rwanda and Ethiopia. Rwanda looks to Israel as a model of how to build a modern country out of the devastation of genocide, Rwanda’s Ambassador Joseph Rutabana told The Jerusalem Post. Rwanda is on Netanyahu’s list because it is arguably Israel’s closest friend on the continent. Rwanda wants to benefit from Israeli water management expertise, according to an Israeli diplomatic source. “Israel has no water resources, but has developed other technologies toward recycling and water desalination that has made it self reliant,” Rutabana said. “In Rwanda we have lots of rain, but are still suffering from shortages.” - See more at: http://afkinsider.com/128871/is-desalination-the-answer-for-africas-water-shortages/#sthash.A45vW3Z1.dpuf

### AT: Water Wars

#### No water wars prefer our overall scholarship analysis over their hype evidence

**Katz11**—Lecturer of Geography and Environmental Studies @ University of Haifa [Dr. David Katz (PhD in Natural Resource Policy & MA in Applied Economics @ University of Michigan), “Hydro-Political Hyperbole: Examining Incentives for Overemphasizing the Risks of Water Wars,” Global Environmental Politics, Volume 11, Number 1, February 2011, pp. 12-35]

Evidence and Perception In sum, despite some instances of violent conflict over water, there is little systematic evidence of war over water resources. Evidence for a deterministic relationship between water scarcity and the outbreak of armed conflict is particularly weak. Less ambitious claims that water shortages will contribute to insecurity, which can, in turn, lead to violent conflict, have more empirical support. Even here, however, the importance of water as a causal variable is questionable. Several studies have found that variables such as regime type and institutional capacity are much more important indicators of conflictpotential, 43 and may have mitigating effects on any water-conflict link. As a consequence of accumulated research, many scholars have concluded that risks of water wars are low, 44 and others have toned down or qualified their statements about the likelihood of future water wars.45 Some governmental reports have limited their contentions to highlighting that water scarcity can aggravate conflicts and increase insecurity,46 and many studies now emphasizewater as a tool for cooperation.47 Warnings and predictions of imminent water wars continue to be commonplace, however. In a review of published academic literature, Gupta and van der Zaag find that articles on water conflict outnumber those on cooperation by nearly three to one, and are five times more likely to be cited.48 This article will now turn to offering possible explanations for the persistence and popularity of such declarations despite the bulk of expert opinion downplaying the risks of water wars. Incentives to Stress a Water War Scenario Incentives Presented in Existing Literature Observers have noted that various actors may have incentives to stress or even exaggerate the risks of water wars. Lonergan notes, for instance, that in “many cases, the comments are little more than media hype; in others, statements have been made for political reasons.”49 Beyond mere acknowledgement of the possibility of such incentives, however, little research has attempted to understand what these incentives are and how they may differ between actors. An understanding of the different motivations of various groups of actors to stress the possibility of imminent water wars can help explain the continued seemingly disproportionate popularity of such messagesand help to evaluate such warnings more critically.pg. 17-18

#### No risk of water wars--- co-op solves and every study goes our way

Jeremy Allouche 11 is currently a Research Fellow at the Institute of Development Studies at the University of Sussex. "The sustainability and resilience of global water and food systems: Political analysis of the interplay between security, resource scarcity, political systems and global trade" Food PolicyVolume 36, Supplement 1, January 2011, Pages S3-S8 Accessed via: Science Direct Sciverse

Water/food resources, war and conflict

The question of resource scarcity has led to many debates on whether scarcity (whether of food or water) will lead to conflict and war. The underlining reasoning behind most of these discourses over food and water wars comes from the Malthusian belief that there is an imbalance between the economic availability of natural resources and population growth since while food production grows linearly, population increases exponentially. Following this reasoning, neo-Malthusians claim that finite natural resources place a strict limit on the growth of human population and aggregate consumption; if these limits are exceeded, social breakdown, conflict and wars result. Nonetheless, it seems that **most empirical studies do not support any of these neo-Malthusian arguments.** **Technological change and greater inputs of capital have dramatically increased labour productivity in agriculture.** More generally, the neo-Malthusian view has suffered because during the last two centuries **humankind has breached many resource barriers that seemed unchallengeable.** Lessons from history: alarmist scenarios, resource wars and international relations In a so-called age of uncertainty, a number of alarmist scenarios have linked the increasing use of water resources and food insecurity with wars. The idea of water wars (perhaps more than food wars) is a dominant discourse in the media (see for example Smith, 2009), NGOs (International Alert, 2007) and within international organizations (UNEP, 2007). In 2007, UN Secretary General Ban Ki-moon declared that ‘water scarcity threatens economic and social gains and is a potent fuel for wars and conflict’ (Lewis, 2007). Of course, this type of discourse has an **instrumental purpose**; security and conflict are here used for raising water/food as key policy priorities at the international level. In the Middle East, presidents, prime ministers and foreign ministers have also used this bellicose rhetoric. Boutrous Boutros-Gali said; ‘the next war in the Middle East will be over water, not politics’ (Boutros Boutros-Gali in Butts, 1997, p. 65). The question is not whether the sharing of transboundary water sparks political tension and alarmist declaration, but rather to what extent water has been a principal factor in international conflicts. **The evidence seems quite weak**. Whether by president Sadat in Egypt or King Hussein in Jordan, **none of these declarations have been followed up by military action**. The governance of transboundary water has gained increased attention these last decades. This has a direct impact on the global food system as water allocation agreements determine the amount of water that can used for irrigated agriculture. The likelihood of conflicts over water is an important parameter to consider in assessing the stability, sustainability and resilience of global food systems. **None of the various and extensive databases** on the causes of war show water as a casus belli. Using the International Crisis Behavior (ICB) data set and supplementary data from the University of Alabama on water conflicts, Hewitt, Wolf and Hammer found only seven disputes where water seems to have been at least a partial cause for conflict (Wolf, 1998, p. 251). In fact, about 80% of the incidents relating to water were limited purely to governmental rhetoric intended for the electorate (Otchet, 2001, p. 18). As shown in The Basins At Risk (BAR) water event database, **more than two-thirds of over 1800 water-related ‘events’ fall on the ‘cooperative’ scale** (Yoffe et al., 2003). Indeed, if one takes into account a much longer period, the following figures clearly demonstrate this argument. According to studies by the United Nations Food and Agriculture Organization (FAO), organized political bodies signed between the year 805 and 1984 more than 3600 water-related treaties, and approximately 300 treaties dealing with water management or allocations in international basins have been negotiated since 1945 ([FAO, 1978] and [FAO, 1984]). The fear around water wars have been driven by a Malthusian outlook which equates scarcity with violence, conflict and war. There is however **no direct correlation between water scarcity and transboundary conflict**. Most specialists now tend to agree that the major issue is not scarcity per se but rather the allocation of water resources between the different riparian states (see for example [Allouche, 2005], [Allouche, 2007] and [Rouyer, 2000]). Water rich countries have been involved in a number of disputes with other relatively water rich countries (see for example India/Pakistan or Brazil/Argentina). The perception of each state’s estimated water needs really constitutes the core issue in transboundary water relations. Indeed, whether this scarcity exists or not in reality, perceptions of the amount of available water shapes people’s attitude towards the environment (Ohlsson, 1999). In fact, some water experts have argued that scarcity drives the process of co-operation among riparians ([Dinar and Dinar, 2005] and [Brochmann and Gleditsch, 2006]). In terms of international relations, the threat of water wars due to increasing scarcity **does not make much sense in the light of the recent historical record**. Overall, the water war rationale expects conflict to occur over water, and appears to suggest that violence is a viable means of securing national water supplies, an argument which is highly contestable. The debates over the likely impacts of climate change have again popularised the idea of water wars. The argument runs that climate change will precipitate worsening ecological conditions contributing to resource scarcities, social breakdown, institutional failure, mass migrations and in turn cause greater political instability and conflict ([Brauch, 2002] and [Pervis and Busby, 2004]). In a report for the US Department of Defense, Schwartz and Randall (2003) speculate about the consequences of a worst-case climate change scenario arguing that water shortages will lead to aggressive wars (Schwartz and Randall, 2003, p. 15). Despite growing concern that climate change will lead to instability and violent conflict, **the evidence base to substantiate the connections is thin** ([Barnett and Adger, 2007] and [Kevane and Gray, 2008]).

#### Co-op outweighs conflict. Overwhelming empirics prove

**Conca 12**

<Ken Conca 2012, professor at American University's School of International Service, where he directs the Global Environmental Politics Program, "Decoupling Water and Violent Conflict," Fall, Issues in Science & Technology, Vol. 29 Issue 1, Academic Search Premier>

The good news is that **although countries** may sometimes **use bellicose rhetoric** when discussing water supplies, **there are no significant examples** in the historical record **of countries going to war over water. The most comprehensive study** to date, which looked at water-related events in shared river basins during the second half of the 20th century, **found that coop**erative events, such as treaties, scientific exchanges, or verbal declarations of cooperation, **outnumbered** instances of **conflict**, such as verbal hostility, coercive diplomacy, or troop mobilization, **by** roughly **two to one**; **and** that **even the most severe episodes of conflict stopped short of** outright **war**fare. Moreover, when conflict episodes did occur, they were typically not the result of water scarcity. Rather, the key factor was the inability of governments to adapt to rapid changes, such as when part of a country split off to become a new one or when a decision to build a large dam was made without consulting downstream neighbors. The reasons for the **lack of** violent **conflict are not surprising**: War between nations is an increasingly rare event in world politics, **water relations are embedded in broader relations between countries, and there are far less costly alternatives than war to improve water availability** or efficiency of use. Well-designed cooperative agreements can go a long way toward managing shared rivers in a fair and peaceful manner.

#### No water wars- all empirics prove

**Null 12**

[Schuyler, researcher at Woodrow Wilson Center’s Environmental Change and Security Program, a nonpartisan research organization, “Move Beyond “Water Wars” to Fulfill Water’s Peacebuilding Potential, Says NCSE Panel,” 1-26-12 http://www.newsecuritybeat.org/2012/01/move-beyond-water-wars-to-fulfill-waters-peacebuilding-potential-says-ncse-panel/]

Carl **Bruch**, who co-directs international programs at the Environmental Law Institute, **started by saying history shows that inter-state “water wars” are “highly unlikely**.” He pointed to Aaron Wolf’s and Peter Gleick’s work cataloguing the role of water in conflict throughout human history that shows **it is difficult to find even a single conflict that was fought solely over the fundamental resource**. For example, **climate change may bring changes in rainfall, and some studies have found a correlation between lack of rainfall and conflict, but there is no causation**, said Bruch. “**It’s a question of governance**,” he said. **If lack of rainfall caused conflict, there would have been war across the Sahel in 2003; instead, it only happened in Darfur, which lacked a government able to deal with the challenge** (similar observations have been made about the relationship between drought and famine in the Horn of Africa).

#### No impact to water wars

**Allouche 11** – fellow at the Institute of Development Studies at Brighton, UK (Jeremy, "The sustainability and resilience of global water and food systems: Political analysis of the interplay between security, resource scarcity, political systems and global trade" Food Policy, Volume 36, Supplement 1)

At the same time, Ostrom’s work (1990) shows how local people cooperate in times of scarcity. Refuting Hardin’s (1968) pessimistic ‘tragedy of the commons’, her publications have highlighted a variety of conditions under which collective action in resource management operates effectively, such as when there are clear resource boundaries and relative socio-economic homogeneity among users. What seem to be emerging, in fact, is that geographical scale and intensity of conflict are inversely related. However, water-related conflicts are caused more by the way in which water use is governed than by water scarcity (see for example the ongoing tensions between landowners and poorer peasants in the Chittoor District, India, over the lowering of the water table). The outcome of local conflicts tends to reflect societal problems. The evidence that countries engage in wars specifically over water is poor but there is little doubt that water conflicts are common at the inter-sector, inter-community, inter-farm and inter- (and intra-) household levels. Access and control over water, political power, and social and gender relations are the major drivers causing water crises, especially at the local level (see for example Mehta, 2005). The risks of water-related conflicts are at the level of human security. As suggested by Gleick (2009), these risk can be reduced if: (i) basic human needs for water are met as a way to ensure, if not absolute justice, at least some semblance of equity, (ii) effective peace-keeping operations at the United Nations are developed when resource disputes cannot be resolved locally, and (iii) diplomats have a better understandings of the connections between water and conflict so that they can apply the tools in other conflict situations to reduce water disputes.

### AT: Middle East

#### No Middle East water wars

Urdan 11—writer for Inside Government (Matthew, Wars or Water Peace? Part I, 28 Feb 11, http://www.insidegov.org/?p=534)

Perhaps the “Goldilocks Zone of Cooperation” in terms of water scarcity represents a unique period in human history and global civilization evolution when practical considerations, that may be representative of constructivist thought, will allow the transformation of society into a truly global civilization capable of finding solutions to the most pressing of global issues before it is too late and a perpetual Hobbesian state of war ensues. The water situations and interdependencies on the Tigris and Euphrates Rivers in Turkey, Syria, and Iraq (Dinar, 2009); along with the enduring Indus Water Treaty (IWT) between India and Pakistan that persists despite serious disputes over territory in Kashmir strongly illustrate this idea. (Sahni, 2006). “The Indus Waters Treaty set a precedent of cooperation between India and Pakistan that has survived three wars and other hostilities between the two nations…. As Stephen P. Cohen has observed, ‘The Indus Waters Treaty is a model for future regional cooperation, especially on energy, environmental concerns, and even the management of the region’s impressive water resources.’” (Sahni, 2006, p. 154). That India and Pakistan continue to honor and abide by the IWT is impressive, but perhaps it **pales in comparison to water cooperation in the Middle East.** Contrary to realist theory that would predict water wars, **water cooperation in the Middle East is the norm**. Allan explains that the “Middle East is the most water-challenged region in the world, with little freshwater and negligible soil water. Water is therefore a key strategic natural resource, and realist theory, as well as popular intuition, has it that the scarcity of water in the region will lead to water wars. Despite growing water demand, the Middle East has shown no signs of a water war since some minor military events in the northern Jordan Valley in the early 1960s. On the contrary, there is much evidence of cooperation over scarce water resources in the region, especially in the Jordan River Basin, **where freshwater is scarcest.”** (Allan, 2002, pp. 255-256).

### Trade Solves

#### Trade solves

Wendy Barnaby 9 is editor of People & Science, the magazine published by the British Science Association "Do nations go to war over water?" Nature 458, 282-283 (19 March 2009) www.nature.com.turing.library.northwestern.edu/nature/journal/v458/n7236/full/458282a.html

Allan's earlier thinking about water wars began to change after meeting the late Gideon Fishelson, an agricultural economist at Tel Aviv University, Israel. Fishelson argued that it is foolish for Israel, a water-short country, to grow and then export products such as oranges and avocados, which require a lot of water to cultivate. Fishelson's work prompted Allan to realize that water 'embedded' in traded products could be important in explaining the **absence of conflict over water** in the region. As a global average, people typically drink one cubic metre of water each per year, and use 100 cubic metres per year for washing and cleaning. Each of us also accounts for 1,000 cubic metres per year to grow the food we eat. In temperate climates, the water needed to produce this food is generally taken for granted. In arid regions, Allan described how people depend on irrigation and imported food to fulfill these needs. Imported food, in particluar, saves on the water required to cultivate crops. The relationship of food trade to water sustainability is often not obvious, and often remains invisible: no political leader will gain any popularity by acknowledging that their country makes up the water budget only by importing food. Allan saw through this to document how the water budgets of the Middle East were **accounted for without conflict**. Allan wrote about embedded water for a few years without it exciting any comment. Then, on a dark Monday afternoon in November 1992, during a routine SOAS seminar, somebody used the term 'virtual' water to describe the same concept. Allan realized this attention-grabbing word, in vogue with the computer-literate younger generation, would catch on better than his own term. And he was right: "From there on it flew," he says. Allan's work explained how, as poor countries diversify their economies, they turn away from agriculture and create wealth from industries that use less water. As a country becomes richer, it may require more water overall to sustain its booming population, but it can afford to import food to make up the shortfall5. **Areas seemingly desperate for water arrive at sustainable solutions thanks to the import of food, reducing the demand for water and giving an invisible boost to domestic supplies**. Political leaders can threaten hostile action if their visible water supplies are threatened (a potentially useful political bluff), **while not needing to wage war** thanks to the benefits of trade.

### No Escalation

#### Water wars are mostly regional – won’t escalate internationally

**Allouche 11** – fellow at the Institute of Development Studies at Brighton, UK (Jeremy, "The sustainability and resilience of global water and food systems: Political analysis of the interplay between security, resource scarcity, political systems and global trade" Food Policy, Volume 36, Supplement 1)

This article has provided an overview of the current and future challenges in terms of global food and water systems. The major focus of the argument has been on how resource scarcity is a contested and subjective concept which cannot fully explain conflict, political instability or food insecurity. The politics of inequality and allocation are much more important variables in explaining water and food insecurity. This is particularly true for conflicts. Although resource scarcity has been linked to international wars, the current data shows that most conflict over water and food are much more local. But there again, although resource scarcity can be linked to malnutrition, hunger and water insecurity, in the majority of cases, water and food insecurity are rarely about competition over resources but rather reflect the politics of allocation and inequality. In this respect, war and conflicts aggravate these insecurities not just on the short term but also on the long term. At the global level, food security has considerably improved and provides the means to address these insecurities. Trade can certainly be seen as a way to address access for countries that are under severe stress in terms of food and water and provides logical grounds for questioning the various water and food wars scenarios. Although global trade and technological innovation are key drivers in providing stable and resilient global systems, the most destabilizing global water-related threat is increasing food prices and hunger. Overall, decision-makers should show greater concern for the human beings who make their living in agriculture, so that those at risk of livelihood and food-security failures, especially under anticipated scenarios of climate change, will be less deprived. Current debates linked to global food security and climate fail to address the political dimension of resource scarcity which is primarily linked to the politics of inequality, gender and power.

#### Water conflict doesn’t escalate—too many limiting factors

Leslie 2k

Jacques Leslie, Harper's Magazine, July 1, 2000

Yet such wars haven't quite happened. Aaron **Wolf, an Oregon State University specialist in water conflicts, maintains that the last war over water was fought** between the Mesopotamian city states of Lagash and Umma **4,500 years ago.** Wolf has found that **during the twentieth century only 7 minor skirmishes were fought over water while 145 water-related treaties were signed**. He argues that **one reason is strategic: in a conflict involving river water, the aggressor would have to be both downstream** (since the upstream nation enjoys unhampered access to the river) **and militarily superior.** As Wolf puts it, "An upstream riparian would have no cause to launch an attack, and a weaker state would be foolhardy to do so." **And if a powerful downstream nation retaliates** against a water diversion by, say, destroying its weak upstream neighbor's dam, **it still risks the consequences, in the form of flood or pollution or poison from upstream.** So, until now, water conflicts have simmered but rarely boiled, perhaps because of the universality of the need for water. Almost two fifths of the world's people live in the 214 river basins shared by two or more countries; **the Nile links ten countries, whose leaders are profoundly aware of one another's hydrologic behavior. Countries usually manage to cooperate** about Water, **even in unlikely circumstances.** In 1957, Cambodia, Laos, Thailand, and South Vietnam formed the Mekong Committee, which exchanged information throughout the Vietnam War. Through the 1980s and into the 1990s, Israeli and Jordanian officials secretly met once or twice a year at a picnic table on the banks of the Yarmuk River to allocate the river's water supply; these so-called picnic-table summits occurred while the two nations disavowed formal diplomatic contact. Jerome Delli Priscoli, editor of a thoughtful trade journal called Water Policy and a social scientist at the U.S. Army Corps of Engineers, believes the whole notion of water conflict is overemphasized: "Water irrigation helped build early communities and bring those communities together in larger functional arrangements. Such community networking was a primary impetus to the growth of civilization. Indeed, **water may** actually **be one of humanity's great learning grounds for building community.... The thirst for water may be more persuasive than the impulse toward conflict."**

### Prefer Our Studies

#### Prefer our authors’ studies---theirs aren’t peer reviewed

Wendy Barnaby 9 is editor of People & Science, the magazine published by the British Science Association "Do nations go to war over water?" Nature 458, 282-283 (19 March 2009) www.nature.com.turing.library.northwestern.edu/nature/journal/v458/n7236/full/458282a.html

Yet **the myth of water wars persists**. Climate change, we are told, will cause water shortages. The Intergovernmental Panel on Climate Change estimates that up to 2 billion people may be at risk from increasing water stress by the 2050s, and that this number could rise to 3.2 billion by the 2080s7.

Water management will need to adapt. But the mechanisms of trade, international agreements and economic development that currently **ease water shortages** will persist. Researchers, such as Aaron Wolf at Oregon State University, Corvallis, and Nils Petter Gleditsch at the International Peace Research Institute in Oslo, point out that **predictions of armed conflict come from the media and from popular, non-peer-reviewed work.**

#### States threaten water wars as a method of signaling, but they don’t actually fight them

David Katz 11, Director of the Akirov Institute for Business and Environment at Tel Aviv University and Adjunct Lecturer at Tel Aviv University’s Recanati School of Management and Porter School of Environmental Studies, February 2011, “Hydro-Political Hyperbole: Examining Incentives for Overemphasizing the Risks of Water Wars,” Global Environmental Politics, Vol. 11, No. 1, p. 12-33

Political leaders and policy-makers have several other, unique, reasons to voice water war risks. Indeed, given that research has shown that public threats are more often met with defiance rather than compliance,73 other reasons may in fact be primary ones. Signal Co-riparians that Water is Considered High-level Politics Actors may use the language of securitization in order to elevate an issue from low to high politics.74 Issues of water management are often considered technical or bureaucratic matters far from the realm of high politics, which traditionally has focused on security and economic development. Warning of risks of war over water can be a signal to a co-riparian country that their actions are being taken seriously. This may be done, for instance, to convince a country to refrain from a planned action or to induce it to engage in negotiations. While Fearon shows that offering non-credible threats is a dominated strategy, he also notes that in reality, such policies are often pursued.75 For example, saber-rattling by Syria and Iraq towards militarily superior Turkey, including threats of war and mobilization of troops, were (unsuccessful) attempts to dissuade Turkey from developing dams upstream. Güner presents the use of threats of war over water as a signaling tactic by Turkey and Syria in a game-theoretic model.76 Such use of threats of war may be an important signaling device even if parties recognize the likelihood of the threat being realized as minor.

### Threat Con

#### Their authors have incentives to overstate the risk and impact

David Katz 11, Director of the Akirov Institute for Business and Environment at Tel Aviv University and Adjunct Lecturer at Tel Aviv University’s Recanati School of Management and Porter School of Environmental Studies, February 2011, “Hydro-Political Hyperbole: Examining Incentives for Overemphasizing the Risks of Water Wars,” Global Environmental Politics, Vol. 11, No. 1, p. 12-33

Observers have noted that various actors may have incentives to stress or even exaggerate the risks of water wars. Lonergan notes, for instance, that in “many cases, the comments are little more than media hype; in others, statements have been made for political reasons.”49 Beyond mere acknowledgement of the possibility of such incentives, however, little research has attempted to understand what these incentives are and how they may differ between actors. An understanding of the different motivations of various groups of actors to stress the possibility of imminent water wars can help explain the continued seemingly disproportionate popularity of such messages and help to evaluate such warnings more critically.

Mueller offers a general explanation for a focus on violence in public discourse by postulating that, following the end of the Cold War, policy-makers, the press, and various analysts seek to fill a “catastrophe quota.”50 According to this theory, various actors seek out new areas of potential violence to justify fears that had become commonplace during the Cold War period.

Simon, while not specifically addressing environmental conflict, suggests four possible reasons for academic researchers to offer what he claimed were overly gloomy scenarios resulting from resource scarcity.51 The first reason is that international funding organizations are eager to fund research dealing with crises, but not work that produces good news. The second is that bad news sells more newspapers and books. The third is a psychological predisposition to focus on bad news or worst-case scenarios. The fourth is a belief that sounding alarm bells can mobilize action to improve environmental issues.

Haas offers two reasons why “exaggerated beliefs about resource scarcity and their possible threats to environmental security persist.” The first is “the absence of any consensual mechanism for reconciling inter-discourse (or interparadigm) disputes.” This, Haas argues, allows for ideological disputes to continue [End Page 18] unresolved. “The second reason is the elective affinity between environmental and security discourses on the one hand, and other dominant discourses in social discussions . . . on the other hand. Consequently self-interested political actors can borrow from discourses that are similar in their ontology and structure and that justify pre-existing political ambitions.”52 Trottier, addressing the risks of water wars specifically, suggests that certain private-sector actors in the water industry may stress the risks of water wars in order to promote water-related infrastructure.53

### Scarcity Inevitable

#### Scarcity inevitable—most qualified reports

**Lean 9**, Water scarcity 'now bigger threat than financial crisis' By 2030, more than half the world's population will live in high-risk areas By Geoffrey Environment Editor Sunday, 15 March 2009 http://www.independent.co.uk/environment/climate-change/water-scarcity-now-bigger-threat-than-financial-crisis-1645358.html

**Humanity is facing "water bankruptcy"** as a result of a crisis even greater than the financial meltdown now destabilising the global economy, two authoritative new reports show. They add that **it is already** **beginning to take effect, and** **there will be no way of bailing the earth out** of water scarcity. The two **reports** – one by **the world's foremost international economic forum and the** other by 24 **U**nited **N**ations agencies – presage the opening tomorrow of the most important conference on the looming crisis for three years. The World Water Forum, which will be attended by 20,000 people in Istanbul, will hear stark warnings of how half the world's population will be affected by water shortages in just 20 years' time, with millions dying and increasing conflicts over dwindling resources.

### AT Africa

#### Nile’s no different

Wendy Barnaby 9 is editor of People & Science, the magazine published by the British Science Association "Do nations go to war over water?" Nature 458, 282-283 (19 March 2009) www.nature.com.turing.library.northwestern.edu/nature/journal/v458/n7236/full/458282a.html

Israel ran out of water in the 1950s: it has not since then produced enough water to meet all of its needs, including food production. Jordan has been in the same situation since the 1960s; Egypt since the 1970s. Although it is true that these countries have fought wars with each other, **they have not fought over water**. Instead they all import grain. As Allan points out, more 'virtual' water flows into the Middle East each year embedded in grain than flows down the **Nile** to Egyptian farmers. Perhaps the most often quoted example of a water war is the situation in the West Bank between Palestinians and Israel. But as Mark Zeitoun, senior lecturer in development studies at the University of East Anglia in Norwich, UK, has explained, contrary to what both the mass media and some academic literature say on the subject, **while there is conflict and tension — as well as cooperation — there is no 'water war' here either6**. Ten million people now live between the Jordan River and the Mediterranean Sea. If they were to be self-sufficient in food, they would need ten billion cubic metres of water per year. As it is, they have only about one-third of that: enough to grow 15–20% of their food. They import the rest in the form of food. When it comes to water for domestic and industrial use, the rainfall and geology of the West Bank alone should provide enough water for the population there: Ramallah has a higher annual average rainfall than Berlin. But today, water for even these needs is scarce.

#### More ev

Wendy Barnaby 9 is editor of People & Science, the magazine published by the British Science Association "Do nations go to war over water?" Nature 458, 282-283 (19 March 2009) www.nature.com.turing.library.northwestern.edu/nature/journal/v458/n7236/full/458282a.html

**The Nile Basin Initiative**, launched in 1999 and encompassing nine nations, **is another example of the way in which wider geopolitical and economic factors help** to balance water allocation. Historically, vast differences in the political clout of nations across which, or along which, a river flows have resulted in unequal water division. Under the 1959 Nile Waters Agreement between Egypt and Sudan, Egypt has had rights to 87% of the Nile's water, with Sudan having rights to the rest. Ethiopia, whose highlands supply 86% of Nile water, does not even figure in the agreement: continuing conflicts weakened the agreement to a point where Ethiopia has been unable to press a claim. But Egypt's desire to consolidate its economic development necessitates that it now come to better terms with its neighbours, improving prospects for local trade. So Egypt is willing to engage in the multilateral initiative to cooperate more on matters such as hydroelectric power development, power-sharing cooperatives, river regulation and water-resources management.

#### Arab Spring caused a shift to water co-op.

Daly 12

(John, Staff Writer for Oilprice.com, “Ethiopia's Hydroelectric Program - Boon or Folly?”, 24 October 2012, <http://oilprice.com/Alternative-Energy/Hydroelectric-Energy/Ethiopia-s-Hydroelectric-Program-Boon-or-Folly.html> )

**The “Arab Spring”** that overthrew the regime of Egyptian President Hosni Mubarak in February **has resulted in Egypt’s interim government showing new signs of flexibility on Nile water issues**. Last month Egyptian Interim Prime Minister Essam **Sharaf** met with Zenawi in Cairo and **agreed to set up a technical team to study the impact of the Grand Ethiopian Renaissance Dam** while Zernawi, on an obvious charm offensive to secure international financial backing, agreed to host Egyptian and Sudanese officials to prove that the Grand Ethiopian Renaissance Dam will not be used to irrigate any of the large corporate farms the Ethiopian government has leased to foreign investors in recent years, but instead be used solely to generate electricity, adding that his government will delay ratifying the 2010 Entebbe Agreement. Several months ago Ethiopia said it would be forced to finance the Grand Ethiopian Renaissance Dam itself and from the sale of government bonds because Egypt was pressuring donor countries and international lenders not to fund its dam projects. And both structures are largely about electricity exports. If completed, Gilgel Gibe III alone will double Ethiopia’s hydroelectric total installed capacity from its 2007 level of 814 megawatts. In April Zenawi announced that Ethiopia plans to produce as much as 8,000 megawatts of additional electricity from hydropower sources by 2016 as various projects come online. While Ethiopia reportedly has "initial agreements" to export electricity to Sudan, Dijibouti, and Kenya, critics of the hydroelectric projects emphasize that the majority of Africans are not connected to the power grid, and that Ethiopia will be generating far more electricity than it or its neighbors can currently utilize. The projected future environmental water stresses of the Nile basin’s population make for grim reading. Washington DC’s Population Reference Bureau has developed some unsettling statistics for countries along the Nile, estimating that Egypt's population of 80 million is expected to reach 122 million by 2050. During the same period Ethiopia’s 83 million population will soar to 150 million and in Uganda, with one of the highest birthrates in the world, the population is expected to more than triple from its current level of 32 million to 97 million. While East Africa’s efforts to improve their standards of living with increased electricity resources, it is questionable whether a massive commitment to hydroelectric power is the only option. The surging demographics of the region combined with the potential environmental impacts of massive hydroelectric projects along the world’s longest river, combined with Ethiopia’s refusal to provide EIAs should give all international investors pause before underwriting such massive undertakings. The waters of the Nile are finite and will soon support a population greater than the United States, and water diversions for such projects can only increase national and regional tensions. **It is good that Egypt is now willing to talk, but even more important that Ethiopia be willing to listen**. If the international community wishes to support Ethiopia’s efforts to become East Africa’s energy “hub,” then it should request transparency about the environmental consequences of such extravagant hydrological projects and their impact not only in Ethiopia but their neighbors along the shared river basins which geography has bequeathed them.

#### No Nile water wars and NBI solves

Mbote 7

(Patricia Kamari-Mbote, chair of the Department of Private Law, University of Nairobi, and programme director for the Interna- tional Environmental Law Research Centre, Nairobi, “Water, Conflict, and Cooperation: Lessons from the Nile River Basin”, *Navigating Peace*, January 2007 No. 4)

Despite this gloomy scenario, **interstate war is unlikely**, according to history: **no nations have gone to war** specifically **over water resources for thousands of years**. **Instances of cooperation** between riparian nations **outnumbered conflicts by more than 2-to-1** between 1945 and 1999.1 Instead of war, water fuels greater interdependence. **By coming together to jointly manage** their shared **water resources, countries build trust and prevent conflict**. In the face of potential conflict and regional instability, **the Nile basin countries continue to seek cooperative solutions**. The political will to develop a new legal framework for managing the Nile should continue. In principle, the countries of the Nile River basin agree that the situation should change. However, they do not agree on how.to help reach a consensus, they developed the high-level Nile Basin Initiative (NBI) in 1999. Originally designed as a way to share scientific information, **the NBI** today **brings together ministers from the basin countries** “to achieve sustainable socio-economic devel- opment through equitable utilization of, and benefit from, the common Nile basin water resources,” as stated in its shared vision.2 **The NBI has served as a catalyst for cooperation in the search for a new legal framework for the management of the Nile.**

#### Updated irrigation tech ensures Nile water cooperation

Wiebe ‘1

(Kristin, Independent Researcher, “The Nile River: Potential for conflict and cooperation in the face of water degradation”, *Natural Resources Journal* (2001) Volume: 41, Issue: 3, Pages: 731-754)

The second, subtler vein of thought is that **water disputes lead to cooperation rather than armed conflict**."' Particularly today, as more emphasis is given to joint responsibility for sustainable management of shared resources, **it is quite likely that advance planning and more sophisticated technology may ease the tension in the Nile Basin and even avert conflict**.' **Egypt is starting to apply modem technology domestically by implementing updated irrigation methods and considering shifting its agriculture to less water-intensive crops**. In addition, **planning in the form of a basin-wide agreement has thwarted rising conflict in several instances**." Such agreements require participation by all riparian countries, fair and reasonable water allocation, and effective dispute resolution procedures, as discussed in the following section. To date, the Nile region has no such agreement in place, although it has taken steps to create an inclusive framework. Water projects spurred by the need for economic development, particularly in Ethiopia, cause concern for Egypt and disturb the uneasy balance between conflict and cooperation.

## AT: Warming DA

### AT: Nuclear Key

#### There aren’t enough nuclear power plants to come close to stopping warming – also they’re just as bad as fossil fuels.

Sovacool and Cooper 8 Benjamin Sovacool (Research Fellow in the Energy Governance Program at the Centre on Asia and Globaliaztion, part of the Lee Kuan Yew School of Public Policy at the National University of Singapore, adjunct professor at the Virginia Polytechnic Institute & State University) and Christopher Cooper (Principal Partner for Oomph Consulting, LLC, former Executive Director of the Network for New Energy Choices) “Nuclear Nonsense: Why Nuclear Power is No Answer to Climate Change and the World's Post- Kyoto Energy Challenges” William & Mary Environmental Law and Policy Review Volume 33 Issue 1 Article 2 2008 h p://scholarship.law.wm.edu/wmelpr/vol33/iss1/2 JW

From a climate-change standpoint, nuclear power is not much of an improvement over conventional coal-burning power plants, despite recent claims by the Nuclear Energy Institute that nuclear power is the "Clean Air Energy."4u Reprocessing and enriching uranium requires a substantial amount of electricity, often generated from fossil fuel-fired power plants, and uranium milling, mining, leeching, plant construction, and decommissioning all produce substantial amounts of greenhouse gas.425 In order to enrich natural uranium, for example, it is converted to uranium hexafluoride, UF6, and then diffused through permeable barri- ers.426 "In 2002, the Paducah [uranium] enrichment plant [in Kentucky] released over 197.3 metric tons ofFreon[, a greenhouse gas far more potent than carbon dioxide,] through leaking pipes and other equipment."127Data collected from one uranium enrichment company revealed that it takes a 100 MW power plant running for 550 hours to produce the amount ofen- riched uranium needed to fuel a 1000 MW reactor, of the most efficient de- signcurrentlyavailable,forjustoneyear.42 AccordingtotheWashington Post,"[tiwo ofthe nation's most polluting coal plants, in Ohio and Indiana, produce electricity primarily for uranium enrichment."429 When one takes into account the carbon-equivalent emissions associated with the entire nuclear lifecycle, nuclear plants contribute significantly to climate change and will contribute even more as stockpiles of high-grade uranium are depleted. An assessment of 103 lifecycle studies of greenhouse gas equivalent emissions for nuclear power plants found that the average CO2 emissions over the typical lifetime of a plant are around sixty-six grams for every kWh, or the equivalent of some 183 mil-ion metric tons of CO2in 2005."° If the global nuclear industry were taxed at a rate of$24 per ton for the carbon equivalent emissions associated with its lifecycle, the cost of nuclear power would increase by about $4.4 billion per year.431 The carbon equivalent emissions of the nuclear lifecycle will only get worse, not better, because, over time, reprocessed fuel is depleted necessitating a shift to fresh ore, and reactors must utilize lower quality ores as higher quality ones are depleted. 2 The Oxford Research Group projects that because of this inevitable eventual shift to lower quality uranium ore, if the percentage of world nuclear capacity remains what it is today, by 2050 nuclear power would generate as much carbon dioxide per kWh as comparable gas-fired power stations.' This bears repeating: at current levels of generation, by 2050 nuclear plants will be producing as much greenhouse gas as some fossil fuel plants. In addition, the capital intensity ofthe nuclear fuel cycle-immense construction, reprocessing, storage, decommissioning, and R&D costs- may make it all but impossible to mobilize nuclear power plants quickly enough to fight climate change.' In order for advanced nuclear plants to even maintain the 19% share of power generation held by conventional nuclear units in the United States, an additional 190 GW ofnew capacity would have to be built. 5 Taking an average reactor size of 1000 MW, this equates to bringing online about six nuclear plants per year, every year until 2040.436 The historical record suggests that this task is insurmountable. France, which currently generates 78% of its electricity from nuclear units, has the fastest record for deploying nuclear plants in history: fifty- eight between 1977 and 1993, or an average of 3.4 reactors per year, close to half the six per year needed to address U.S. climate change.4 37 In addition, 190 new nuclear plants would require the additional construction of four large enrichment plants, five fuel fabrication plants, and three waste disposal sites, each the size of Yucca Mountain.43

### LT: Renewables

[insert plan shift to renewables]

#### Renewables solve global warming better than nuclear power.

Sovacool and Cooper 8 Benjamin Sovacool (Research Fellow in the Energy Governance Program at the Centre on Asia and Globaliaztion, part of the Lee Kuan Yew School of Public Policy at the National University of Singapore, adjunct professor at the Virginia Polytechnic Institute & State University) and Christopher Cooper (Principal Partner for Oomph Consulting, LLC, former Executive Director of the Network for New Energy Choices) “Nuclear Nonsense: Why Nuclear Power is No Answer to Climate Change and the World's Post- Kyoto Energy Challenges” William & Mary Environmental Law and Policy Review Volume 33 Issue 1 Article 2 2008 h p://scholarship.law.wm.edu/wmelpr/vol33/iss1/2 JW

E. Lifecycle Emissions of Pollutants Every single renewable power technology is less greenhouse-gas- intensive than any sized nuclear power plant. A single, one MW wind turbine running at only 30% of capacity for one year, for example, dis- places more than 1500 tons of C0 2, 2.5 tons of sulfur dioxide, 3.2 tons of nitrogen oxides, and sixty pounds of toxic mercury emissions."S One study assessing the environmental savings of a 580 MW wind farm located on the Altamont Pass near San Francisco, California, concluded that the turbines displaced hundreds of thousands of tons of air pollutants each year that would have otherwise resulted from fossil fuel com- 6 s0 bustion. The study estimated that the wind farm will displace more than twenty-four billion pounds of nitrogen oxides, sulfur dioxides, particulate matter and CO2 over the course of its twenty year life- time-enough to cover the entire city of Oakland in a pile of toxic pollu- tion forty stories high. 5' Dedicated biomass electrical plants release no netC02emissions into the atmosphere, as long as they avoid combusting fossilized fuel, and produce fewer toxic gases. One study conducted by the Center for Energy Policy and Technology found that combined cycle biomass gasification plants produce one twentieth the amount of pollutants emitted by coal-fired power plants, and one tenth the pollution of equiv- alent natural gas plants.5 2 Landfill capture generators and anaerobic digesters harness methane and other noxious gases from landfills and transform them into electricity.5 3 This does not just produce useful energy, but also displaces greenhouse gases that would otherwise escape into the environment.654 Geothermal plants also have immense air quality benefits. "A typical geothermal plant using hot water and steam to generate electric- ity emits about 1 percent of the sulfur dioxide ("SO2"), less than 1 per- cent of the nitrous oxide ("NO."), and 5 percent of the C02 emitted by a coal-fired plant of equal size."655 Its airborne emissions are "essentially nonexistent" because geothermal gases are not released into the atmo- sphere during normal operation.656 Another study calculated that the geothermal plants currently in operation throughout the U.S. avoid 32,000 tons of NO., 78,000 tons of SO2, 17,000 tons of particulate mat- ter, and sixteen million tons of CO 2 emissions every single year.65 7 All forms of hydroelectric generation combust no fuel, meaning they produce little to no air pollution in comparison with conventional power plants. Luc Gagnon and Joop F. van de Vate conducted a full lifecycle assessment ofhydroelectric facilities, and focused on the activi- ties related to building of dams, dykes, and power stations; decaying biomass from flooded land, where plant decomposition produces methane and C0 2; and the thermal backup power needed when seasonal changes cause hydroelectric plants to run at partial capacity.65 They found that typical emissions of greenhouse gases for hydro-power were still thirty to sixty times less than those from equally sized fossil-fueled stations.659 In terms of climate change, and greenhouse gases, the IAEA estimates that when direct and indirect carbon emissions are included, coal plants are about seven times more carbon intensive than solar and fifty times more carbon intensive than wind technologies.66 ° Natural gas fares little better, at two times the carbon intensity of solar and twenty seven times the carbon intensity ofwind.66' In the U.S., the DOE esti- mates that "every kilowatt-hour (kWh) of renewable power avoids the emission of more than one pound of carbon dioxide."662 According to data compiled by UCS, achieving twenty percent renewables penetration by 2020 would reduce CO 2 emissions by 434 million metric tons, the equiva- lent of taking nearly seventy-one million automobiles off the road.663 An almost identical study published in Energy Policy found that biomass facilities were about ten times cleaner than the best coal technolo- gies and that wind, solar electric, and hydroelectric systems were almost 100 times cleaner than the cleanest coal-fueled system.' Martin Pehnt from the Institute for Energy and Environmental Research in Heidelberg conducted lifecycle analyses of fifteen separate distributed generation and renewable energy technologies and found that all but one-solar PV-emitted much less carbon dioxide or other greenhouse gases per kilo- watt hour than nuclear reactors.' In an analysis using updated data, researchers from Brookhaven National Laboratory found that current esti- mates of the greenhouse gas emissions for a typical solar PV system range from twenty-nine to thirty-five grams of carbon dioxide equivalent] kWh," significantly less than the equivalent emissions for nuclear power.6 7 Nuclear energy proponents may argue that these estimates compare base-load energy sources, such as nuclear, to intermittent or non-dispatchable sources, such as wind and solar PV. However, if these updated numbers are correct, then renewable energy technologies are two to seven times more effective on a per kWh basis than nuclear power at fighting climate change. Therefore, even the deployment ofmuch more intermittent renewable capacity to generate equivalent amounts of energy would still more effectively address climate change than relying on deployment of base-load nuclear or fossil fueled generators.

### Impact D

#### Warming is irreversible – we’re past the brink.

#### ANI 10 <Asian News International, South Asia’s leading Multimedia News Agency, 3-20-2010, http://news.oneindia.in/2010/03/20/ipcchas-underestimated-climate-change-impacts-sayscientis.html>

**According to** Charles H. Greene, **Cornell professor** of Earth and atmospheric science, “**Even if all** man-made greenhouse gas **emissions** d **stopped tomorrow** and carbon-dioxide levels stabilized at today’s concentration, by the end of this century, the **global** average **temperature would increase by** about **4**.3 **degrees** Fahrenheit, or about 2.4 degrees centigrade above pre-industrial levels, which is **significantly above the** level which scientists and policy makers agree is a **threshold for dangerous climate change.**” “Of course, greenhouse gas emissions will not stop tomorrow, so the actual temperature increase will likely be significantly larger, resulting in potentially catastrophic impacts to society unless other steps are taken to reduce the Earth’s temperature,” he added. “Furthermore, while the oceans have slowed the amount of warming we would otherwise have seen for the level of greenhouse gases in the atmosphere, **the ocean’s thermal inertia will also slow the cooling** we experience once we finally reduce our greenhouse gas emissions,” he said. This means that **the** temperature **rise** we see this century **will be** largely **irreversible** for the next thousand years. “Reducing greenhouse gas emissions alone is unlikely to mitigate the risks of dangerous climate change,” said Green.

#### History proves biotic communities are resilient to warmer climates.

**NIPCC 11** <Nongovernmental International Panel on Climate Change. Surviving the unprecedented climate change of the IPCC. 8 March 2011. http://www.nipccreport.org/articles/2011/mar/8mar2011a5.html>

In a paper published in Systematics and Biodiversity, Willis et al. (2010) consider the IPCC (2007) "predicted climatic changes for the next century" -- i.e., their contentions that "global temperatures will increase by 2-4°C and possibly beyond, sea levels will rise (~1 m ± 0.5 m), and atmospheric CO2will increase by up to 1000 ppm" -- noting that it is "widely suggested that the magnitude and rate of these changes will result in many plants and animals going extinct," citing studies that suggest that "within the next century, over 35% of some biota will have gone extinct (Thomas et al., 2004; Solomon et al., 2007) and there will be extensive die-back of the tropical rainforest due to climate change (e.g. Huntingford et al., 2008)." On the other hand, they indicate that some **biologists and climatologists have pointed out that "many of the predicted increases in climate have happened before, in terms of both magnitude and rate of change** (e.g. Royer, 2008; Zachos et al., 2008), **and yet biotic communities have remained remarkably resilient** (Mayle and Power, 2008) **and in some cases thrived** (Svenning and Condit, 2008)." But they report that those who mention these things are often "placed in the 'climate-change denier' category," although the purpose for pointing out these facts is simply to present "a sound scientific basis for understanding biotic responses to the magnitudes and rates of climate change predicted for the future through using the vast data resource that we can exploit in fossil records." Going on to do just that, Willis et al. focus on "intervals in time in the fossil record when atmospheric CO2 concentrations increased up to 1200 ppm, temperatures in mid- to high-latitudes increased by greater than 4°C within 60 years, and sea levels rose by up to 3 m higher than present," describing **studies of past biotic responses that indicate "the scale and impact of the magnitude and rate of such climate changes on biodiversity."** And **what emerges** from those studies, as they describe it, "is evidence for rapid community turnover, migrations, development of novel ecosystems and thresholds from one stable ecosystem state to another." And, most importantly in this regard, they report "there is very little evidence for broad-scale extinctions due to a warming world." In concluding, the Norwegian, Swedish and UK researchers say that "based on such evidence we urge some caution in assuming broad-scale extinctions of species will occur due solely to climate changes of the magnitude and rate predicted for the next century," reiterating that "the fossil record indicates remarkable biotic resilience to wide amplitude fluctuations in climate."

#### Qualified scientists agree no impact.

Hsu 10 <Jeremy Hsu, Live Science Staff, July 19 2010, pg. http://www.livescience.com/culture/can-humans-survive-extinction-doomsday-100719.html>

His views deviate sharply from those of **most experts**, who don't view climate change as the end for humans. Even the **worst-case scenarios** discussed by the Intergovernmental Panel on Climate Change **don't foresee** human **extinction.** "The scenarios that the mainstream climate community are advancing are not end-of-humanity, catastrophic scenarios," said Roger Pielke Jr., a climate policy analyst at the University of Colorado at Boulder. Humans have the technological tools to begin tackling climate change, if not quite enough yet to solve the problem, Pielke said. He added that doom-mongering did little to encourage people to take action. "My view of politics is that the long-term, high-risk scenarios are really difficult to use to motivate short-term, incremental action," Pielke explained. "The rhetoric of fear and alarm that some people tend toward is counterproductive." Searching for solutions One technological solution to climate change already exists through carbon capture and storage, according to Wallace Broecker, **a** geochemist and **renowned climate scientist** at Columbia University's Lamont-Doherty Earth Observatory in New York City. But Broecker **remained skeptical** that governments or industry would commit the resources needed to slow the rise of carbon dioxide (CO2) levels, and predicted that more drastic geoengineering might become necessary to stabilize the planet. "The **rise in CO2 isn't going to kill many** people, and it's not going to kill humanity," Broecker said. "But it's going to change the entire wild ecology of the planet, melt a lot of ice, acidify the ocean, change the availability of water and change crop yields, so we're essentially doing an experiment whose result remains uncertain."

#### Humans can adapt, new tech.

Moore 08 (Senior Fellow at the Hoover Institution at Stanford University, Stanford, Thomas Gale 7/9/12 “Global warming; the good, the bad and the ugly and the efficient” EMBO reports http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3317379/?tool=pmcentrez)

Even if the pessimists are correct and future climate change reduces food production, wicked storms lash much of the planet, summers are plagued by terrible heat waves, and floods and droughts inundate large areas of the world and reduce the availability of clean water, human beings will be better able to handle such terrible conditions than they are now because technology will advance and people will become richer over the next century. Evidence of an increasing rate of technological advancement comes from patents; the number of patents issued for inventions has continued to rise at an increasing rate since 1790 ([Fig 2](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3317379/figure/f2/)). Although patented inventions are only a crude measure of technological growth, they do indicate that technology will continue to change the world in which we live. Consider the world 200 years ago when the fastest means of communication was by horseback, or just 100 years ago when telephones were only slowly spreading and radio, much less TV or the internet, were almost undreamed of. **Thus progress will allow our descendants to deal with almost any difficulties that climate change brings**.

### Impact Turn: CO2

#### Sustained C02 emissions key to avert extinction

Ferrara 14 Peter (Senior fellow for entitlement and budget policy @ Heartland, senior fellow at the Social Security Institute, White House Office of Policy Development under President Reagan, Associate Deputy Attorney General of the United States under the first President Bush) “The Period Of No Global Warming Will Soon Be Longer Than the Period of Actual Global Warming,” February 24th 2014 Forbes <http://www.forbes.com/sites/peterferrara/2014/02/24/the-period-of-no-global-warming-will-soon-be-longer-than-the-period-of-actual-global-warming/>

In addition, CO2 is actually essential to all life on the planet. **Plants need CO2 to grow and conduct photosynthesis,** which is the natural process **that creates food** for animals and fish at the bottom of the food chain. The **increase of CO2** in the atmosphere that has occurred due to human emissions **has** actually **increased ag**ricultural **growth** and output as a result, causing actually an increased **greening** of **the planet**. So has any warming caused by such human emissions, as minor warming increases agricultural growth. The report states, “CO2 is a vital nutrient used by plants in photosynthesis. **Increasing** **CO2** in the atmosphere ‘greens’ the planet and **helps feed the growing human population**.”

#### Best evidence proves global warming has no impact but Co2 sustains the biosphere.

Idso 14 Craig D. (Ph.D., lead editor and chief scientist for the Nongovernmental International Panel on Climate Change) “Efforts to cap CO2 emissions are adverse to human health and welfare,” The Hill January 30, 2014 <http://thehill.com/blogs/congress-blog/energy-environment/197001-efforts-to-cap-co2-emissions-are-adverse-to-human>

In his State of the Union address, President Obama advocated an energy policy aimed at reducing emissions of carbon dioxide (CO2), which he claims are causing catastrophic changes to the earth’s **climate** and “harming western communities.” In his policy prescription, the president advocates a combination of increased regulation of the energy and transportation industries and more government spending on research designed to bring low-carbon-emitting sources of energy, i.e., so-called renewables, to market. He considers those actions to be the only viable options “leading to a cleaner, safer planet.” But the president’s **concerns** for the planet **are based upon flawed** and **speculative science**; and his policy prescription is a recipe for failure. With respect to the science, Obama conveniently fails to disclose the fact that literally **thousands of scientific studies have produced findings** that run **counter** to his view of future climate. As just one example, and a damning one at that, all of the computer models upon which his vision is based failed to predict **the current plateau in global temperature** that **has continued** for the past **16 years**. That the **earth has not warmed** significantly during this period, **despite** an **8 percent increase in** atmospheric **CO2**, is a major indictment of the models’ credibility in predicting future climate, as well as the president’s assertion that debate on this topic is “settled.” Numerous other problems with Obama’s model-based view of future climate have been filling up the pages of peer-reviewed science journals for many years now, as evidenced by the recent work of the Nongovernmental International Panel on Climate Change, which published a 1,000-page report in September highlighting a large and well-substantiated alternative viewpoint that contends that **rising** atmospheric **CO2** emissions **will have a** much smaller, if not **negligible, impact** on future climate, while generating several biospheric benefits. Concerning these benefits, atmospheric CO2 is the building block of plant life. **It** is used by earth’s plants in the process of photosynthesis to construct their tissues and grow. And **as has been conclusively demonstrated in** numerous scientific studies, **the more CO2 we put into the air**, the better **plants** grow. Among other findings, they **produce greater** amounts of **biomass, become more efficient** at using water, **and** are better able to **cope with environmental stresses** such as pollution and high temperatures. The implications of these benefits are enormous. One recent study calculated that over the 50-year period ending in 2001, the direct monetary benefits conferred by the atmospheric CO2 enrichment of the Industrial Revolution on global crop production amounted to a staggering $3.2 trillion. And projecting this positive externality forward in time reveals it will likely bestow an additional $9.8 trillion in crop production benefits between now and 2050. By ignoring these realities, Obama’s policy prescription is found to be erroneous. The taxation or regulation of CO2 emissions is an unnecessary and detrimental policy option that should be shunned. Why would any government advocate to increase regulations and raise energy prices based on flawed computer model projections of climate change that will never come to pass? Why would any government advance policy that seeks to destroy jobs, rather than to promote them? Why, in fact, would they actually “bite the hand that feeds them?” We live in a time when half the global population experiences some sort of limitation in their access to energy, energy that is needed for the most basic of human needs, including the production of clean water, warmth, and light. One-third of those thus impacted are children. An even greater portion finds its ranks among the poor. As a society, it is time to recognize and embrace the truth. **Carbon dioxide** is not a pollutant. Its increasing concentration only minimally affects earth’s climate, while it **offers** tremendous benefits to the biosphere. Efforts to regulate and reduce CO2 emissions will hurt far more than they will help.

### Impact Turn: Ice Age

#### Sun activity proves an ice age is coming very soon.

Hurd 14 Dale (Reported extensively from Western Europe, as well as China, Russia, and Central and South America) “Global Cooling: Is an Ice Age Coming?” CBN News http://www.cbn.com/cbnnews/healthscience/2014/January/Cover-Up-Mounting-Evidence-Belies-Global-Warming/

Global Cooling The fact that Arctic ice is growing may not be the good news that it seems to be. There are signs that the Earth is entering a very unpleasant cooling period. Sunspot activity remains very low. "The sun has been very unusual for almost 15 years now," Jens Pedersen, senior scientist at the Denmark's Technical University, said. Pedersen said the sun recently reached solar maximum and that there should be a lot of sunspot activity, but there isn't. "We have to go back 100 years to find a solar maximum that was as weak as the one we are in right now," he told CBN News. "And the recent solar minimum…one has to go back 200 years to find one that was as weak." The last time the sun was this quiet, North America and Europe suffered through a weather event from the 1600s to the 1800s known as "Little Ice Age," when the Thames River in London regularly froze solid, and North America saw terrible winters. Crops failed and people starved.

#### Global warming prevents this ice age.

The National 13 (English-language daily newspaper published in Abu Dhabi.) “The choice may be global warming or a new Ice Age, say scientists” The National November 13th 2013 http://www.thenational.ae/uae/science/the-choice-may-be-global-warming-or-a-new-ice-age-say-scientists#page1

Once again, however, climate science is revealing a more complex reality. Evidence increasingly suggests that man-made global warming may actually be preventing a worldwide calamity, in the form of a new Ice Age. Despite its pejorative image, the “greenhouse effect” of our atmosphere is all that stands between us and our being plunged into the bitter cold of the space around the Earth. It keeps us warm by trapping the sun’s heat using molecules of certain gases – notably carbon dioxide and methane – in the atmosphere. The heat we get from the sun ebbs and flows over millennia according to changes in the Earth’s orbit and orientation in space. And calculations suggest we should have been heading back into a terrible Ice Age for the past few thousand years. Fortunately this hasn’t happened – but why not? Around a decade ago, a team of climate scientists led by Prof William Ruddiman of the [at the] University of Virginia suggested that humans may have been holding off the next Ice Age through our wilful production of greenhouse gases. These are usually thought of as products of the Industrial Revolution. But Prof Ruddiman and his colleagues pointed out that basic agricultural practices, such as crop planting and deforestation, generate hefty amounts of carbon dioxide and methane – and perhaps even enough to cancel out the Big Chill that should have set in over the past few thousand years. The idea has received a predictably frosty reception from environmentalists. But studies have since shown that greenhouse gases did indeed rise about 5,000 to 8,000 years ago – in line with the origins of large-scale agriculture in Asia and extensive deforestation in Europe. Now fresh evidence that we humans are holding off an Ice Age has emerged. The journal Science has just published research by a team led by geochemist Prof Logan Mitchell at the University of Utah, Salt Lake City, who have compared methane levels trapped in ancient ice cores from Greenland and Antarctica. The significance of the two locations is that human population growth has been different over the northern and southern hemisphere. So if methane levels have risen as the result of human activity – as Prof Ruddiman originally claimed – the ice cores from each hemisphere should show a different rate of increase in methane levels. The team has now confirmed a substantial rise in methane in ice-core samples dating back up to 2,800 years. Crucially, however, the rise was bigger in the northern hemisphere, and could only be explained by including human activity – such as rice cultivation. All this serves to underline the dangers of simplistic thinking in our approach to climate change. Trying to prevent [climate change] it through drastic reduction of greenhouse gases may have disastrous consequences. The cause of the calamities that have struck the Philippines is no more certain.

#### Ice age causes death in the millions and outweighs warming.

Chapman 08 Phil (geophysicist and astronautical engineer, bachelor of science degree in Physics and Mathematics from Sydney University, a master of science degree in Aeronautics and Astronautics from the Massachusetts Institute of Technology) “Sorry to ruin the fun, but an ice age cometh,” April 23rd 2008 The Australian http://www.theaustralian.com.au/news/sorry-to-ruin-the-fun-but-an-ice-age-cometh/story-e6frg73o-1111116134873

There is no doubt that the next little ice age would be much worse than the previous one and much more harmful than anything warming may do. There are many more people now and we have become dependent on a few temperate agricultural areas, especially in the US and Canada. Global warming would increase agricultural output, but global cooling will decrease it. Millions will starve if we do nothing to prepare for it (such as planning changes in agriculture to compensate), and millions more will die from cold-related diseases. There is also another possibility, remote but much more serious. The Greenland and Antarctic ice cores and other evidence show that for the past several million years, severe glaciation has almost always afflicted our planet. The bleak truth is that, under normal conditions, most of North America and Europe are buried under about 1.5km of ice. This bitterly frigid climate is interrupted occasionally by brief warm interglacials, typically lasting less than 10,000 years. The interglacial we have enjoyed throughout recorded human history, called the Holocene, began 11,000 years ago, so the ice is overdue. We also know that glaciation can occur quickly: the required decline in global temperature is about 12C and it can happen in 20 years. The next descent into an ice age is inevitable but may not happen for another 1000 years. On the other hand, it must be noted that the cooling in 2007 was even faster than in typical glacial transitions. If it continued for 20 years, the temperature would be 14C cooler in 2027. By then, most of the advanced nations would have ceased to exist, vanishing under the ice, and the rest of the world would be faced with a catastrophe beyond imagining. Australia may escape total annihilation but would surely be overrun by millions of refugees. Once the glaciation starts, it will last 1000 centuries, an incomprehensible stretch of time. If the ice age is coming, there is a small chance that we could prevent or at least delay the transition, if we are prepared to take action soon enough and on a large enough scale. For example: We could gather all the bulldozers in the world and use them to dirty the snow in Canada and Siberia in the hope of reducing the reflectance so as to absorb more warmth from the sun. We also may be able to release enormous floods of methane (a potent greenhouse gas) from the hydrates under the Arctic permafrost and on the continental shelves, perhaps using nuclear weapons to destabilise the deposits. We cannot really know, but my guess is that the odds are at least 50-50 that we will see significant cooling rather than warming in coming decades. The probability that we are witnessing the onset of a real ice age is much less, perhaps one in 500, but not totally negligible. All those urging action to curb global warming need to take off the blinkers and give some thought to what we should do if we are facing global cooling instead. It will be difficult for people to face the truth when their reputations, careers, government grants or hopes for social change depend on global warming, but the fate of civilisation may be at stake. In the famous words of Oliver Cromwell, "I beseech you, in the bowels of Christ, think it possible you may be mistaken."

## AT: Elections DA

### UQ Overwhelms

#### Hillary’s definitely going to win- prefer electoral vote analysis.

Garver 9/15 Rob “Is the Race Tied? Why Trump Isn’t Really That Close to Winning” The Fiscal Times September 15th 2016 <http://www.thefiscaltimes.com/2016/09/15/Race-Tied-Why-Trump-Isn-t-Really-Close-Winning> JW

Despite all the breathless headlines to the contrary, the presidential race between Hillary Clinton and Donald Trump isn’t really that close right now. A series of recent polls have showed a tightening of the popular vote, with the occasional survey showing Trump actually ahead. However, for a couple of reasons, it’s not actually all that helpful to look at national polls and try to draw conclusions about how things will stand when the polls close on Nov. 8. First of all, for better or for worse, the U.S. does not hold a national election. A successful presidential candidate can actually win the presidency with fewer total votes than an opponent because of the way the Electoral College works. George W. Bush did it in 2000, and John F. Kennedy, arguably, did it in 1960. It’s not really that complicated. Landslide victories for a Republican across the Deep South, for example, yield just as many electoral votes as one-point victories for a Democrat in states like New York, California and the Pacific Northwest. Related: With Clinton Campaigning Again, Trump Renews Attacks on Her Health So even when the Real Clear Politics polling average shows Clinton ahead by just 1.8 percent nationally, and barely clinging to a 1.1 percent lead over Trump if third party candidates are included, it doesn’t indicate that the election is close to a coin flip at this point. In the fall of 2012, President Obama was polling just 0.4 percentage points ahead of Mitt Romney on average, and he went on to win the presidency comfortably, with 332 electoral votes to Romney’s 206. None of this is to say that Trump can’t win the presidency. He can. The respected FiveThirtyEight.com election forecast model puts the odds right now at a little better than one-in-three. But the truth is that he faces a very challenging path to get to the 270 electoral votes he needs. At the University of Virginia’s Center for Politics, Larry J. Sabato, Kyle Kondik and Geoffrey Skelley continue to argue that Clinton has by far the easier road to election, postulating what they refer to as “Fortress Obama” that Trump would have to conquer in order to find his way to the Oval Office. “There are 359 electoral votes worth of states (and Nebraska’s Second District) that voted for Obama at least once,” they write. “Indiana, which Obama carried in a fluke in 2008, is already gone, which knocks Clinton’s total down to 348, where we have her right now.” Related: Libertarian Gary Johnson Scores a Major Victory in His White House Bid “The fortress’s outer ring of defenses — the Leans Democratic states — is made up of Florida (29 electoral votes), Iowa (6), Nevada (6), North Carolina (15), Ohio (18) and two electoral votes from congressional districts in Maine and Nebraska,” they continue. “If Trump can break through in all of those places, he gets to 266 — four short of the majority he needs. He would need one other state, coming from the Likely Democratic column — places like Colorado, Michigan, New Hampshire, Pennsylvania, Virginia, and Wisconsin. Trump is losing in those six states by an average of six points in the RealClearPolitics polling average, and Clinton has led 109 of 119 polls conducted in those states, combined, since last summer (Trump led just four, and there were six ties).” Again, this doesn’t mean a Trump victory is impossible. It’s just unlikely. Writing at FiveThirtyEight.com today, David Wasserman of the Cook Political Report lays out a credible scenario under which Trump could snatch victory from Clinton in the Electoral College while losing the popular vote. Should Hillary Clinton be sleeping easy? No. She’s facing about a 1-in-3 shot of losing to a man who the vast majority of the American people believe in unqualified to serve as president. But to say that the race is really neck-and-neck at this point seriously overstates the current state of play in Trump’s favor.

### NL

#### No link – the NRC implements the plan – solves the link, that’s normal means.

Wallace et al, 13 – CSIS Senior Advisor [Michael, John Kotek, Sarah Williams, Paul Nadeau, Thomas Hundertmark, George David Banks, June, CSIS, Restoring Us Leadership in Nuclear Energy, [https://csis-prod.s3.amazonaws.com/s3f public/legacy\_files/files/publication/130614\_ RestoringUSLeadershipNuclearEnergy\_ WEB.pdf](https://csis-prod.s3.amazonaws.com/s3f%20public/legacy_files/files/publication/130614_%20RestoringUSLeadershipNuclearEnergy_%20WEB.pdf), accessed 7/17/16, ge]

The U.S. Nuclear Regulatory Commission (NRC) has set the global standard for excellence in nuclear energy regulation and has long served to bolster public confidence in nuclear operations. Yet there is a growing concern that the regulatory burden facing U.S. plant operators will be expanded without commensurate safety benefit, particularly in light of the understandable and appropriate desire to respond quickly to lessons learned from the Fukushima nuclear accident in Japan. It is essential that the NRC and the U.S. nuclear industry work constructively to enhance the safety and security of the U.S. nuclear fleet without placing undue burdens on reactor operators. The U.S. commercial industry has been unrelenting in its quest for excellence. The Institute of Nuclear Power Operations (INPO) has been a strong force for self-regulation and the result has been performance that sets the global standard. Added regulatory requirements when they produce real benefits are good for the industry; additional regulatory costs without appropriate benefits will weigh down otherwise well-performing nuclear facilities and their staff, and would contribute to financial pressures that could lead to even more rapid shutdowns of presently operating nuclear power plants.¶ Public acceptance of nuclear energy has fallen in the aftermath of the Fukushima accident. While most polls show a majority of Americans still support the use of nuclear energy, opposition to new plants in most parts of the country is still formidable. Sustained operational and regulatory excellence, competent and swift response to safety issues, and a path forward for the nuclear waste program can help turn the tide of public opinion.

### Plan Popular

#### TURN- plan’s popular, nuclear power sparks mass public backlash.

CSI 12. [Civil Society Institute, “SURVEY: AMERICANS NOT WARMING UP TO NUCLEAR POWER ONE YEAR AFTER FUKUSHIMA” March 7 -- http://www.civilsocietyinstitute.org/media/030712release.cfm]

One year after the disaster at the Fukushima nuclear reactors in Japan, Americans continue to want to keep the brakes on more nuclear power in the United States, according to a major new ORC International survey conducted for the nonprofit and nonpartisan Civil Society Institute (CSI).¶ To gauge any shift in public attitudes, the new survey was benchmarked to an earlier poll carried out by ORC International in March 2011 for CSI. Conducted February 23-26 2012, the new survey of 1,032 Americans shows that:¶ • Nearly six in 10 Americans (57 percent) are less supportive of expanding nuclear power in the United States than they were before the Japanese reactor crisis, a nearly identical finding to the 58 percent who responded the same way when asked the same question one year ago. This contrasts sharply with pre-Fukushima surveys by Gallup and other organizations showing a 60 percent support level for nuclear power.¶ • More than three out of four Americans (77 percent) say they are now more supportive than they were a year ago "to using clean renewable energy resources - such as wind and solar - and increased energy efficiency as an alternative to more nuclear power in the United States." This finding edged up from the 2011 survey level of 76 percent.¶ • More than three out of four Americans (77 percent) would support "a shift of federal loan-guarantee support for energy away from nuclear reactors" in favor of wind and solar power. This level of support was up from the 74 percent finding in the 2011 survey.¶ • In response to a new question in the 2012 survey, more than six in 10 Americans (61 percent) said they were less supportive of nuclear power as a result of reports in the U.S. during 2011 and so far in 2012 of nuclear reactors that had to be shut down due such factors as natural disasters, equipment failure and radioactive leaks.¶ • About two thirds (65 percent) of Americans now say they would oppose "the construction of a new nuclear reactor within 50 miles of [their] home." This figure was roughly the same as the 67 percent opposition level in the March 2011 survey.¶ Pam Solo, founder and president, Civil Society Institute, said: "It is clear that Fukushima left an indelible impression on the thinking of Americans about nuclear power. The U.S. public clearly favors a conservative approach to energy that insists on it being safe in all senses of the word - including the risk to local communities and citizens. These poll findings support the need for a renewed national debate about the energy choices that America makes."¶ Peter Bradford, former member of the United States Nuclear Regulatory Commission, former chair of the New York and Maine utility regulatory commissions, and currently adjunct professor at Vermont Law School on "Nuclear Power and Public Policy, said: "This survey is another piece of bad news for new nuclear construction in the U.S. For an industry completely dependent on political support in order to gain access to the taxpayers' wallets (through loan guarantees and other federal subsidies) and the consumers' wallets (through rate guarantees to cover even canceled plants and cost overruns), public skepticism of this magnitude is a near fatal flaw. The nuclear industry has spent millions on polls telling the public how much the public longs for nuclear power. Such polls never ask real world questions linking new reactors to rate increases or to accident risk. Fukushima has made the links to risk much clearer in the public mind. This poll makes the consequences of that linkage clear."¶ Pollster Graham Hueber, senior researcher, ORC International, said: "I would summarize these findings as follows: We see here a lasting chill in how the public perceives nuclear power. The passage of one year since the Fukushima nuclear reactor crisis in Japan has neither dimmed concerns in the U.S. about nuclear power nor has it made Americans more inclined to support an expanded federal focus on promoting more nuclear reactors in the U.S."¶ Robert Alvarez, senior scholar, Institute for Policy Studies, where he is currently focused on nuclear disarmament and environmental and energy policies, and former senior policy advisor, U.S. Secretary of Energy, where he coordinated the effort to enact nuclear worker compensation legislation, said: "Nuclear power remains expensive, dangerous, and too radioactive for Wall Street. This survey shows why the industry has no future unless the U.S. government props it up and forces the public to bear the risks."

### Trump Lies

#### Trump won’t do what he says he will – he can’t, and he’s just pandering

Maiko. Bradshaw, (academic, political scientist, data analyst) Jennifer Maiko. Will Donald Trump really do the things he says he will do if elected?. https://www.quora.com/Will-Donald-Trump-really-do-the-things-he-says-he-will-do-if-elected

Will Donald Trump really do the things he says he will do if elected? No, but not only because he constitutionally can’t. He most likely won’t bother trying to do most of the things he’s said he’ll do. The Deal he’s trying to make right now isn’t to build a wall or deport all Muslims. All he wants is the presidency; the title, the prestige, and the power. Most likely, he’s running out of quite self-interested reasons - he will likely lower taxes on the rich, capital gains taxes, corporate taxes, and open loopholes for businesses. This will absolutely positively affect him and the Trump enterprises. He’s said the things he’s said to capitalize on authoritarian-leaning voters/PC culture and establishment pushback/free media coverage. While I loathe the man, I don’t believe Trump is stupid enough to think he can actually raise a Mexico-paid wall. Looking at his history of flip-flopping on issues, he’s not speaking from any strong conviction, just pandering to the lowest common denominator. He doesn’t see election promises as something he actually has to follow through on - it’s simply marketing material to him.

### A2 Environment

#### Clinton won’t help with warming—too corporate friendly.

Klein 16 Naomi (author of This Changes Everything: Capitalism vs the Climate) “We’re out of time on climate change. And Hillary Clinton helped get us here” The Guardian April 7th 2016 https://www.theguardian.com/commentisfree/2016/apr/07/out-of-time-climate-change-hillary-clinton JW

That’s a whole lot of firepower to slap down a non-issue. So is it an issue or not? First, some facts. Clinton’s campaign, including her Super Pac, has received a lot of money from the employees and registered lobbyists of fossil-fuel companies. There’s the much-cited $4.5m that Greenpeace calculated, which includes bundling by lobbyists. But that’s not all. There is also a lot more money from sources not included in those calculations. For instance, one of Clinton’s most prominent and active financial backers is Warren Buffett. While he owns a large mix of assets, Buffett is up to his eyeballs in coal, including coal transportation and some of the dirtiest coal-fired power plants in the country. Then there’s all the cash that fossil-fuel companies have directly pumped into the Clinton Foundation. In recent years,Exxon, Shell, ConocoPhillips and Chevron have all contributed to the foundation. An investigation in the International Business Times just revealed that at least two of these oil companies were part of an effort to lobby Clinton’s State Department about the Alberta tar sands, a massive deposit of extra-dirty oil. Leading climate scientists like James Hansen have explained that if we don’t keep the vast majority of that carbon in the ground, we will unleash catastrophic levels of warming. Did these donations have anything to do with the investigation found, Clinton’s State Department approving the Alberta Clipper, a controversial pipeline carrying large amounts of tar-sands bitumen from Alberta to Wisconsin? “According to federal lobbying records reviewed by the IBT,” write David Sirota and Ned Resnikoff, “Chevron and ConocoPhillips both lobbied the State Department specifically on the issue of ‘oil sands’ in the immediate months prior to the department’s approval, as did a trade association funded by ExxonMobil.” Did they make Hillary Clinton more disposed to seeing tar-sands pipelines as environmentally benign, as early State Department reviews of Keystone XL seemed to conclude, despite the many scientific warnings? There is no proof – no smoking gun, as Clinton defenders like to say. Just as there is no proof that the money her campaign took from gas lobbyists and fracking financiers has shaped Clinton’s current (and dangerous) view that fracking can be made safe. It’s important to recognise that Clinton’s campaign platform includes some very good climate policies that surely do not please these donors – which is why the fossil-fuel sector gives so much more to climate change-denying Republicans. Still, the whole funding mess stinks, and it seems to get worse by the day. So it’s very good that the Sanders camp isn’t abiding by Krugman’s “guidelines for good behaviour” and shutting up about the money in a year when climate change has contributed to the hottest temperatures since records began. This primary isn’t over, and Democratic voters need and deserve to know all they can before they make a choice we will all have to live with for a very long time. Eva Resnick-Day, the 26-year-old Greenpeace activist who elicited the “so sick” response from Clinton last week, has a very lucid and moving perspective on just how fateful this election is, how much hangs in the balance. Responding to Clinton’s claim that young people “don’t do their own research,” Resnick-Day told Democracy Now!: As a youth movement, we have done our own research, and that is why we are so terrified for the future…. Scientists are saying that we have half the amount of time that we thought we did to tackle climate change before we go over the tipping point. And because of that, youth—the people that are going to have to inherit and deal with this problem—are incredibly worried. What happens in the next four or eight years could determine the future of our planet and the human species. And that’s why we’re out there…asking the tough questions to all candidates: to make sure that whoever is in office isn’t going to continue things as they’ve been, but take a real stand to tackle climate change in a meaningful and deep way for the future of our planet. Resnick-Day’s words cut to the heart of why this is not just another election cycle, and why Clinton’s web of corporate entanglements is deeply alarming with or without a “smoking gun.” Whoever wins in November, the next president will come into office with their back up against the climate wall. Put simply, we are just plain out of time. Everything is moving faster than the scientific modelling has prepared us for. The ice is melting faster. The oceans are rising faster. And that means that governments must move much faster too. The latest peer-reviewed science tells us that if we want a good shot at protecting coastal cities this century – including New York, the place where Bernie and Hillary are currently having it out – then we need to get off fossil fuels with superhuman speed. A new paper from Oxford University, published in the journal Applied Energy, concludes that for humanity to have a 50-50 chance of meeting the temperature targets set in Paris, every new power plant has to be zero-carbon, starting next year. That is hard. Really hard. At a bare minimum, it requires a willingness to go head-to-head with the two most powerful industries on the planet – fossil-fuel companies and the banks that finance them. Hillary Clinton is uniquely unsuited to this epic task. While Clinton is great at warring with Republicans, taking on powerful corporations goes against her entire worldview, against everything she’s built, and everything she stands for. The real issue, in other words, isn’t Clinton’s corporate cash, it’s her deeply pro-corporate ideology: one that makes taking money from lobbyists and accepting exorbitant speech fees from banks seem so natural that the candidate is openly struggling to see why any of this has blown up at all. To understand this worldview, one need look no further than the foundation where Hillary Clinton works and that bears her family name. Its mission can be distilled as follows: There is so much private wealth sloshing around our planet (thanks in very large part to the deregulation and privatisation frenzy that Bill Clinton unleashed on the world while president) that every single problem on earth, no matter how large, can be solved by convincing the ultra-rich to do the right things with their loose change. Naturally, the people to convince them to do these fine things are the Clintons, the ultimate relationship brokers and dealmakers, with the help of an entourage of A-list celebrities. The problem with Clinton World is structural. It’s the way in which these profoundly enmeshed relationships – lubricated by the exchange of money, favours, status and media attention – shape what gets proposed as policy in the first place. For instance, under the Clintons’ guidance, drug companies work with the foundation to knock down their prices in Africa (conveniently avoiding the real solution: changing the system of patenting that allows them to charge such grotesque prices to the poor in the first place). The Dow Chemical Company finances water projects in India. (Just don’t mention their connection to the ongoing human health disaster in Bhopal, for which the company still refuses to take responsibility.). And it was at the Clinton Global Initiative that the airline mogul Richard Branson made his flashy pledge to spend billions solving climate change (almost a decade later, we’re still waiting, while Virgin Airlines keeps expanding). In Clinton World it’s always win-win-win: the governments look effective, the corporations look righteous, and the celebrities look serious. Oh, and another win too: the Clintons grow ever more powerful. At the centre of it all is the canonical belief that change comes not by confronting the wealthy and powerful but by partnering with them. Viewed from within the logic of what Thomas Frank recently termed “the land of money”, all of Hillary Clinton’s most controversial actions make sense. Why not take money from fossil-fuel lobbyists? Why not get paid hundreds of thousands for speeches to Goldman Sachs? It’s not a conflict of interest; it’s a mutually beneficial partnership – part of a never-ending merry-go-round of corporate-political give and take. Books have been filled with the failures of Clinton-style philanthrocapitalism. When it comes to climate change, we have all the evidence we need to know that this model is a disaster on a planetary scale. This is the logic that gave the world fraud-infested carbon markets and dodgy carbon offsets instead of tough regulation of polluters – because, we were told, emission reductions needed to be “win-win” and “market-friendly.”

#### History proves biotic communities are resilient to warmer climates.

NIPCC 11 <Nongovernmental International Panel on Climate Change. Surviving the unprecedented climate change of the IPCC. 8 March 2011. http://www.nipccreport.org/articles/2011/mar/8mar2011a5.html>

In a paper published in Systematics and Biodiversity, Willis et al. (2010) consider the IPCC (2007) "predicted climatic changes for the next century" -- i.e., their contentions that "global temperatures will increase by 2-4°C and possibly beyond, sea levels will rise (~1 m ± 0.5 m), and atmospheric CO2will increase by up to 1000 ppm" -- noting that it is "widely suggested that the magnitude and rate of these changes will result in many plants and animals going extinct," citing studies that suggest that "within the next century, over 35% of some biota will have gone extinct (Thomas et al., 2004; Solomon et al., 2007) and there will be extensive die-back of the tropical rainforest due to climate change (e.g. Huntingford et al., 2008)." On the other hand, they indicate that some **biologists and climatologists have pointed out that "many of the predicted increases in climate have happened before, in terms of both magnitude and rate of change** (e.g. Royer, 2008; Zachos et al., 2008), **and yet biotic communities have remained remarkably resilient** (Mayle and Power, 2008) **and in some cases thrived** (Svenning and Condit, 2008)." But they report that those who mention these things are often "placed in the 'climate-change denier' category," although the purpose for pointing out these facts is simply to present "a sound scientific basis for understanding biotic responses to the magnitudes and rates of climate change predicted for the future through using the vast data resource that we can exploit in fossil records." Going on to do just that, Willis et al. focus on "intervals in time in the fossil record when atmospheric CO2 concentrations increased up to 1200 ppm, temperatures in mid- to high-latitudes increased by greater than 4°C within 60 years, and sea levels rose by up to 3 m higher than present," describing **studies of past biotic responses that indicate "the scale and impact of the magnitude and rate of such climate changes on biodiversity."** And **what emerges** from those studies, as they describe it, "is evidence for rapid community turnover, migrations, development of novel ecosystems and thresholds from one stable ecosystem state to another." And, most importantly in this regard, they report "there is very little evidence for broad-scale extinctions due to a warming world." In concluding, the Norwegian, Swedish and UK researchers say that "based on such evidence we urge some caution in assuming broad-scale extinctions of species will occur due solely to climate changes of the magnitude and rate predicted for the next century," reiterating that "the fossil record indicates remarkable biotic resilience to wide amplitude fluctuations in climate."

#### New technology means humans Can Adapt

Moore 08 (Senior Fellow at the Hoover Institution at Stanford University, Stanford, Thomas Gale 7/9/12 “Global warming; the good, the bad and the ugly and the efficient” EMBO reports http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3317379/?tool=pmcentrez)

Even if the pessimists are correct and future climate change reduces food production, wicked storms lash much of the planet, summers are plagued by terrible heat waves, and floods and droughts inundate large areas of the world and reduce the availability of clean water, human beings will be better able to handle such terrible conditions than they are now because technology will advance and people will become richer over the next century. Evidence of an increasing rate of technological advancement comes from patents; the number of patents issued for inventions has continued to rise at an increasing rate since 1790 ([Fig 2](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3317379/figure/f2/)). Although patented inventions are only a crude measure of technological growth, they do indicate that technology will continue to change the world in which we live. Consider the world 200 years ago when the fastest means of communication was by horseback, or just 100 years ago when telephones were only slowly spreading and radio, much less TV or the internet, were almost undreamed of. **Thus progress will allow our descendants to deal with almost any difficulties that climate change brings**.

#### Prefer my evidence—not media hype.

Spencer 8 Roy Spencer, climatologist and a Principal Research Scientist for the University of Alabama in Huntsville, Ph.D. in meteorology at the University of Wisconsin-Madison in 1981, former Senior Scientist for Climate Studies at NASA’s Marshall Space Flight Center, where he and Dr. John Christy received NASA’s Exceptional Scientific Achievement Medal for their global temperature monitoring work with satellites, Climate Confusion, 2008

The media can always find an expert who is willing to provide some juicy quotes regarding our imminent environmental doom. Usually there is a grain of truth to the story which helps sell the idea. Like a science fiction novel, a somewhat plausible weather disaster tale captures our imagination, and we consider the possibility of global catastrophe. And some of the catastrophic events that are predicted are indeed possible, or at least not impossible. Catastrophic global warming—say by 10° Fahrenheit or more over the next century—cannot be ruled out with 100 percent certainty. Of course, neither can the next extraterrestrial invasion of Earth. But theoretical possibilities reported by the media are far from competent scientific predictions of the future. The bias contained in all of these gloom-and-doom news stories has a huge influence on how we perceive the health of the Earth and our effect on it. We scientists routinely encounter reporters who ignore the uncertainties we voice about global warming when they write their articles and news reports. Sometimes an article will be fairly balanced, but that is the exception. Few reporters are willing to push a story on their editor that says that future global warming could be fairly benign. They are much more interested in gloom and doom. A scientist can spend twenty minutes describing new and important research, but if it can’t be expressed in simple, alarmist language, you can usually forget about a reporter using it. It has reached the point where the minimum amount of necessary alarm amounts to something like, “we have only ten years left to avert catastrophic global warming.” A reporter will probably run with that. After all, which story will most likely find its way into a news-paper: “Warming to Wipe out Half of Humanity,” or “Scientists Predict Little Warming”? It goes without saying that, **in science, if you want to keep getting funded, you should find something Earth-shaking**. And if you want to get your name in the newspaper, give a reporter some material that gives him hope of breaking the big story.

### IMP. TURN: GOP Warming

#### **A Trump presidency would crush the GOP**

Chait 2/5 (Jonathan Chait is a commentator and writer for New York magazine. He was previously a senior editor at The New Republic and a former assistant editor of The American Prospect. “Why Liberals Should Support a Trump Republican Nomination,” New York Magazine, 2016, <http://nymag.com/daily/intelligencer/2016/02/why-liberals-should-support-a-trump-nomination.html>) Os

Second, a Trump nomination might upend his party. The GOP is a machine that harnesses ethno-nationalistic fear — of communists, criminals, matrimonial gays, terrorists, snooty cultural elites — to win elections and then, once in office, caters to its wealthy donor base. (This is why even a social firebrand like Ted Cruz would privately assure the billionaire investor Paul Singer that he wasn’t particularly concerned about gay-marriage laws.) As its voting base has lost college-­educated voters and gained blue-collar whites, the fissure between the means by which Republicans attain power and the ends they pursue once they have it has widened. What has most horrified conservative activists about Trump’s rise is how little he or his supporters seem to care about their anti-government ideology. When presented with the candidate’s previous support for higher taxes on the rich or single-payer insurance, heresies of the highest order, Trump fans merely shrug. During this campaign, Trump has mostly conformed to party doctrine, but without much conviction. Trump does not mouth the rote conservative formulation that government is failing because it can’t work and that the solution is to cut it down to size. Instead, he says it is failing because it is run by idiots and that the solution is for it to instead be run by Trump. About half of Republicans favor higher taxes on the rich, a position that has zero representation among their party’s leaders. And those Republicans are the most likely to support Trump. Trump’s candidacy represents, among other things, a revolt by the Republican proletariat against its master class. That is why National Review devoted a cover editorial and 22 columns to denouncing Trump as a heretic to the conservative movement. A Trump nomination might not actually cleave the GOP in two, but it could wreak havoc. If, like me, you think the Republican Party in its current incarnation needs to be burned to the ground and rebuilt anew, Trump is the only one holding a match.

#### **Solves warming**

Cowen 1/25 (Tyler Cowen is an American economist, academic, and writer. He occupies the Holbert C. Harris Chair of economics, as a professor at George Mason University. “Tyrone on why Democrats should vote for Donald Trump,” Marginal Revolution, 2016, <http://marginalrevolution.com/marginalrevolution/2016/01/tyrone-democrats-vote-donald-trump.html>) OS edited for problematic language

OK people, let’s say Trump sticks to the mainstream Republican position. What will happen then? Won’t greedy capitalists [destroy] the earth, not to mention building that energy-consuming wall? Well, in the short run, maybe. (Don’t forget Lennon on the omelette and those broken eggs!) But we all know how disastrous Trump’s economic ideas would be in practice. They would lower the growth rate of gdp and impoverish the masses. Even if you read Trump as a policy moderate, just imagine what his volatile temperament would do to the equity risk premium. (Then they would have to give Robert Barro a Nobel prize!) And so, four or maybe eight years later, — or is it two? — what we could expect to find? A fully Democratic Congress and White House. (And dear reader, is there any other way to get there?) And thus would arrive comprehensive climate change legislation, just as we got Obamacare post-2008. Voila! That’s way more important than maintaining America’s status as a nice, well-respected, and tolerant country, isn’t it? So Democrats, if you really care about Bangladesh and Vietnam, and don’t just have this silly mood affiliation fancy that Tyler has fabricated, you should promote the candidacy of Donald Trump. The more Democratic you are, the better. The more worried about climate change you are, the better. Your man has arrived on the national scene. Finally.

#### Warming causes extinction

Tickell 08 – (Oliver, The Guardian, “On a planet 4C hotter, all we can prepare for is extinction”, 8/11, http://www.guardian.co.uk/commentisfree/2008/aug/11/climatechange)

We need to get prepared for four degrees of global warming, Bob Watson told the Guardian last week. At first sight this looks like wise counsel from the climate science adviser to Defra. But **the idea that we could adapt to a 4C rise is absurd and dangerous. Global warming on this scale would be a catastrophe that would mean**, in the immortal words that Chief Seattle probably never spoke, "the end of living and the beginning of survival" for humankind. Or perhaps the beginning of our extinction**. The collapse of the polar ice caps would become inevitable, bringing long-term sea level rises of 70-80 metres. All the world's coastal plains would be lost, complete with ports, cities, transport and industrial infrastructure, and much of the world's most productive farmland.** The world's geography would be transformed much as it was at the end of the last ice age, when sea levels rose by about 120 metres to create the Channel, the North Sea and Cardigan Bay out of dry land. Weather would become extreme and unpredictable, with more frequent and severe droughts, floods and hurricanes. **The Earth's carrying capacity would be hugely reduced. Billions would undoubtedly die.** Watson's call was supported by the government's former chief scientific adviser, Sir David King, who warned that "if we get to a four-degree rise it is quite possible that we would begin to see a runaway increase". This is a remarkable understatement. **The climate system is already experiencing significant feedbacks, notably the summer melting of the Arctic sea ice. The more the ice melts, the more sunshine is absorbed by the sea, and the more the Arctic warms. And as the Arctic warms, the release of billions of tonnes of methane** – a greenhouse gas 70 times stronger than carbon dioxide over 20 years – **captured under melting permafrost is already under way**. **To see how far this process could go, look 55.5m years to the Palaeocene-Eocene Thermal Maximum, when a global temperature increase of 6C coincided with the release of about 5,000 gigatonnes of carbon into the atmosphere,** both as CO2 and as methane from bogs and seabed sediments. Lush subtropical forests grew in polar regions, and sea levels rose to 100m higher than today. It appears that **an initial warming pulse triggered other warming processes. Many scientists warn that this historical event may be analogous to the present: the warming caused by human emissions could propel us towards a similar hothouse Earth**.

### IMP. TURN: Relations

#### Hillary increases US/China tensions

Dingding Chen ’15 [assistant professor of Government and Public Administration], The Diplomat 15, 4-20-2015, "3 Ways a Hillary Clinton Presidency Would Affect US-China Relations," Diplomat, http://thediplomat.com/2015/04/3-ways-a-hillary-clinton-presidency-would-affect-us-china-relations/

First, it is about Clinton’s past attitudes toward China. While still the first lady, Hillary Clinton had some tough words for China when she attended the fourth world conference on women in Beijing in 1995. That unhappy memory still lingers on the minds of many Chinese. Then again, recently Hillary strongly criticized China for arresting five women for promoting women’s rights. And then, of course, Chinese officials and scholars did not appreciate her interference in China’s disputes with other Asian countries in the South China Sea. Many in China also acknowledge the United States’ pivot to Asia – or rebalance – strategy as Hillary’s brainchild, for better or worse. So most Chinese experts have concluded, perhaps correctly, that Hillary Clinton is a strong leader who would do everything possible to maintain American hegemony in the world, a goal increasingly at odds with China’s growing geopolitical desires. Second, if elected, Clinton’s party, the Democratic Party, is traditionally strong on issues like human rights and trade protectionism. Chairman Mao once said jokingly that he would any day prefer to deal with the Republican Party, and that might still be the case of Chinese leaders today. Again, this might be a misperception because the Republican Party is also known for its tendency to flex America’s military muscle, something China wouldn’t prefer. So it remains to be seen whether another Democratic president would act tough on China. Third, and perhaps most importantly, there is increasing tension between China and the United States from a structural point of view as China continues to grow stronger economically and militarily. China will demand more power and respect from the United States, and the United States will refuse to give in as long as it can sustain the current global system. Such structural tensions will not disappear if both sides cannot find an effective way to narrow their differences, manage their conflicts carefully, and eventually share power in Asia. It is in this sense that the person to assume the next U.S. presidency probably matters very little. Whether or not the next U.S. president will adopt a tougher approach toward China very much depends on the capabilities and intentions of the United States as a whole. A single individual, even someone as powerful as the U.S. president, might not have a large enough influence on the democratic and fragmented U.S. system to cause real change. Many in China tend to neglect the influence of the U.S. Congress on American foreign policy, but, in reality, Congress can have a huge impact on U.S. foreign policy. It seems that the Republican Party will continue to dominate the Congress in near future, thus putting more constraints on a Democratic president. In the end, the attitude Hillary Clinton, if elected, would adopt toward China is a result of all three factors mentioned above. The bad news, however, is that all three factors seem to converge and point to a more turbulent relationship between China and the United States.

#### US-China relations solve extinction—trans-national conflict, economic collapse, and warming

Cohen ’9 (William S. Cohen is chairman and CEO of The Cohen Group, a strategic business consulting firm based in Washington, D.C. Secretary Cohen served as U.S. secretary of defense, Maurice R. Greenberg is chairman and CEO of C.V. Starr & Co., Inc. Mr. Greenberg retired four years ago as chairman and CEO of American International Group (AIG) after more than 40 years of leadership, creating the largest insurance company in history, “Smart Power in U.S.-China Relations,” http://csis.org/files/media/csis/pubs/090309\_mcgiffert\_uschinasmartpower\_web.pdf)

#### The evolution of Sino-U.S. relations over the next months, years, and decades has the potential to have a greater impact on global security and prosperity than any other bilateral or multilateral arrangement. In this sense, many analysts consider the US.-China diplomatic relationship to be the most influential in the world. Without question, strong and stable U.S. alliances provide the foundation for the protection and promotion of U.S. and global interests. Yet within that broad framework, the trajectory of U.S.-China relations will determine the success, or failure, of efforts to address the toughest global challenges: global financial stability, energy security and climate change, nonproliferation, and terrorism, among other pressing issues. Shepherding that trajectory in the most constructive direction possible must therefore be a priority for Washington and Beijing. Virtually no major global challenge can be met without U.S.-China cooperation. The uncertainty of that future trajectory and the "strategic mistrust" between leaders in Washington and Beijing necessarily concerns many experts and policymakers in both countries. Although some U.S. analysts see China as a strategic competitor—deliberately vying with the United States for energy resources, military superiority, and international political influence alike— analysis by the Center for Strategic and International Studies (CSIS) has generally found that China uses its soft power to pursue its own, largely economic, international agenda primarily to achieve its domestic objectives of economic growth and social stability.1 Although Beijing certainly has an eye on Washington, not all of its actions are undertaken as a counterpoint to the United States. In addition, CSIS research suggests that growing Chinese soft power in developing countries may have influenced recent U.S. decisions to engage more actively and reinvest in soft-power tools that have atrophied during the past decade. To the extent that there exists a competition between the United States and China, therefore, it may be mobilizing both countries to strengthen their ability to solve global problems. To be sure, U.S. and Chinese policy decisions toward the respective other power will be determined in large part by the choices that leaders make about their own nations interests at home and overseas, which in turn are shaped by their respective domestic contexts. Both parties must recognize—and accept—that the other will pursue a foreign policy approach that is in its own national interest. Yet, in a globalized world, challenges are increasingly transnational, and so too must be their solutions. As demonstrated by the rapid spread of SARS from China in 2003, pandemic flu can be spread rapidly through air and via international travel. Dust particulates from Asia settle in Lake Tahoe. An economic downturn in one country can and does trigger an economic slowdown in another. These challenges can no longer be addressed by either containment or isolation. What constitutes the national interest today necessarily encompasses a broader and more complex set of considerations than it did in the past As a general principle, the United States seeks to promote its national interest while it simultaneously pursues what the CSIS Commission on Smart Power called in its November 2007 report the "global good."3 This approach is not always practical or achievable, of course. But neither is it pure benevolence. Instead, a strategic pursuit of the global good accrues concrete benefits for the United States (and others) in the form of building confidence, legitimacy, and political influence in key countries and regions around the world in ways that enable the United States to better confront global and transnational challenges. In short, the global good comprises those things that all people and governments want but have traditionally not been able to attain in the absence of U.S. leadership. Despite historical, cultural, and political differences between the United States and China, Beijing's newfound ability, owing to its recent economic successes, to contribute to the global good is a matter for common ground between the two countries. Today there is increasing recognition that no major global challenge can be addressed effectively, much less resolved, without the active engagement of—and cooperation between—the United States and China. The United States and China—the worlds first- and third-largest economies—are inextricably linked, a fact made ever more evident in the midst of the current global financial crisis. Weak demand in both the United States and China, previously the twin engines of global growth, has contributed to the global economic downturn and threatens to ignite simmering trade tensions between the two countries. Nowhere is the interconnectedness of the United States and China more clear than in international finance. China has $2 trillion worth of largely U.S. dollar-denominated foreign exchange reserves and is the world's largest holder—by far—of U.S. government debt. Former treasury secretary Henry M. Paulson and others have suggested that the structural imbalances created by this dynamic fueled the current economic crisis. Yet. China will almost certainly be called on to purchase the lion's share of new U.S. debt instruments issued in connection with the U.S. stimulus and recovery package. Secretary of State Hillary Rodham Clinton's February 23.2009, reassurance to Beijing that U.S. markets remain safe and her call for continued Chinese investment in the U.S. bond market as a means to help both countries, and the world, emerge from global recession underscored the shared interest—and central role—that both countries have in turning around the global economy quickly. Although China's considerable holdings of U.S. debt have been seen as a troubling problem, they are now being perceived as a necessary part of a global solution. Similarly, as the worlds two largest emitters of greenhouse gases, China and the United States share not only the collateral damage of energy-inefficient economic growth, but a primary responsibility to shape any ultimate global solutions to climate change. To date, cooperation has been elusive, owing as much to Washington's reluctance as to Beijing's intransigence. Painting China as the environmental bogeyman as an excuse for foot-dragging in policymaking is no longer an option; for its part, China, as the world's top polluter, must cease playing the developing-economy card. Yet energy security and climate change remain an area of genuine opportunity for joint achievement. Indeed, U.S.-China cooperation in this field is a sine qua non of any response to the energy and climate challenges. The sheer size of the Chinese economy means that collaboration with the United States could set the de facto global standards for efficiency and emissions in key economic sectors such as industry and transportation. Climate change also provides an area for cooperation in previously uncharted policy waters, as in emerging Arctic navigational and energy exploration opportunities. Washington and Beijing also share a deep and urgent interest in international peace and stability. The resumption of U.S.-China military contacts is a positive development. As two nuclear powers with worldwide economic and strategic interests, both countries want to minimize instability and enhance maritime security, as seen by parallel antipiracy missions in the waters otT Somalia. Joint efforts in support of United Nations peacekeeping, nonproliferation, and counterterrorism offer critical areas for bilateral and multilateral cooperation. Certainly, regional and global security institutions such as the Six-Party Talks concerning North Korea or the UN Security Council require the active engagement of both Washington and Beijing. Even more broadly, crisis management in geographic regions of mutual strategic interest like the Korean peninsula, Iran, or Burma require much more Sino-U.S. communication if the two countries are to avoid miscalculation and maximize opportunities to minimize human sutfering. Increasing the number of mid-level military-to-military exchanges would help in this regard. The United States and China could do more to cooperate on law enforcement to combat drug trafficking and organized crime in Western China. Afghanistan is competing with Burma as the main provider of narcotics to China; Washington could use its influence with the International Security Assistance Force in Kabul to develop a joint antinarcotics program. This could potentially build networks and joint capabilities that might be useful for U.S.-China cooperation on the issue of Pakistan. In addition, Washington should also encourage NATO-China cooperation along the Afghan border. Collaborating under the auspices of the Shanghai Cooperation Organization (SCO) might provide an additional framework for Beijing and Washington to address Central Asian security issues in a cooperative manner. 1he SCO, which includes Pakistan as an observer and will convene a multinational conference on Afghanistan in March 2009, has long made curbing narcoterrorism in Afghanistan a priority. In addition, the VS. Drug Enforcement Agency and the Chinese Anti-Narcotics Bureau should expand cooperation on interdiction and prosecution of heroin and meth traffickers. To be sure, there are a number of areas of serious divergence between Washington and Beijing. This should surprise no one. The United States has disagreements with even its allies. Two large powers with vastly dilferent histories, cultures, and political systems are bound to have challenges. History has shown, however, that the most effective way of addressing issues is for the U.S. and Chinese governments to engage in quiet diplomacy rather than public recrimination. In the U.S.-China context, there is often little to be gained—and much to be lost in terms of trust and respect—by a polarizing debate. Any differences, moreover, must not necessarily impede Sino-U.S. cooperation when both sides share strong mutual interests. I;. Scott Fitzgerald wrote that "the test of a first-rate intelligence is the ability to hold two opposed ideas in the mind at the same time, and still retain the ability to function."3 Effective policy toward China by the United States, and vice versa, will require this kind of dual-minded intelligence. Moreover, working together on areas of mutual and global interest will help promote strategic trust between China and the United States, facilitating possible cooperation in other areas. Even limited cooperation on specific areas will help construct additional mechanisms for bilateral communication on issues of irreconcilable disagreement. In fact, many of the toughest challenges in U.S.-China relations in recent years have been the result of unforeseen events, such as the accidental bombing of the Chinese embassy in Belgrade in May 1999 and the EP-3 reconnaissance plane collision in April 2001. Building trust and finding workable solutions to tough problems is the premise behind the Obama administrations foreign policy of smart power, as articulated by Secretary of State Clinton. Smart power is based on, as Secretary Clinton outlined in her confirmation hearing, the fundamental belief that 'We must use... the full range of tools at our disposal—diplomatic, economic, military, political and cultural—picking the right tool, or combination of tools, for each situation."' As the CS1S Commission on Smart Power noted in November 2007, "Smart Power is neither hard nor soft—it is the skillful combination of bothIt is an approach that underscores the necessity of a strong military, but also invests heavily in alliances, partnerships and institutions at all levels... .°5 As such, smart power necessarily mandates a major investment in a U.S.-China partnership on key issues. 'The concept enjoys broad support among the Chinese and American people and, by promoting the global good, it reaps concrete results around the world. There should be no expectation that Washington and Beijing will or should agree on all, or even most, questions. But the American and Chinese people should expect their leaders to come together on those vital issues that require their cooperation. U.S.-China partnership, though not inevitable, is indispensable. Clinton collapses US-Russia relations

Miller ’15(S.A. Miller, reports from Capitol Hill on politics, policy and political campaigns for The Washington Times, The Washington Times - Tuesday, June 9, 2015. “Hillary Clinton’s hawkish position on Russia troubles both sides of aisle” <http://www.washingtontimes.com/news/2015/jun/9/hillary-clintons-hawkish-position-on-russia-troubl/?page=all>)

Democratic presidential front-runner Hillary Rodham Clinton has pivoted left on domestic issues but stands out on foreign policy as more hawkish than some of her GOP rivals, even stoking fears that she’s ready to put the U.S. on a warpath with Russia. Mrs. Clinton is poised to make her foreign policy experience as senator and secretary of state a central argument for her White House run. It’s a record that includes supporting military intervention in Iraq and Libya, positions that put her at odds with her party’s liberal base. And since leaving the State Department in 2013, her harsh rhetoric about Russia raised eyebrows among hawks and doves alike. At a California fundraiser last year, she reportedly compared Russian President Vladimir Putin to Adolf Hitler. At a meeting earlier this year with London Mayor Boris Johnson, he said she faulted European leaders for being “too wimpy” about challenging Mr. Putin. Conservative commentator Paul Craig Roberts, an economist who served as assistant secretary of treasury under President Reagan, warned that Mrs. Clinton will have a difficulty backing down from a confrontation with Mr. Putin after calling him Hitler. “When you go that far out on a limb, you really kind of have to go the rest of the way,” he said in an interview at Infowars.com. “I don’t’ think there is any candidate that we can end up with as president that would be more likely to go to war with Russia than Hillary.” Mrs. Clinton isn’t the only candidate to take a tough stand on Russia’s annexation of Crimea and ongoing involvement in the warfare in eastern Ukraine. But she brings more heat to the discourse than any other Democrat or most Republicans. Former Florida Gov. Jeb Bush, who is expected to announce his presidential run next week, gave a speech Wednesday in Berlin in which he said the West should “push back” against Russian aggression. Mr. Bush described Mr. Putin as a bully who “will push until someone pushes back.” But he warned against being reactionary and pushing away the Russian people, as occurred during the Cold War. “I don’t think we should be reacting to bad behavior. By being clear of what the consequences of that bad behavior is in advance, I think we will deter the kind of aggression we fear from Russia,” he said. “But always reacting and giving the sense we’re reacting in a tepid fashion only enables the bad behavior of Putin.” Still, Mr. Roberts said that Mrs. Clinton doesn’t just talk tough but “is in tight with the military-security complex.” Former Green Party presidential candidate Ralph Nader recently called her “a deep corporatist and a deep militarist.” He said that when Mrs. Clinton served on the Senate Armed Services Committee, she “never met a weapons system she didn’t like.” Mr. Nader also blamed Mrs. Clinton for “almost single-handedly” pushing President Obama into lending U.S. military support to depose Libyan dictator Moammar Gadhafi, which unleashed chaos in the country that spread throughout the region and helped the terrorist army that calls itself the Islamic State gain a foothold. “She persuaded the White House that it was an easy topple without knowing that, in a tribal society with nothing to replace it, you would have a civil war, sectarian killings spilling into Africa [and] weapons everywhere [in] Mali [and] central Africa. The big thing is the huge amount of geography that has been destabilized because of the Libyan overthrow.” Mr. Nader’s criticism echoed comments form some of Mrs. Clinton’s Republican rivals, including Sen. Rand Paul of Kentucky, who has said that she will have to answer not only for the deadly attack on the U.S. compound in Benghazi but for the other far-reaching consequences of her Libya policy. For liberal activists, Mrs. Clinton’s foreign policy record compounds their concerns that she doesn’t truly support their agenda. “We definitely view Hillary as pretty far right when it comes to foreign policy,” said Alli McCracken, national coordinator for the feminist anti-war group Code Pink. She said that Mrs. Clinton acts “more like a war general than a diplomat,” including supporting the Iraq invasion, the troop surge in Afghanistan, the Libya overthrow and a potential strike on Iran. “I hope that the left puts pressure on her to break away from the status quo,” said Ms. McCracken. “I hope that there is pressure put on her to not just have left-leaning domestic polices and support of women’s rights here in the U.S. but women’s rights everywhere, and that means taking military options off the table.”

#### Collapse of Russian relations causes nuclear war

Cohen ’11 (Stephen Cohen, Ph.D., professor of Russian studies at New York University and Professor of Politics Emeritus at Princeton University. “Obama's Russia 'Reset': Another Lost Opportunity?” <http://www.thenation.com/article/161063/obamas-russia-reset-another-lost-opportunity?page=full>)

An enduring existential reality has been lost in Washington’s post–cold war illusions and the fog of subsequent US wars: the road to American national security still runs through Moscow. Despite the Soviet breakup twenty years ago, only Russia still possesses devices of mass destruction capable of destroying the United States and tempting international terrorists for years to come. Russia also remains the world’s largest territorial country, a crucial Eurasian frontline in the conflict between Western and Islamic civilizations, with a vastly disproportionate share of the planet’s essential resources including oil, natural gas, iron ore, nickel, gold, timber, fertile land and fresh water. In addition, Moscow’s military and diplomatic reach can still thwart, or abet, vital US interests around the globe, from Afghanistan, Iran, China and North Korea to Europe and Latin America. In short, without an expansive cooperative relationship with Russia, there can be no real US national security. And yet, when President Obama took office in January 2009, relations between Washington and Moscow were so bad that some close observers, myself included, characterized them as a new cold war. Almost all cooperation, even decades-long agreements regulating nuclear weapons, had been displaced by increasingly acrimonious conflicts. Indeed, the relationship had led to a military confrontation potentially as dangerous as the 1962 Cuban missile crisis. The Georgian-Russian War of August 2008 was also a proxy American-Russian war, the Georgian forces having been supplied and trained by Washington. What happened to the “strategic partnership and friendship” between post-Soviet Moscow and Washington promised by leaders on both sides after 1991? For more than a decade, the American political and media establishments have maintained that such a relationship was achieved by President Bill Clinton and Russian President Boris Yeltsin in the 1990s but destroyed by the “antidemocratic and neo-imperialist agenda” of Vladimir Putin, who succeeded Yeltsin in 2000. In reality, the historic opportunity for a post–cold war partnership was lost in Washington, not Moscow, when the Clinton administration, in the early 1990s, adopted an approach based on the false premise that Russia, having “lost” the cold war, could be treated as a defeated nation. (The cold war actually ended through negotiations sometime between 1988 and 1990, well before the end of Soviet Russia in December 1991, as all the leading participants—Soviet President Mikhail Gorbachev, President Ronald Reagan and President George H.W. Bush—agreed.) The result was the Clinton administration’s triumphalist, winner-take-all approach, including an intrusive crusade to dictate Russia’s internal political and economic development; broken strategic promises, most importantly Bush’s assurance to Gorbachev in 1990 that NATO would not expand eastward beyond a reunited Germany; and double-standard policies impinging on Russia (along with sermons) that presumed Moscow no longer had any legitimate security concerns abroad apart from those of the United States, even in its own neighborhood. The backlash came with Putin, but it would have come with any Kremlin leader more self-confident, more sober and less reliant on Washington than was Yeltsin. Nor did Washington’s triumphalism end with Clinton or Yeltsin. Following the events of September 11, 2001, to take the most ramifying example, Putin’s Kremlin gave the George W. Bush administration more assistance in its anti-Taliban war in Afghanistan, including in intelligence and combat, than did any NATO ally. In return, Putin expected the long-denied US-Russian partnership. Instead, the Bush White House soon expanded NATO all the way to Russia’s borders and withdrew unilaterally from the Anti-Ballistic Missile Treaty, which Moscow regarded as the bedrock of its nuclear security. Those “deceptions” have not been forgotten in Moscow. Now Russia’s political class, alarmed by the deterioration of the country’s essential infrastructures since 1991, is locked in a struggle over the nation’s future—one with profound consequences for its foreign policies. One side, associated with Putin’s handpicked successor as president, Dmitri Medvedev, is calling for a “democratic” transformation that would rely on “modernizing alliances with the West.” The other side, which includes ultra-nationalists and neo-Stalinists, insists that only Russia’s traditional state-imposed methods, or “modernization without Westernization,” are possible. As evidence, they point to NATO’s encirclement of Russia and other US “perfidies.” The choice of “modernizing alternatives” will be made in Moscow, not, as US policy-makers once thought, in Washington, but American policy will be a crucial factor. In the centuries-long struggle between reform and reaction in Russia, anti-authoritarian forces have had a political chance only when relations with the West were improving. In this regard, Washington still plays the leading Western role, for better or worse.

## AT: Coal DA

### Link Level

#### Nuclear power will not last for long – that’s Romm 8/4. Proves that fossil fuel shift will occur no matter what if the link is true, but also that shift to renewables is more likely since that tech is getting much more cost effective.

#### The plan causes a shift to renewables in the long term which outweighs small coal usage.

Carrara et al 13 Enrica De Cian, Samuel Carrara Massimo Tavoni (all from Centro Euro-Mediterraneo sui Cambiamenti Climatici) “Innovation Benefits from Nuclear Phase-Out: Can They Compensate the Costs?” ” CMCC <http://www.cmcc.it/wp-content/uploads/2013/02/rp0153-cip-01-2013.pdf> \*note the author means clean power when they say “breakthrough” NP

Nuclear power is a carbon-free source of power. If social and environmental concerns did not limit the extent to which countries rely on this source for electricity generation, the WITCH model would foresee a continued use of the technology, and in 2100 nuclear would generate between 10% and 50% of the global electricity production, in the baseline and in the most stringent policy case considered (450ppme). Should [nuclear power] this technology be excluded from the portfolio of feasible options, then countries would revise their energy mix by modifying their investment strategy. In a baseline scenario this means more investments in coal and gas (but only in the short term, i.e. until 2025-2030), more renewables and more clean power R&D (breakthrough). The breakthrough starts to replace nuclear power as well as fossil-based technologies in 2030. In a policy scenario nuclear phase out translates into more investments in fossil technologies in combination with CCS (coal and gas), renewables and clean power R&D (breakthrough), which is anticipated by five (550ppme) and ten years (450ppme) with respect to the baseline. The breakthrough starts to replace nuclear power as well as fossil-based technologies in 2020 (450ppme) and 2025 (550ppme). Under all the policy regimes considered, the phase out of nuclear power induces investments in early stage technologies and innovation that feature higher learning potential and international externalities compared to the alternatives that are displaced. As a consequence, the economic penalty, measured as increase in policy costs, is partly compensated by the welfare improvements due to the penetration of technologies with externalities. Figure 3 decomposes the penalty of phasing out nuclear into the gross component (gross of technology and innovation benefits) and the technology and innovation benefits. The two blue bars show the discounted world consumption loss at 450ppme in 2100 with a full technology portfolio (left) and with a constrained one, i.e. with nuclear phase out (right). Phasing out nuclear increases the aggregate discounted cost of the stabilization policy only slightly, from 2.06 to 2.12% (blue bars). Technology benefits reduce the macroeconomic loss by 0.5% (violet bar). Policy costs would increase to 2.62%, should the technology benefits be excluded. That is, the technology benefits due to implicit subsidy to learning technologies caused by the nuclear phase out is able to almost completely offset the cost of losing an important mitigation option, which otherwise would be substantial (by 27% in the 450ppme and 42% in the 550ppme).4 A similar result holds in the 550ppme and in the BAU scenarios, where technology benefits reduce the macroeconomic loss by 0.35% and 0.14%, respectively. Figure 4 traces the positive relationship between technology benefits and an indicator of policy stringency, namely cumulative abatement to 2100. Technology benefits are defined as the percentage point difference between the percentage change in discounted GDP/consumption in the 450/550ppme With Nuclear Phase Out w/o technology benefits compared to relative BAU (policy costs) and the same policy cost indicator computed in the 450/550ppme With Nuclear Phase Out. In the BAU we computed the percentage change in discounted GDP/consumption compared to the case With All Technologies. The technology benefit is defined as the percentage point difference between the percentage change in GDP/consumption in the BAU With Nuclear Phase Out w/o technology benefits and the BAU With Nuclear Phase Out. Technology benefits increase with policy stringency in absolute value. When measured relative to the total costs of the policy without nuclear they show diminishing returns, the benefits actually decrease when the policy becomes more stringent, from 38% of total costs in the 550ppme case to 29% in the 450ppme case. This is due to a saturation effect of the productivity of the innovation effort. As expected, the technology benefit is also positively correlated with cumulative investments in R&D, renewable energy and breakthrough. Discounted policy costs are a great indicator for comparing scenarios, but they do not inform about the intertemporal dynamics. Figure 5 illustrates the temporal distribution of innovation and learning benefits. It indicates that phasing out nuclear power would have only a transitory penalty in the case of a 550ppme policy. The panel on the right shows that after 2035 technology benefits are significantly large to offset the efficiency loss. A 450ppme stabilization policy case shows relatively larger benefits in the near term, until 2030, mostly due the innovation effect. The penalty of phasing out nuclear becomes positive in the longer term, after 2050. In the case of the more stringent policy, technology benefits counteract the efficiency loss, but only in the short-, medium-term. Over time, the efficiency effect prevails. It is instructive to analyze the regional distribution of the technology benefits of phasing out nuclear, see Figure 6. In the 450ppme case (left panel), we find greater technology benefits in the regions that would rely more on nuclear power, especially in the more stringent case of a 450ppme stabilization. Not coincidentally, these are also the regions that decided not to modify their plans of continuation or development of their nuclear programs in the aftermath of Fukushima, namely China, Russia, Republic of Korea, and India. However, the regional distribution of the technology benefits reflects also other effects, such as the trading position of each region on the carbon and on the oil markets and the interaction with the international prices of oil and carbon permits. These channels seem to have a stronger impact in the less stringent case of a 550ppme policy (right panel). Consider for example India. Although the share of nuclear power is expected to be significant, India will be a net seller of permits on the carbon market. Technology externalities can induce a loss compared to the case with no technology benefits in net carbon credit exporters, such as India and Latin America (LACA), because technology benefits reduce the carbon price when the stabilization target is not very stringent. In the 550ppme case, technology benefits reduce the carbon price at the end of the century by 17%. 6. Conclusion The nuclear disaster occurred at the Fukushima Daiichi nuclear power plant in March 2011 has led many countries to re-think the role of the nuclear power. The rapid decline in the costs of competitive low carbon technologies over the most recent years, most notably renewables, has led some policymakers to articulate that the decarbonization of the electricity sector is possible without nuclear power, and hopefully at moderate costs. In Europe, the idea that innovation in new low carbon alternatives can bring economic opportunities is summarized by Angela Merkel in the following remark "We believe we as a country can be a trailblazer for a new age of renewable energy sources….We can be the first major industrialized country that achieves the transition to renewable energy with all the opportunities - for exports, development, technology, jobs - it carries with it.” This paper has quantified the implications of a global nuclear phase out on renewable deployment and innovation in low carbon technologies both under a business as usual and two different climate stabilization targets, using an integrated assessment model which features induced technical change and multiple externalities. Our results show that phasing out nuclear power would stimulate investments in R&D and deployment of infant technologies with large learning potentials. This could bring about economic benefits, given the under provision of innovation due to market failures related to both intertemporal and international externalities. Our numerical assessment has shown that technology benefits can be substantial and can almost compensate the costs of foregoing nuclear power as an energy and mitigation option. The timing of the benefits depends on the stringency of the policy. In a less stringent climate policy, they take time to materialize. Nuclear phase out would thus lead to a temporary penalty, over time offset by the positive technology externalities. In the most stringent climate cases, consistent with 2C policies, innovation and technology benefits counterbalance the efficiency loss but only in the medium-term, while in the long-term the efficiency loss prevails. Technology benefits would be distributed unevenly across countries. Assuming that all world regions phase out nuclear starting in 2010, benefits tend to be greater where nuclear power provides a larger share of electricity, though other channels such as international carbon trade and energy markets, also affect the regional distribution of technology benefits. Our analysis is not without caveats. We have neglected technical change directed at conventional sectors, such as fossil fuels with and without CCS. Moreover, the economic penalty of a nuclear phase out is moderated by the assumption about availability of CCS at sufficiently large scale. Further analysis could explore to what extent the results presented in the paper hold in the case of temporary or fragmented phase out.

#### Nuclear energy is the reason renewables don’t grow in the US – lobbies stifle clean energy.

Kari Lydersen, 2-6-2015, "Why the nuclear industry targets renewables instead of gas," Midwest Energy News, http://midwestenergynews.com/2015/02/06/why-the-nuclear-industry-targets-renewables-instead-of-gas/

Cheap natural gas has upended the nation’s energy landscape and made aging nuclear power plants increasingly uncompetitive. Yet the nuclear industry, which generates almost a fifth of the nation’s energy, has declared war not on gas but on wind and solar, which represent about 4 and 0.2 percent of our energy mix, respectively.Nuclear generators have successfully fought against renewable and energy efficiency standards on the state level, and lobbied against tax incentives for wind and solar on the federal level. They’re in the process of securing changes in regional capacity markets that would benefit nuclear and harm solar and wind. And as states develop their Clean Power Plans to fulfill the federal mandate to reduce carbon emissions, nuclear is often pitted against renewables. In deregulated states like Illinois, Ohio, Michigan and Pennsylvania, nuclear generators have found it increasingly difficult to sell their power at a profit on open markets, because of competition primarily from gas but also from wind. Meanwhile, energy efficiency and distributed solar generation have reduced demand for electricity and are part of a fundamental shift which could significantly shrink the role of large, centralized power plants. Proponents describe nuclear energy as the ultimate clean fuel, with zero carbon or other harmful emissions and steady reliability. “Nuclear energy produces more clean-air energy than any other source and is the only one that can produce large amounts of electricity 24/7,” says a fact sheet from the Nuclear Energy Institute trade association. But nuclear critics point out the safety and environmental risks and long-term costs of nuclear power. And they fear that the nuclear industry's tactics could hamper renewable energy development at a crucial time. Illinois: Ground zero Nuclear energy provides almost half of Illinois’ electricity; wind and solar provide almost five percent and less than a tenth of a percent, respectively. Chicago-based Exelon, the country’s largest nuclear generator, has said that three of its six Illinois plants could close if state lawmakers don’t provide “market-based solutions” to help them become more profitable. A diverse group of business and clean energy interests are campaigning against an Exelon “bailout,” as critics call it, pegged at $580 million, saying citizens have already subsidized the company more than enough. Exelon’s fortunes have plummeted in recent years, though a report recently released by Illinois state agencies indicated the company is exaggerating the crisis facing its Illinois plants. As part of the report, required by a 2014 law pushed by Exelon, Illinois officials considered the possibility of a low-carbon energy standard similar to the state’s renewable standard. If nuclear energy were allowed to fulfill state clean energy goals, advocates fear the nuclear plants would overwhelm the program and leave little or no incentive for new renewable energy. Exelon also pressured state legislators last spring to halt a planned “fix” of the state’s renewable energy standard, which would have facilitated the development of more wind and solar power. New wind development in Illinois has stalled because of the problems with the standard. Legislation to fix it will likely be introduced again this spring, with Exelon again weighing in and trying to tie any changes to support for its nuclear plants. Ohio: Trouble in Toledo In Ohio, FirstEnergy successfully lobbied to suspend the state’s renewable energy and energy efficiency standards. Now FirstEnergy is asking that ratepayers be forced to pay a guaranteed rate for energy from the troubled Davis-Besse nuclear plant near Toledo, under a proposal pending before the Public Utilities Commission of Ohio. “Clearly FirstEnergy was seeing both energy efficiency and renewable energy as direct competitors,” said Allison Fisher, energy program outreach director of the watchdog group Public Citizen. “The arguments they were using were that these mandatory standards are distorting the market and are costly to ratepayers. But as soon as the standards were frozen, they turned around and proposed a plan that is looking to distort the market and going to cost $3 billion.” If the plan is approved, the Ohio Consumers’ Counsel estimates it could cost ratepayers an extra $3.2 billion. “It’s both their actions and the hypocrisy of their arguments that makes what they are doing so incredibly brazen,” Fisher continued. FirstEnergy spokespeople Doug Colafella and Jennifer Young said in written answers that the Economic Stability Program, as the proposal regarding Davis-Besse is called, is "designed to provide an additional opportunity for our customers to benefit from the competitive market." They said that studies by FirstEnergy and other entities project energy prices will rise, which could mean customers will actually benefit from buying the Davis-Besse power at a fixed price. In fact FirstEnergy estimates that rather than losing $3.2 billion, customers will save $2 billion through the plan. FirstEnergy’s generation mix is 57 percent coal, 23 percent nuclear, 8 percent natural gas and 11 percent renewables. FirstEnergy and the Nuclear Energy Institute say that the Davis-Besse plant pumps $1.1 billion into the state economy each year and is crucial to the region’s electricity supply. Regarding FirstEnergy's lobbying against the efficiency and renewable standards, the spokespeople said: "It was clear that the mandates imposed a significant cost to customers that had to be thoughtfully looked at. Ohio can continue to promote the wise use of our natural resources while lifting an undue cost burden on our customers, especially our job creators in Ohio." Renewable energy advocates say it is ironic that companies with nuclear plants are asking for government assistance because their plants are facing challenges on the open market – given that the same companies pushed for deregulation in years past, when nuclear plants stood to benefit from market conditions. “They are operating in a deregulated market, but they’re trying to re-regulate again,” said Fisher. “It’s important to remember that they’re failing in the marketplace and they’re not making changes to their business model, instead they’re going into the political and regulatory arenas. Their strategy is killing their competition by eliminating energy efficiency and renewable energy as incentivized [sources], then going to regulators asking to bail them out.” Nuclear engineer Arjun Makhijani, president of the Institute for Energy and Environmental Research, called the nuclear generators’ requests for subsidies “outrageous.” “These free-marketeers are going to the government with hat in hand whenever they have trouble raising revenues,” he said. “But when they make a lot of money they don’t offer to give the excess back to ratepayers." Why attack renewables? The advent of horizontal hydraulic fracturing (fracking) about a decade ago provided an abundant fuel for natural gas plants which can quickly ratchet up and down to match demand. Cheap natural gas has driven the closing of scores of coal plants nationwide, and has had a major impact on the nuclear industry. So why isn’t the nuclear industry trying to curb the influence of natural gas? Energy experts point to straightforward political and business reasons and the complicated structure of the auctions where energy is sold. “The fact of the matter is natural gas and wind power both compete with Exelon’s nuclear generation,” said Environmental Law & Policy Center director Howard Learner. “Exelon can’t do anything about the market price for natural gas, so Exelon is training its fire on trying to stop and hold off wind power and solar energy development.” Some companies that own nuclear generation are also heavily invested in natural gas. Nuclear makes up 81 percent of Exelon’s generation and 54 percent of its capacity, while natural gas makes up 10 percent of its generation and 22 percent of its capacity. Wind and solar make up 1.9 and 0.3 percent of Exelon’s generation, respectively. “One thing to understand about the nuclear industry is that nuclear is also the coal and natural gas industry,” said Tim Judson, executive director of the Nuclear Information and Resource Service, which published the September 2014 report “Killing the Competition” about nuclear attacks on renewables. “Wind and efficiency are just boutique elements of their portfolios.” Nuclear Energy Institute spokesman Thomas Kauffman said that the institute does not take a position on renewable energy subsidies and that it, “supports the Obama administration’s all-of-the-above energy strategy.” He declined to answer further questions and said that groups weighing in about recent developments have “a history of opposing nuclear power.” Colafella and Young of FirstEnergy said "we believe that a diverse mix of generating assets, including renewables, is needed to keep power flowing reliably and affordably." "Low market prices – which are largely driven by low-cost natural gas, not renewables – are putting pressure on baseload generating plants that reliably deliver power to our customers around the clock," they added. But, they reiterated they expect prices to rise, reviving the nuclear plants' profits. Auction action Nuclear energy and wind power are both known as “price-takers” in the regional auctions where generators sell their energy. In these auctions, all sellers get the same price for energy sold at a given time. They are all paid the price of the most expensive bid that is accepted into the auction to meet demand. Nuclear plants and wind turbines both generate energy very cheaply, even though the overall costs of maintaining and running a nuclear plant are high. Before the fracking revolution, natural gas-fired power was typically much more expensive than other sources, so nuclear and coal generators would enjoy getting paid at the same rate as natural gas. These days natural gas-fired power is cheap, but wind is even cheaper. So a lot of wind on the market not only edges out other energy sources in the auction, it also can lower the price that all players are paid for their energy. The nuclear industry is striking back at wind in a specific type of market known as capacity, where energy providers are essentially paid for promising to be ready to provide energy at peak times. The PJM regional market has adopted changes that greatly increase the capacity payments that Exelon’s nuclear plants will receive, while making it extremely difficult for wind and solar to benefit from these payments. Exelon lobbied hard for the changes, which must still be approved by federal regulators. Paradigm shift Nuclear companies also appear to oppose the proliferation of distributed solar and other renewable generation for the same reasons that apparently motivate utility companies like We Energies in Wisconsin. Even if renewables make up only a small amount of generation, they represent a shift to a more decentralized energy system, less reliant on big baseload coal or nuclear power plants. While Exelon’s unregulated generation arm runs the nuclear plants in Illinois, Exelon is also a regulated utility in the process of acquiring Washington D.C.-area Pepco Holdings, which would make it the country’s largest utility. “It goes back to the concept of maintaining the old model of utilities as long as possible because you have control, as opposed to something out of their control like solar panels on rooftops,” said Dave Kraft, director of the Nuclear Energy Information Service.

#### Fossil fuel tech is getting too expensive for use.

Sovacool and Cooper 8 Benjamin Sovacool (Research Fellow in the Energy Governance Program at the Centre on Asia and Globaliaztion, part of the Lee Kuan Yew School of Public Policy at the National University of Singapore, adjunct professor at the Virginia Polytechnic Institute & State University) and Christopher Cooper (Principal Partner for Oomph Consulting, LLC, former Executive Director of the Network for New Energy Choices) “Nuclear Nonsense: Why Nuclear Power is No Answer to Climate Change and the World's Post- Kyoto Energy Challenges” William & Mary Environmental Law and Policy Review Volume 33 Issue 1 Article 2 2008 h p://scholarship.law.wm.edu/wmelpr/vol33/iss1/2 JW

Other technologies, such as natural gas, coal, hydrogen, and fusion, are seen as too expensive, dirty, or unlikely to play a significant role in power generation anytime soon."° From 2002 to 2005, for example, operation and maintenance expenses for utilities in the U.S. rose by nearly $26 billion.0 7 Ninety-six percent of this increase was driven by rising fossil fuel prices, not because parts or labor had gotten more expensive.' 0 8 Aggregate fossil fuel costs nearly doubled between 2002 and 2005, from 2.3c/kWh to 4.4c/kWh.' °9 The overbuilding of gas-fired peaking plants has resulted in skyrocketing demand for natural gas, which, in turn caused gas prices to surge." ° Between 1995 and 2005, natural gas prices rose by an average offifteen percentperyear."' Coal, an even greater source offuel for elec- tricity generation, has not escaped the inflation in fossil fuel prices. In October 2003, the cost of coal in Central Appalachia was over thirty-five dollars per ton." 2 By August 2008, the price for a ton of coal in the same region had quadrupled to one-hundred-forty dollars a ton."' There is little likelihood, given increasing demands and low reserve margins," 4 that fossil fuel prices are likely to return to historic lows.

## Renewables Good

### Electricity Reliability

#### Renewables produce electricity more reliably than nuclear power.

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Advances in design, operation, and maintenance now enable these types of power technologies to generate electricity more reliably than nuclear plants. Geothermal, bioelectric, and hydroelectric plants have long provided reliable baseload power in the same fashion as nuclear plants. 87 One very recent 2008 assessment ofhydroelectric power in the U.S. found that by looking at just four possible resources-constructing new but smaller scale dams, upgrading existing facilities, adding power generators to non-hydroelectric dams, and commercializing hydro-kinetics-58,882 MW to 311,202 MW of installed baseload capacity was available."M That amount is equivalent to between 50 and 300 new nuclear reactors, and it already takes into account restrictive environmental standards.

### Cost

#### Renewables are cheaper than nuclear power.

Sovacool and Cooper 8 Benjamin Sovacool (Research Fellow in the Energy Governance Program at the Centre on Asia and Globaliaztion, part of the Lee Kuan Yew School of Public Policy at the National University of Singapore, adjunct professor at the Virginia Polytechnic Institute & State University) and Christopher Cooper (Principal Partner for Oomph Consulting, LLC, former Executive Director of the Network for New Energy Choices) “Nuclear Nonsense: Why Nuclear Power is No Answer to Climate Change and the World's Post- Kyoto Energy Challenges” William & Mary Environmental Law and Policy Review Volume 33 Issue 1 Article 2 2008 h p://scholarship.law.wm.edu/wmelpr/vol33/iss1/2 JW

In contrast to gargantuan nuclear units, most renewable power technologies tend to have quicker construction lead times, taking between a few months to five years to implement. There is no need for mining, milling, or leeching uranium, enriching and reprocessing fuel assemblies, or permanently storing radioactive waste. The quicker lead times for renewables enables a more accurate response to load growth, and minimizes the financial risk associated with borrowing hundreds of millions of dollars to finance plants for ten or more years before they start producing a single kW of electricity. Florida Power & Light ("FPL") claimed that it can take a new wind farm from groundbreaking to com- mercial operation in as little as three to six months.597 In 2005, Puget Sound Energy proved that FPL's boast was achievable in practice when it brought eighty-three 1.8 MW wind turbines at its Hopkins Ridge Wind Project from groundbreaking to commercial operation in exactly six months and nine days. 98 Wind turbines are not the only technology that can achieve these kinds of quick lead times. In Nevada, Ormat Nevada Incorporated commissioned a twenty MW geothermal power plant only eight months after groundbreaking on the facility.5 99 9 Sovacool, supranote 590, at 7. 55U. OF OREGON, APPENDIx A: ENERGY STORAGE TECHNOLOGIES A-2 (2001), availableat http://zebu.uoregon.edu/2001/ph162/append-overview.pdf. 59 Id.atA-4. 597 WORLDWATCH INSTITUTE & CENTER FOR AMERICAN PROGRESS, AMERICAN ENERGY: THE RENEWABLE PATH TO ENERGY SECURITY 16 (2006). 59 PSE poured the first foundation on May 18, 2005 and the Hopkins Ridge Wind Project began commercial operations on Nov. 27, 2005. Roger Garratt, Director, Resource Acqui- sition & Emerging Technologies, Puget Sound Energy, Exploring Wind & Solar Resources, Presentation atHarvesting Clean Energy Conference 6 (Jan.29,2008)(on filewith author). '" Press Release, Ormat Technologies, Inc., ORMAT's State ofthe Art Geothermal Power Plant, Commissioned Eight Months After Ground Breaking (Nov. 15,2005), availableat http://www.nevadarenewables.org/?section=news&id=419. network one week later.594 2008] NUCLEAR NONSENSE Solar panels can be built in various sizes, placed in arrays ranging from watts to megawatts, and used in a wide variety of applications, including centralized plants, distributed sub-station plants, grid con- nected systems for home and business use, and off-grid systems for remote power use.60 0 "PV systems have long been used to power remote data relaying stations critical to the operation of supervisory control and data acquisition systems used by electric and gas utilities and govern- ment agencies."' Solar installations may require even less construction time than wind or geothermal facilities since the materials are pre- fabricated and modular. The Partnership for Advancing Technology in Housing recently conducted a case study of one PV powered home, finding it required only a two month lead time for the panels.0 2 Utilities and investors can cancel modular plants more easily, so abandoning a project is not a complete loss, and the portability of most renewable systems means recoverable value exists should the technolo- gies need to be resold as commodities in a secondary market.0 3 Smaller units with shorter lead times "reduce the risk ofbuying a technology that .. becomes obsolete even before it's installed," and quick installations "can better exploit rapid learning," as "many generations of product development can be compressed into the time it would take simply to build a single giant [power plant].'OO In addition, outage durations tend to be shorter than those from larger plants and repairs for reciprocating gas and diesel engines take less money, time, and skill. As one study concluded, "[tiechnologies that deploy like cell phones and personal computers are faster than those that build like cathedrals. Options that can be mass-produced and adopted by millions of customers will save more carbon and money sooner than those that need specialized institu- tions, arcane skills, and suppression of dissent."60 5 Amazingly, the United Nations recently calculated in a study utilizing 2007 data collected from dozens of countries, that renewable power sources can produce incredibly cheap power without subsidies. At the low end of the range, hydroelectric, geothermal, wind, and biomass can all generate electricity for 7 c/kWh or less.606 See Table 4.

### Environment

#### Renewables are actually good for the environment.

Sovacool and Cooper 8 Benjamin Sovacool (Research Fellow in the Energy Governance Program at the Centre on Asia and Globaliaztion, part of the Lee Kuan Yew School of Public Policy at the National University of Singapore, adjunct professor at the Virginia Polytechnic Institute & State University) and Christopher Cooper (Principal Partner for Oomph Consulting, LLC, former Executive Director of the Network for New Energy Choices) “Nuclear Nonsense: Why Nuclear Power is No Answer to Climate Change and the World's Post- Kyoto Energy Challenges” William & Mary Environmental Law and Policy Review Volume 33 Issue 1 Article 2 2008 h p://scholarship.law.wm.edu/wmelpr/vol33/iss1/2 JW

Renewable power sources also require less land area than conventional generators, and most of the land they occupy is still "dual use." When configured in large centralized plants and farms, wind and solar technologies use around ten to seventy-eight square kilometers of land per installed GW per year, but traditional plants can use more than 100 square kilometers of land per year to produce the same amount of elec- tricity.630 In open and flat terrain, newer large-scale wind plants require about sixty acres per MW of installed capacity, but the amount drops to as little as two acres per MW for hilly terrain.6 31 While this may sound like a lot, only 5%, or three acres, of this area is actually occupied by turbines, access roads, and other equipment; 95% remains free for other compatible uses such as farming or ranching.6 32 Alan Nogee from Union of Concerned Scientists ("UCS") estimates that only a small fraction of contiguous land in the country, ranging from between 0.11% to 0.26%, would be needed to supply 20% of the nation's electricity from wind energy, and of that land, more than 98% would be available for other uses.633 At the High Winds Project in Solano, California, for example, eight different landowners host ninety separate 1.8 MW wind turbines that total 162 MW of electricity capacity, but are still able to use about 96% of farmland around and between the turbines.63 4 When integrated into building structures and facades, solar PV systems would require no new land at all. The California Exposition Center in Sacramento, California, for example, fully integrates 540 kW of PV into a parking lot. 5 Indeed, NREL concluded that, "a world relying on PV would offer a landscape almost indistinguishable from the landscape we know today."1 6 The Energy Policy Initiatives Center at the University of San Diego recently estimated that the city could construct 1532 GWh of solar PV relying only on available roof area downtown." In fact, the Worldwatch Institute noted that "[slolar power plants that concentrate sunlight in desert areas require 2,540 acres per billion kWh. On a lifecycle basis, this is less land than a comparable coal or hydro-power plant [gener- ating the same amount of electricity] requires .... .38 High-yield food crops leech nutrients from the soil, but the cultivation of biomass crops on degraded lands can help stabilize soil quality, improve fertility, reduce erosion, and improve ecosystem health." 9 Peren- nial energy crops improve land cover and enable plants to form an exten- sive root system, adding to the organic matter content of the soil.' ° Agricultural researchers in Iowa, for instance, discovered that planting grasses or poplar trees in buffers along waterways captured runoff from corn fields, making streams cleaner.64' "Prairie grasses, with their deep roots, build up topsoil, putting nitrogen and other nutrients into the ground."642 Twigs and leaves decompose in the field after harvesting, enhancing soil nutrient composition. Biomass crops can also create better wildlife habitats, since they frequently include native plants that attract a greater variety ofbirds and small animals, and poplar trees, sugar cane, and other crops can be grown on land unsuitable for food production."3

### Water

#### Renewables don’t waste water.

Sovacool and Cooper 8 Benjamin Sovacool (Research Fellow in the Energy Governance Program at the Centre on Asia and Globaliaztion, part of the Lee Kuan Yew School of Public Policy at the National University of Singapore, adjunct professor at the Virginia Polytechnic Institute & State University) and Christopher Cooper (Principal Partner for Oomph Consulting, LLC, former Executive Director of the Network for New Energy Choices) “Nuclear Nonsense: Why Nuclear Power is No Answer to Climate Change and the World's Post- Kyoto Energy Challenges” William & Mary Environmental Law and Policy Review Volume 33 Issue 1 Article 2 2008 h p://scholarship.law.wm.edu/wmelpr/vol33/iss1/2 JW

D. Water Renewables such as wind and solar PV do not consume or with- draw water, and hydroelectric, geothermal, and biomass facilities do not risk radioactive contamination ofwater supplies. The DOE acknowledges that renewables could play a key role in averting a "business-as-usual scenario" where "consumption ofwater in the electric sector could grow substantially."6 Another DOE report noted that "[gireater additions of wind to offset fossil, hydro-power, and nuclear assets in a generation portfolio will result in a technology that uses no water, offsetting water- dependent technologies." 5 Dr. Ed Brown, Director of Environmental Programs at the University of Northern Iowa, estimated that a 100 W solar panel would save approximately 2000 to 3000 gallons ofwater over the course of its lifetime." Similarly, Dr. Brown concluded that "billions of gallons of water can be saved every day" through the greater use of renewable energy technologies. 7 The American Wind Energy Association conducted one of the most comprehensive assessments of renewable energy and water consumption. Their study estimated that wind power uses less than 1/600th as much water per unit of electricity produced as does nuclear, 1/500th as much as coal, and 1/250th as much as natural gas-small amounts ofwater are used to clean wind and solar systems."' By displacing centralized fossil fuel and nuclear generation, clean power sources such as energy efficiency and renewables can conserve substantial amounts ofwater that would other- wise be withdrawn and consumed for the production of electricity.

### Warming

#### Renewables solve global warming better than nuclear power.

Sovacool and Cooper 8 Benjamin Sovacool (Research Fellow in the Energy Governance Program at the Centre on Asia and Globaliaztion, part of the Lee Kuan Yew School of Public Policy at the National University of Singapore, adjunct professor at the Virginia Polytechnic Institute & State University) and Christopher Cooper (Principal Partner for Oomph Consulting, LLC, former Executive Director of the Network for New Energy Choices) “Nuclear Nonsense: Why Nuclear Power is No Answer to Climate Change and the World's Post- Kyoto Energy Challenges” William & Mary Environmental Law and Policy Review Volume 33 Issue 1 Article 2 2008 h p://scholarship.law.wm.edu/wmelpr/vol33/iss1/2 JW

E. Lifecycle Emissions of Pollutants Every single renewable power technology is less greenhouse-gas- intensive than any sized nuclear power plant. A single, one MW wind turbine running at only 30% of capacity for one year, for example, dis- places more than 1500 tons of C0 2, 2.5 tons of sulfur dioxide, 3.2 tons of nitrogen oxides, and sixty pounds of toxic mercury emissions."S One study assessing the environmental savings of a 580 MW wind farm located on the Altamont Pass near San Francisco, California, concluded that the turbines displaced hundreds of thousands of tons of air pollutants each year that would have otherwise resulted from fossil fuel com- 6 s0 bustion. The study estimated that the wind farm will displace more than twenty-four billion pounds of nitrogen oxides, sulfur dioxides, particulate matter and CO2 over the course of its twenty year life- time-enough to cover the entire city of Oakland in a pile of toxic pollu- tion forty stories high. 5' Dedicated biomass electrical plants release no netC02emissions into the atmosphere, as long as they avoid combusting fossilized fuel, and produce fewer toxic gases. One study conducted by the Center for Energy Policy and Technology found that combined cycle biomass gasification plants produce one twentieth the amount of pollutants emitted by coal-fired power plants, and one tenth the pollution of equiv- alent natural gas plants.5 2 Landfill capture generators and anaerobic digesters harness methane and other noxious gases from landfills and transform them into electricity.5 3 This does not just produce useful energy, but also displaces greenhouse gases that would otherwise escape into the environment.654 Geothermal plants also have immense air quality benefits. "A typical geothermal plant using hot water and steam to generate electric- ity emits about 1 percent of the sulfur dioxide ("SO2"), less than 1 per- cent of the nitrous oxide ("NO."), and 5 percent of the C02 emitted by a coal-fired plant of equal size."655 Its airborne emissions are "essentially nonexistent" because geothermal gases are not released into the atmo- sphere during normal operation.656 Another study calculated that the geothermal plants currently in operation throughout the U.S. avoid 32,000 tons of NO., 78,000 tons of SO2, 17,000 tons of particulate mat- ter, and sixteen million tons of CO 2 emissions every single year.65 7 All forms of hydroelectric generation combust no fuel, meaning they produce little to no air pollution in comparison with conventional power plants. Luc Gagnon and Joop F. van de Vate conducted a full lifecycle assessment ofhydroelectric facilities, and focused on the activi- ties related to building of dams, dykes, and power stations; decaying biomass from flooded land, where plant decomposition produces methane and C0 2; and the thermal backup power needed when seasonal changes cause hydroelectric plants to run at partial capacity.65 They found that typical emissions of greenhouse gases for hydro-power were still thirty to sixty times less than those from equally sized fossil-fueled stations.659 In terms of climate change, and greenhouse gases, the IAEA estimates that when direct and indirect carbon emissions are included, coal plants are about seven times more carbon intensive than solar and fifty times more carbon intensive than wind technologies.66 ° Natural gas fares little better, at two times the carbon intensity of solar and twenty seven times the carbon intensity ofwind.66' In the U.S., the DOE esti- mates that "every kilowatt-hour (kWh) of renewable power avoids the emission of more than one pound of carbon dioxide."662 According to data compiled by UCS, achieving twenty percent renewables penetration by 2020 would reduce CO 2 emissions by 434 million metric tons, the equiva- lent of taking nearly seventy-one million automobiles off the road.663 An almost identical study published in Energy Policy found that biomass facilities were about ten times cleaner than the best coal technolo- gies and that wind, solar electric, and hydroelectric systems were almost 100 times cleaner than the cleanest coal-fueled system.' Martin Pehnt from the Institute for Energy and Environmental Research in Heidelberg conducted lifecycle analyses of fifteen separate distributed generation and renewable energy technologies and found that all but one-solar PV-emitted much less carbon dioxide or other greenhouse gases per kilo- watt hour than nuclear reactors.' In an analysis using updated data, researchers from Brookhaven National Laboratory found that current esti- mates of the greenhouse gas emissions for a typical solar PV system range from twenty-nine to thirty-five grams of carbon dioxide equivalent] kWh," significantly less than the equivalent emissions for nuclear power.6 7 Nuclear energy proponents may argue that these estimates compare base-load energy sources, such as nuclear, to intermittent or non-dispatchable sources, such as wind and solar PV. However, if these updated numbers are correct, then renewable energy technologies are two to seven times more effective on a per kWh basis than nuclear power at fighting climate change. Therefore, even the deployment ofmuch more intermittent renewable capacity to generate equivalent amounts of energy would still more effectively address climate change than relying on deployment of base-load nuclear or fossil fueled generators.

### Safety

#### Renewables are safe.

Sovacool and Cooper 8 Benjamin Sovacool (Research Fellow in the Energy Governance Program at the Centre on Asia and Globaliaztion, part of the Lee Kuan Yew School of Public Policy at the National University of Singapore, adjunct professor at the Virginia Polytechnic Institute & State University) and Christopher Cooper (Principal Partner for Oomph Consulting, LLC, former Executive Director of the Network for New Energy Choices) “Nuclear Nonsense: Why Nuclear Power is No Answer to Climate Change and the World's Post- Kyoto Energy Challenges” William & Mary Environmental Law and Policy Review Volume 33 Issue 1 Article 2 2008 h p://scholarship.law.wm.edu/wmelpr/vol33/iss1/2 JW

F. Safety Unlike the scores of nuclear accidents discussed above, not a single major energy accident in the past century involved small-scale renewable energy systems or energy efficiency, whereas fossil fueled, nuclear, and larger hydroelectric facilities were responsible for 279 accidents totaling forty-one billion dollars in damages and 182,156 deaths.668 An investigation ofenergy-related accidents in the European Union found that nuclear power was forty-one times more dangerous than equivalently sized coal, oil, natural gas, and hydroelectric projects. 6 9 Nuclear plants were at risk of killing about forty-six people for every GW-year of power produced.7 ° A database of major industrial accidents from 1969 to 1996 compiled by the Paul Scherrer Institute found that 31%, or 4290 out of 13,914, were related to the fossil fuel sector.67' Another study concluded that about 25% ofthe fatalities caused by severe accidents worldwide in the period 1970 to 1985 occurred in the conventional energy sector. 72 Even if we were to assume that a massive expansion of renewable energy systems may increase the likelihood of industrial accidents within the sector, any reasonable estimate would find that renewables are a far safer alternative to nuclear or fossil fuels.

### Security

#### Renewables don’t have security problems.

Sovacool and Cooper 8 Benjamin Sovacool (Research Fellow in the Energy Governance Program at the Centre on Asia and Globaliaztion, part of the Lee Kuan Yew School of Public Policy at the National University of Singapore, adjunct professor at the Virginia Polytechnic Institute & State University) and Christopher Cooper (Principal Partner for Oomph Consulting, LLC, former Executive Director of the Network for New Energy Choices) “Nuclear Nonsense: Why Nuclear Power is No Answer to Climate Change and the World's Post- Kyoto Energy Challenges” William & Mary Environmental Law and Policy Review Volume 33 Issue 1 Article 2 2008 h p://scholarship.law.wm.edu/wmelpr/vol33/iss1/2 JW

Since modern renewable technology enables utilities to remotely dispatch hundreds of scattered units, it also improves the ability of utilities to handle peak load and grid congestion problems. Another PG&E analysis, comparing fifty 1-MW distributed solar PV plants to one .50-MW central plant in Kerman, California, found that the grid advan- tages, in forms of load savings and congestion, more than offset the disadvantages, in terms of high capital cost and interconnection, of installing the new generation. 79 The use of renewables also diversifies the "fuels" used to gener- ate electricity, thereby minimizing the risk of fuel interruptions, short- ages, and accidents. Together, renewable power technologies can in- crease security by reducing the number of large and vulnerable targets on the grid, providing insulation for the grid in the event of an attack, and minimizing foreign dependence on uranium. While renewable technologies are constantly derided as intermittent or variable, it is far more certain to rely on the sun shining and the wind blowing than to rely on a system that saboteurs could easily disrupt by blowing up a single power station or snipping a few transmission lines. Renewables are far more resilient and far less attractive a target to possible attack- ers than the ever-tempting nuclear power plant, spent fuel repository, or uranium mine.

# AT: CPs

## AT: SMRs

#### SMR Technology fails – they’ll never be cost competitive enough to get used – subsidies are a waste

Alexander 14. Ryan Alexander (Ryan Alexander is president of Taxpayers for Common Sense.), 5-7-2014, "Throwing Good Money After Bad Nuclear Reactors," US News & World Report, http://www.usnews.com/opinion/economic-intelligence/2014/05/07/government-should-get-out-of-the-small-nuclear-reactor-business, accessed 9-4-2016. NP

bracketed for grammar

When investors pull money out of certain technologies and companies shift resources to pursue other opportunities, what story does that tell? These signs that the marketplace are leaving a technology on the shelf suggest any number of things: an absence of demand, evidence that the proposed technology is too expensive or simply unworkable, or maybe even that another competing technology is better and cheaper. These market signals are exactly what we are seeing for small modular reactors, a technology that some have argued would transform the nuclear power industry. Despite the availability of generous federal subsidies, private investors and companies are withdrawing support and scaling back or cancelling their development projects in this area. In December, the Department of Energy awarded NuScale Power funding to support up to half of the costs of developing the “NuScale Power Module.” At the time of the award, NuScale heralded its technology as “an innovative, simple, safe, economic and scalable small modular reactor.” And yet, recently, NuScale, along with others, has withdrawn support or scaled back its internal small modular reactor development programs. Babcock & Wilcox, which was previously awarded DOE funding to support its own project, mPower, sought to sell that division earlier this year and had trouble finding a buyer and is significantly scaling back investments in small modular reactor technology. Westinghouse also declared that it would be reducing investments in its reactors project. [See a collection of political cartoons on energy policy.] The industry is recognizing something that seems like it should have been obvious all along: small modular reactor technology is a pipe dream. The idea of hot-tub sized nuclear reactors is simply beyond the reach of commercial pricing. New, traditional, large-scale nuclear reactors are not cost competitive in the face of other energy prices, particularly natural gas, and traditional nuclear reactors rely on decades of experience of design and construction (also, decades of experience of cost overruns, but that is a story for another day). Small modular reactors would have to produce energy at less than half the cost of conventional reactors to compete, and not even the most outspoken proponent suggests that is possible. So what is the reaction of the Department of Energy to all these clear indicators that the private sector does not think these reactors are commercially viable? So far, DOE has shown no signs of acknowledging these market realities. In the president’s budget proposal in March, DOE proposed a 30 percent increase in the Small Modular Reactor Licensing and Technical Support Program, increasing allotted funding by $27 million to a total of $97 million. And at a recent appropriations committee hearing, Department of Energy Secretary Ernie Moniz affirmed DOE’s commitment to the program. At Taxpayers for Common Sense, we have a general skepticism of energy subsidies, not only because they distort the marketplace, but they [and] have historically proven very difficult to undo. (Witness, for example, the more than 100 years some of the subsidies for oil and gas have been on the books). So even when the marketplace sends clear signals, as we see in the case of small modular reactors, the subsidy train moves forward. At a time when belt-tightening continues not only in Washington but all over the country, continuing to back a misguided subsidy program is simply the wrong path. The Department of Energy should suspend or, better yet, cancel the small modular reactor program immediately.

#### SMRs have massive problems – they will lower security and safety standards to keep operation costs low

Makhijani 16. Dr. Arjun Makhijani, (Dr. Arjun Makhijani is president of the Institute for Energy and Environmental Research. ) 2-3-2016, "The problems with small nuclear reactors," http://thehill.com/blogs/congress-blog/energy-a-environment/166609-the-problems-with-small-nuclear-reactors, accessed 9-4-2016. NP.

Even in a budget-slashing environment, the U.S. Department of Energy has already requested $67 million in FY2012 to pay for part of the design certification and licensing for up to two designs. Sixteen bipartisan House members have sent a letter in support of this subsidy. Meanwhile, Sen. Jeff Bingaman (D-N.M.), chair of the Senate Energy Committee, has introduced a bill to require the development of two SMR designs, as have Reps. Jason Altmire (D-Pa.) and Tim Murphy (R-Pa.). The arguments of the proponents are alluring: since they are small, SMRs could be cheaply mass produced in factories and quickly erected on site. Being small, no single reactor would be a "bet the farm" risk. Most seductively, there would be highly paid industrial jobs right here in the United States; SMRs would just roll off the assembly lines like the Model Ts of yesteryear in contrast to the custom made Lamborghinis of today. The devil, as usual, is in the details. For instance, the cost of a nuclear reactor per unit of electrical generating capacity declines with increasing size. This is because, contrary to intuition, larger reactors use less material per unit of capacity than smaller reactors. When the size of given type of reactor is reduced from 1,000 to 100 megawatts, the amount of material used per megawatt will more than double. And the notion that U.S. workers would get the bulk of the factory jobs is entirely fanciful, given the rules of the World Trade Organization on free trade. Most likely the reactors would be made in China or another country with industrial infrastructure and far lower wages. And what would we do if the severe quality problems with Chinese products, such as drywall and infant formula, afflict reactors? Will there be a process for recalls, as has happened with factory products from Toyotas to Tylenol? How do you recall a radioactively-contaminated, mass-produced nuclear reactor if it has problems? There are economies of scale associated with security, too. Today, large crews staff a reactor control room round-the-clock and guard the site**. To reduce** operating costs, some vendors are advocating to lower the number of security staff and to require only one operator for three modules, raising serious questions about whether there would be sufficient personnel in the event of an accident or attack. The same problem is associated with safety. The cost of electricity from SMRs would skyrocket if each reactor had to have its own secondary containment structure. Such containment is needed to prevent large-scale releases of radioactivity in case of a severe accident. To ameliorate this problem, it has been proposed to put a number of SMRs in a single containment structure. The result is that a typical reactor project would still have to be very large with several reactors per project; a single small reactor at a site would become prohibitively expensive if security and safety standards are to be maintained. This would defeat the purpose of the flexible "modular" design. All these problems would be associated with SMRs even if we stuck with the basic design approach - light water reactors - that is well-known. They would be compounded with new rector designs and new types of waste. Nuclear power advocates have long promised far more than they can deliver, ignoring essential hurdles such as cost, safety, and performance. Decades of experience, however, have proven those promises to be hollow and hazardous. The notion that "small is beautiful" for nuclear reactors is not just fanciful; it is whistling past the graveyard of the "nuclear renaissance" that never was.

#### SMRs increase risk of groundwater contamination in accidents, and prevent effective cleanup operations

Benedict 13.Kennette Benedict, (Kennette Benedict is a senior adviser to the Bulletin of the Atomic Scientists and served as Executive Director and Publisher from 2005 until she retired in February 2015. She is adjunct professor at the Harris School of Public Policy at the University of Chicago. Previously, Benedict was the Director of International Peace and Security at the John D. and Catherine T. MacArthur Foundation, overseeing grant-making on a broad international security agenda, as well as supporting efforts to reduce the threat from weapons of mass destruction and an initiative on science, technology, and security. Benedict has taught at the University of Illinois at Urbana-Champaign, and at Rutgers University, New Brunswick. She has published numerous columns and articles about nuclear weapons and disarmament, nuclear power, climate change, and global governance, and has made many media appearances regarding those issues. Benedict received her BA from Oberlin College and her PhD in political science from Stanford University.) 2-12-2013, "Are small nuclear reactors the answer?," Bulletin of the Atomic Scientists, http://thebulletin.org/are-small-nuclear-reactors-answer, accessed 9-4-2016

Proponents of smaller nuclear power plants argue that they will reduce the risk of core meltdowns from loss of power or terrorist attacks, thanks to their proposed placement below ground as well as new design features that do not rely on human operators for safety. In the event of an accident or deliberate attack, the resulting meltdown could be better contained, or so the theory goes. But while placing a smaller plant underground might reduce the risk of atmospheric dispersal of radionuclides following an accident, that below-grade siting might hamper clean-up operations and be more likely to contaminate ground water. And the safety features that small-reactor designers have proposed—based on forces of physics like gravity, convection, and conduction rather than human intervention—could also be used in a large 1 GWe plant.

#### SMR’s employ the same dangerous technology but make regulation more difficult

Smith 11. By Gar Smith, (Gar Smith is editor emeritus of Earth Island Journal, former editor of Common Ground magazine and former editor of the Pesticide Action Network magazine. He is a multiple Project Censored award-winning investigative journalist. Prior to joining Earth Island Institute, he worked with Dave Brower at Friends of the Earth, serving as a reporter, columnist, and art director. At FOE, he researched and wrote the award-winning documentary, Cry of the Condor.) 2011 "Don’t Mini-mize the Dangers of Nuclear Power," No Publication, http://www.earthisland.org/journal/index.php/eij/article/dont\_mini-mize\_the\_dangers\_of\_nuclear\_power/, accessed 9-4-2016. NP.

The Fukushima disaster has severely hobbled the atomic industry’s hopes for a big-ticket nuclear renaissance. So the American Nuclear Society has proposed a mini-renaissance based on “Small Modular Reactors,” or SMRs. Cheaper, quicker to build, and small enough to fit in a garage, SMRs could power homes, factories, and military bases. South Carolina’s Savannah River National Laboratory hopes to start building SMRs at a New Mexico plant and is taking a lead role in a GE-Hitachi demonstration project. Even as Japanese engineers were working to contain the radiation risks at Fukushima, an international SMR conference in South Carolina in April attracted representatives from Westinghouse, AREVA, GE, the International Atomic Energy Agency, China National Nuclear Corp., Iraq Energy Institute, the US Army, and many US utilities. But SMRs still depend on designs that generate intense heat, employ dangerous materials (highly reactive sodium coolant), and generate nuclear waste. SMRs also retain all the risks associated with supplying, maintaining, safeguarding, and dismantling large nuclear reactors – only now those risks would be multiplied and decentralized. The planet can’t afford nuclear energy – be it mega or mini. As Dave Brower observed 30 years ago: “Is the minor convenience of allowing the present generation the luxury of doubling its energy consumption every 10 years worth the major hazard of exposing the next 20,000 generations to this lethal waste? “We are at the edge of an abyss and we’re close to being irrevocably lost,” Dave warned. “As the Welshman Allen Reese puts it: ‘At the edge of the abyss, the only progressive move you can make is to step back.’”

#### Current SMR designs can’t effectively prevent accidents, not enable effective accident cleanup

Lyman 13. Edwin Lyman. (Edwin Lyman is a senior scientist in the Union of Concerned Scientists Global Security Program. The Union of Concerned Scientists puts rigorous, independent science to work to solve our planet’s most pressing problems. Joining with citizens across the country, we combine technical analysis and effective advocacy to create innovative, practical solutions for a healthy, safe, and sustainable future) Small Isn't Always Beautiful Safety, Security, and Cost Concerns about Small Modular Reactors. www.ucsusa.org/sites/default/files/legacy/assets/documents/nuclear\_power/small-isnt-always-beautiful.pdf Union of Concerned Scientists, September 2013. Pg 10. NP 8/4/16.

The need to reduce SMR capital costs is driving one important passive safety system—the containment structure—to be smaller and less robust. None of the iPWR designs has a containment structure around the reactor with sufficient strength and volume to withstand the forces generated by overpressurization and hydrogen explosions in severe accidents. SMRs therefore must rely on means to prevent hydrogen from reaching explosive concentrations. However, neither active means (hydrogen igniters) nor passive means (hydrogen recombiners) of hydrogen control are likely to be as reliable as a robust containment. Also, small containment designs will generally result in a greater coupling of the core and the containment, which has potentially negative safety consequences, as became clear after Fukushima Daiichi. The close coupling of the reactor vessel and containment characteristic of its Mark I boiling water reactors resulted in overpressurization of the containments at Units 1, 2, and 3, which made it difficult to inject emergency cooling water into the reactor vessels. Some SMR vendors propose to locate their reactors underground, which they argue will be a major safety benefit. While underground siting would enhance protection against certain events, such as aircraft attacks and earthquakes, it could have disadvantages as well. Again at Fukushima Daiichi, emergency diesel generators and electrical switchgear were installed below grade to reduce their vulnerability to seismic events, but that location increased their susceptibility to flooding. Moreover, in the event of a serious accident, emergency crews could have greater difficulty accessing underground reactors. Underground siting of reactors is not a new idea. Decades ago, both Edward Teller and Andrei Sakharov proposed siting reactors deep underground to enhance safety. However, it was recognized early on that building reactors underground increases cost. Numerous studies conducted in the 1970s found construction cost penalties for underground reactor construction ranging from 11 to 60 percent (Myers and Elkins). As a result, the industry lost interest in underground siting. This issue will require considerable analysis to evaluate trade-offs. And if it proves to be advantageous to safety, it remains to be seen whether reactor owners will be willing to pay for the additional cost of underground siting.

### A2 Safety

#### Your evidence answers the wrong question – even if one SMR is safer than an individual reactor, multiple SMRs will replace each large reactor, creating more hazards

Lyman 13. Edwin Lyman. (Edwin Lyman is a senior scientist in the Union of Concerned Scientists Global Security Program. The Union of Concerned Scientists puts rigorous, independent science to work to solve our planet’s most pressing problems. Joining with citizens across the country, we combine technical analysis and effective advocacy to create innovative, practical solutions for a healthy, safe, and sustainable future) Small Isn't Always Beautiful Safety, Security, and Cost Concerns about Small Modular Reactors. www.ucsusa.org/sites/default/files/legacy/assets/documents/nuclear\_power/small-isnt-always-beautiful.pdf Union of Concerned Scientists, September 2013. Pg 10. -11 NP 8/4/16.

SMR proponents also point out that the risk to the public from small reactors is lower than that from large reactors, by virtue of the fact that there is less radioactive material in the core. While that is certainly true, it is not the most useful comparison. The relevant factor with regard to societal risk is not the risk per unit, but the risk per megawatt of electricity generated. By this measure, small reactors do not necessarily imply smaller risks if there are more of them. To see why, consider the impact on risk if one large unit is replaced with multiple smaller units providing the same total power. If the probability of core damage is comparable for small reactors and large reactors, then the total site risk—the probability of an accident multiplied by its consequence—will also be comparable in both cases (see Figure 1). Indeed, the overall site risk for the multiple SMRs could actually be higher than for a single reactor. The scenario in Figure 1 assumes the damage probabilities and the consequences for the multiple reactors are independent. But they will not be independent unless the potential for common-mode failures and interactions between the multiple reactors are fully addressed. While underground siting would enhance protection against certain events, it could have disadvantages as well. SMALL ISN'T ALWAYS BEAUTIFUL 11 In order for individual reactor units to remain independent, the number of support staff and amount of safety equipment would need to increase with the number of units on a site. Only through significant sharing of systems and personnel by multiple units, however, could the associated cost increase be moderated. Thus, the SMR vendors want to reduce the number of control rooms and licensed operators that the NRC would ordinarily require for a certain number of units. For example, the NuScale design could have a single control room operator in charge of as many as 12 units, the feasibility of which would have to be verified through performance testing

### A2 Cost

#### SMR’s are super expensive – SMRs have high production, regulation and decommissioning costs.

Cooper 14, Mark. (Ph.D., Senior Fellow for Economic Analysis: Institute for Energy and the Environment, Vermont Law School)THE ECONOMIC FAILURE OF NUCLEAR POWER AND THE DEVELOPMENT OF A LOW CARBON ELECTRICITY FUTURE: WHY SMALL MODULAR REACTORS ARE PART OF THE PROBLEM, NOT THE SOLUTION. https://www.nirs.org/reactorwatch/newreactors/cooper-smrsaretheproblemnotthesolution.pdf May 2014.

THE ECONOMIC CHALLENGE The case for SMRs is forced to assume an irresponsibly rapid rush to market because its viability as a technology and its role as a response to climate change diminish dramatically if it takes too long to roll the technology out. Indeed, even within the time frame claimed by the advocates, the case for SMRs rests on a series of assumptions and policy demands that are questionable and hotly debated. Exhibit II-1, identifies the characteristics that are claimed as the source of advantage for SMRs. The analysis below examines the claims of potential advantage in terms of the two types of advantages claimed, supply-side cost and demand-side value. It shows that they are more like dark clouds that hang over the future of small modular nuclear technology rather than advantages. High Cost on the Supply-Side: Overcoming Lost Economies of Scale At the start of the SMR hype cycle, the assumption was that the “nuclear renaissance” technologies would succeed. The low-cost “renaissance” reactors would meet the demand for large, central station power. SMRs, exhibiting similar costs per kwh, would meet additional needs for smaller units. The initial challenge was to explain how the diseconomies of scale of SMRs would be overcome (see Exhibit II-2). That is, there are certain large costs that have to be incurred regardless of the size of the reactor and these costs decline on a per MW of capacity basis as they are spread across larger units. Economists say they exhibit economies of scale.58 Because SMRs are small, they forgo these benefits of economies of scale. EXHIBIT II-2: POTENTIAL SMR CAPITAL COST ADVANTAGES MODEL SMR advocates argued that the economies of scale lost by building smaller reactors would be offset by economies of mass production. Offered at the height of the “nuclear renaissance” hype, this analysis acknowledged that on a per unit basis, small reactors have a substantial cost disadvantage. Westinghouse estimated that the diseconomy of small size would make the cost per 21 MW about 75 percent higher than the cost of a large reactor.59 Westinghouse argued that the diseconomies of small size would be offset by economies of mass production of standardized units, as assembly lines of standardized modular units would achieve learning benefits faster to lower costs. The mass production and savings were hypothesized based on the experience in other industries, not rooted in the nuclear sector. 60 Repeating the historic pattern for nuclear power, the SMR hype cycle appears to have begun with a vendor authored analysis of how SMRs would overcome their inherent cost disadvantage. The original vendor’s promotional claims were regurgitated repeatedly, but the origin as a vendor promotion is obscured in the literature and the hypothetical economic process becomes gospel among the advocates of SMRs. 61 Some critics of the analysis offered a number of challenges.62 • The diseconomies of small unit construction go well beyond the basic problems identified (the surface area of the reactors and containment structures) to include lost economies in dedicated systems for control, management, and emergency response and the cost of licensing and security. • The economies of mass manufacturing were too optimistic because mass manufacturing has problems when applied to production of a relatively small numbers of very costly pieces of equipment. • While the project size for individual utility deployments would be smaller, the challenge of creating a massive assembly line requires huge amounts of capital, suffers from a startup problem (chicken and egg), and will not sustain competition to drive innovation or cost reduction. • The SMR design raises problems of reactor repair, waste retrieval, and decommissioning. Ironically, the initial estimates of SMR costs were tied to the extremely low estimates of large reactor costs, which have doubled since the initial SMR cost analysis was presented. One can argue that the SMR costs should reflect the dramatic escalation in the large reactor costs for two reasons. • SMR technology will suffer disproportionately from material cost increases because the underlying diseconomies of scale of SMRs suggests that they embody more material per MW of capacity. • The design of the first “renaissance” reactor took 16 revisions to pass muster. Overly optimistic assumptions about how quickly new designs can be approved by regulators will greatly affect SMR technology because of the novel, even radically new characteristics of the design.

#### SMRs aren’t cheaper – production line defects and delays in projects make SMRs more expensive in the long run

Lyman 13. Edwin Lyman. (Edwin Lyman is a senior scientist in the Union of Concerned Scientists Global Security Program. The Union of Concerned Scientists puts rigorous, independent science to work to solve our planet’s most pressing problems. Joining with citizens across the country, we combine technical analysis and effective advocacy to create innovative, practical solutions for a healthy, safe, and sustainable future) Small Isn't Always Beautiful Safety, Security, and Cost Concerns about Small Modular Reactors. www.ucsusa.org/sites/default/files/legacy/assets/documents/nuclear\_power/small-isnt-always-beautiful.pdf Union of Concerned Scientists, September 2013.

According to basic economic principles, the cost per kilowatt-hour of the electricity produced by a small reactor will be higher than that of a large reactor, all other factors being equal. That is because SMRs are penalized by the economies of scale of larger reactors—a principle that drove the past industry trend to build larger and larger plants (Shropshire). For example, a 1,100 MWe plant would cost only about three times as much to build as a 180 MWe version, but would generate six times the power, so the capital cost per kilowatt would be twice as great for the smaller plant (see, e.g., the economies of scale formula used by Carelli et al.). SMR proponents argue that other factors could offset this difference, effectively reversing the economies of scale. For example, efficiencies associated with the economics of mass production could lower costs if SMRs are eventually built and sold in large numbers. Such factors are speculative at this point, however, and the degree to which they might reduce costs has not been well characterized. A 2011 study found that even taking into account all the factors that could offset economies of scale, replacement of one 1,340 MWe reactor with four 335 MWe units would still increase the capital cost by 5 percent (Shropshire). The potential cost benefits of assembly-line module construction relative to custom-built on-site construction may also be overstated. Moreover, **mista**kes on a production line can lead to generic defects that could propagate through an entire fleet of reactors and be costly to fix. The experience to date with construction of modular parts for the nuclear industry has been troubling. For example, a plant to fabricate modules (built in Lake Charles, Louisiana, by the Shaw Group, later acquired by Chicago Bridge and Iron) for the AP1000s under construction in Georgia and South Carolina has had serious production delays and other problems that have caused slips in the construction schedules and cost escalation for those projects. In April 2013, the NRC subpoenaed documents from Shaw regarding possible falsification of quality assurance documents and cited the company for creating “Affordable” doesn’t necessarily mean “cost-effective.” SMALL ISN'T ALWAYS BEAUTIFUL 5 a “chilled work environment” to dissuade workers from raising safety concerns (Freebairn).

## AT: Thorium

#### Thorium reactors are more dangerous – they produce more waste and radiation.

Rees 11. Eifion Rees, (Eifion Rees is a writer currently based in the UK. He has published articles in the Ecologist, London Lite, TimesOnline & Guardian Public. ) 6-23-2011, "Don't believe the spin on thorium being a greener nuclear option," Guardian, https://www.theguardian.com/environment/2011/jun/23/thorium-nuclear-uranium, accessed 9-4-2016. NP

All other issues aside, thorium is still nuclear energy, say environmentalists, its reactors disgorging the same toxic byproducts and fissile waste with the same millennial half-lives. Oliver Tickell, author of Kyoto2, says the fission materials produced from thorium are of a different spectrum to those from uranium-235, but 'include many dangerous-to-health alpha and beta emitters'. Tickell says thorium reactors would not reduce the volume of waste from uranium reactors. 'It will create a whole new volume of radioactive waste from previously radio-inert thorium, on top of the waste from uranium reactors. Looked at in these terms, it's a way of multiplying the volume of radioactive waste humanity can create several times over.' Putative waste benefits – such as the impressive claims made by former Nasa scientist Kirk Sorensen, one of thorium's staunchest advocates – have the potential to be outweighed by a proliferating number of MSRs. There are already 442 traditional reactors already in operation globally, according to the International Atomic Energy Agency. The by-products of thousands of smaller, ostensibly less wasteful reactors would soon add up. Anti-nuclear campaigner Peter Karamoskos goes further, dismissing a 'dishonest fantasy' perpetuated by the pro-nuclear lobby. Thorium cannot in itself power a reactor; unlike natural uranium, it does not contain enough fissile material to initiate a nuclear chain reaction. As a result it must first be bombarded with neutrons to produce the highly radioactive isotope uranium-233 – 'so these are really U-233 reactors,' says Karamoskos. This isotope is more hazardous than the U-235 used in conventional reactors, he adds, because it produces U-232 as a side effect (half life: 160,000 years), on top of familiar fission by-products such as technetium-99 (half life: up to 300,000 years) and iodine-129 (half life: 15.7 million years).Add in actinides such as protactinium-231 (half life: 33,000 years) and it soon becomes apparent that thorium's superficial cleanliness will still depend on digging some pretty deep holes to bury the highly radioactive waste. With billions of pounds already spent on nuclear research, reactor construction and decommissioning costs – dwarfing commitments to renewables – and proposed reform of the UK electricity markets apparently hiding subsidies to the nuclear industry, the thorium dream is considered by many to be a dangerous diversion. Energy consultant and former Friends of the Earth anti-nuclear campaigner Neil Crumpton says the government would be better deferring all decisions about its new nuclear building plans and fuel reprocessing until the early 2020s: 'By that time much more will be known about Generation IV technologies including LFTRs and their waste-consuming capability.' In the meantime, says Jean McSorley, senior consultant for Greenpeace's nuclear campaign, the pressing issue is to reduce energy demand and implement a major renewables programme in the UK and internationally – after all, even conventional nuclear reactors will not deliver what the world needs in terms of safe, affordable electricity, let alone a whole raft of new ones. 'Even if thorium technology does progress to the point where it might be commercially viable, it will face the same problems as conventional nuclear: it is not renewable or sustainable and cannot effectively connect to smart grids. The technology is not tried and tested, and none of the main players is interested. Thorium reactors are no more than a distraction.'

#### Thorium waste is super radioactive and susceptible to accidents

Wauchope 13. (Noel Wauchope is a long time campaigner against nuclear power who was shocked, as a child, by the atomic bombings of Hiroshima and Nagasaki. She is recently retired from work and holds a Bachelor of Education (Secondary). She has taught science and spent time as a Registered Nurse as well as writing for the Nation Review.)  [Noel Wauchop](https://independentaustralia.net/profile-on/noel-wauchope,56)e. Independent Australia, 1-27-2013, "Don't believe thorium nuclear reactor hype ," https://independentaustralia.net/environment/environment-display/dont-believe-thorium-nuclear-reactor-hype,4919, accessed 9-4-2016. NP

But actually, with LFTRs, yes, there is a smaller volume of waste, but it is more intensively radioactive. The reactor itself, at the end of its lifetime, will constitute high level waste: 'With or without reprocessing, these fission products have to be disposed of in a geologic repository.' “Thorium reactors are safe” Wrong. For one thing: 'Any bomb dropped on a thorium reactor will result in a catastrophic accident.' For another, in '...an LFTR the main danger has been shifted from the reactor to the on-site continuous fuel reprocessing operation – a high temperature process involving highly hazardous, explosive and intensely radioactive materials. A further serious hazard lies in the potential failure of the materials used for reactor and fuel containment in a highly corrosive chemical environment, under intense neutron and other radiation.

#### Thorium reactors aren’t cost competitive or developed enough to be a viable option

Rees 11. Eifion Rees, (Eifion Rees is a writer currently based in the UK. He has published articles in the Ecologist, London Lite, TimesOnline & Guardian Public. ) 6-23-2011, "Don't believe the spin on thorium being a greener nuclear option," Guardian, https://www.theguardian.com/environment/2011/jun/23/thorium-nuclear-uranium, accessed 9-4-2016. NP

Brackets in original

In a world increasingly aware of and affected by global warming, the news that 2010 was a record year for greenhouse gases levels was something of a blow. With the world's population due to hit nine billion by 2050, it highlights the increasingly urgent need to find a clean, reliable and renewable source of energy. India hopes it has the answer: thorium, a naturally occurring radioactive element, four times more abundant than uranium in the earth's crust. The pro-thorium lobby claim a single tonne of thorium burned in a molten salt reactor (MSR) – typically a liquid fluoride thorium reactor (LFTR) – which has liquid rather than solid fuel, can produce one gigawatt of energy. A traditional pressurised water reactor (PWR) would need to burn 250 tonnes of uranium to produce the same amount of energy. They also produce less waste, have no weapons-grade by-products, can consume legacy plutonium stockpiles and are meltdown-proof – if the hype is to be believed. India certainly has faith, with a burgeoning population, chronic electricity shortage, few friends on the global nuclear stage (it hasn't signed the nuclear non-proliferation treaty) and the world's largest reserves of thorium. 'Green' nuclear could help defuse opposition at home (the approval of two new traditional nuclear power reactors on its west coast led to fierce protests recently) and allow it to push ahead unhindered with its stated aim of generating 270GW of energy from nuclear by 2050. China, Russia, France and the US are also pursuing the technology, while India's department of atomic energy and the UK's Engineering and Physical Sciences Research Council are jointly funding five UK research programmes into it. There is a significant sticking point to the promotion of thorium as the 'great green hope' of clean energy production: it remains unproven on a commercial scale. While it has been around since the 1950s (and an experimental 10MW LFTR did run for five years during the 1960s at Oak Ridge National Laboratory in the US, though using uranium and plutonium as fuel) it is still a next generation nuclear technology – theoretical. China did announce this year that it intended to develop a thorium MSR, but nuclear radiologist Peter Karamoskos, of the International Campaign to Abolish Nuclear Weapons (ICAN), says the world shouldn't hold its breath. 'Without exception, [thorium reactors] have never been commercially viable, nor do any of the intended new designs even remotely seem to be viable. Like all nuclear power production they rely on extensive taxpayer subsidie**s**; the only difference is that with thorium and other breeder reactors these are of an order of magnitude greater, which is why no government has ever continued their funding.' China's development will persist until it experiences the ongoing major technical hurdles the rest of the nuclear club have discovered, he says. Others see thorium as a smokescreen to perpetuate the status quo: the world's only operating thorium reactor – India's Kakrapar-1 – is actually a converted PWR, for example. 'This could be seen to excuse the continued use of PWRs until thorium is [widely] available,' points out Peter Rowberry of No Money for Nuclear (NM4N) and Communities Against Nuclear Expansion (CANE). In his reading, thorium is merely a way of deflecting attention and criticism from the dangers of the uranium fuel cycle and excusing the pumping of more money into the industry. And yet the nuclear industry itself is also sceptical, with none of the big players backing what should be – in PR terms and in a post-Fukushima world – its radioactive holy grail: safe reactors producing more energy for less and cheaper fuel. In fact, a 2010 National Nuclear Laboratory (NNL) report (PDF)concluded the thorium fuel cycle 'does not currently have a role to play in the UK context [and] is likely to have only a limited role internationally for some years ahead' – in short, it concluded, the claims for thorium were 'overstated'. Proponents counter that the NNL paper fails to address the question of MSR technology, evidence of its bias towards an industry wedded to PWRs. Reliant on diverse uranium/plutonium revenue streams – fuel packages and fuel reprocessing, for example – the nuclear energy giants will never give thorium a fair hearing, they say. But even were its commercial viability established, given 2010's soaring greenhouse gas levels, thorium is one magic bullet that is years off target. Those who support renewables say they will have come so far in cost and efficiency terms by the time the technology is perfected and upscaled that thorium reactors will already be uneconomic. Indeed, if renewables had a fraction of nuclear's current subsidies they could already be light years ahead.

#### Thorium will take a super long time to be viable

Wauchope 13. (Noel Wauchope is a long time campaigner against nuclear power who was shocked, as a child, by the atomic bombings of Hiroshima and Nagasaki. She is recently retired from work and holds a Bachelor of Education (Secondary). She has taught science and spent time as a Registered Nurse as well as writing for the Nation Review.)  [Noel Wauchop](https://independentaustralia.net/profile-on/noel-wauchope,56)e. Independent Australia, 1-27-2013, "Don't believe thorium nuclear reactor hype ," https://independentaustralia.net/environment/environment-display/dont-believe-thorium-nuclear-reactor-hype,4919, accessed 9-4-2016. NP

Thorium reactors are the latest flavour in nuclear power hype. According to their enthusiastic proponents, these reactors will be “smaller, safer, cheaper, cleaner”, will take over the energy market in great numbers, and ...will reinvent the global energy landscape and sketch an end to our dependence on fossil fuels within three to five years. Yet the present situation of thorium nuclear reactors is a confusing one. While on the one hand, thorium as a nuclear fuel, and thorium reactors are being hyped with enthusiasm in both mainstream media and the blogosphere, the nuclear lobby is ambivalent about this. The explanation becomes clearer, when you consider that the nuclear industry has sunk $billions into new (uranium or plutonium fuelled) large nuclear technologies, as well as into lobbying governments and media. Would big corporations like Hitachi, EDF Westinghouse, Toshiba, Areva, Rosatom be willing, or indeed able, to withdraw from the giant international operations that they already have underway? Would they, could they, tolerate a mass uptake of the new thorium nuclear reactors — which is what would be needed, to make the thorium market economical? Yet, the nuclear lobby, in Australia and overseas, doesn’t just tolerate the thorium hype, they participate in it — although with not as much enthusiasm as the diehard thorium fans. Now, why is this? The answer lies in just one concept — time. It is going to take many decades to get the thorium fuel cycle happening. The global nuclear industry has the twin goals of prolonging the life of currently operating nuclear reactors, and of building new ones. Their rationale for this is often that, eventually, the energy solution will be nuclear fusion. So in the meantime, the world needs nuclear power — or so they argue. But nuclear fusion is still little more than a super-expensive glint in the eye of nuclear boffins. Some other dream is needed — something that looks a bit more like it might happen. The thorium excitement fits the bill as, once again, the public can be made to believe that, after all the disasters and disappointment, now there really is safe, cheap nuclear power. The thorium advocates usually promote thorium reactors as a solution to both climate change and energy needs. But in reality, thorium nuclear energy is irrelevant to both. Again, the first reason is time. Although there are current designs that could be established in 10 to 15 years, the most favoured design – the Liquid Fluoride Thorium Reactor (LFTR) – is estimated to have, for a significant deployment, a lead time of 40 to 70 years. In the meantime, renewable energy – notably wind and solar technologies – are being developed and deployed at a fast rate. Thorium reactors, like all things nuclear, have challenging regulatory and funding requirements. Which brings us to the economics of thorium reactors. They are promoted as small reactors. The makers have to have contracts for thousands before they can afford to start! Significant and expensive testing, analysis and licensing work is required first, requiring extensive business and government support. The fuel cycle is more costly and the needed protections for workers, plant safety and the public are considerably more than for existing fuels. Compared to uranium, the thorium fuel cycle is likely to be even more costly. In a once-through mode, it will need both uranium enrichment (or plutonium separation) and thorium target rod production. In a breeder configuration, it will need reprocessing, which is costly. As Dr Peter Karamoskos says: Without exception, [thorium reactors] have never been commercially viable, nor do any of the intended new designs even remotely seem to be viable. Like all nuclear power production they rely on extensive taxpayer subsidies; the only difference is that with thorium and other breeder reactors these are of an order of magnitude greater, which is why no government has ever continued their funding. So far, I have touched only on these practicalities of the long lead time and the poor economics of thorium nuclear reactor as reasons why they will not be the global energy answer. Next let's examine the mythology of Thorium-reactorism — the arguments used to tout this new nuclear dream. Many writers have refuted these myths. For instance, you may hear advocates of thorium claim: "Thorium reactorscreate no weapons proliferation hazard."

### A2 Prolif

Thorium’s just as susceptible to use in nuclear bombs

Mckenna 12. Phil Mckenna, (Mckenna is a freelance writer who primarily writes about energy and the environment. He’s written for the the New York Times, Smithsonian, WIRED, Audubon, New Scientist, Technology Review, MATTER and NOVA Next. He recently published Uprising, an eBook on the climate change implications of natural gas emissions from aging pipelines under US cities. Uprising won the 2013 AAAS Kavli Science Journalism Award and the 2014 NASW Science in Society Award and has been called “the essence of crucial science reporting” by environmental writer and activist Bill McKibben. He has a master's degree in science writing from MIT and was an environmental journalism fellow at Middlebury College.) 12-5-2012, ""Superfuel" Thorium a Proliferation Risk?," Popular Mechanics, http://www.popularmechanics.com/science/energy/a11907/is-the-superfuel-thorium-riskier-than-we-thought-14821644/, accessed 9-4-2016

"It may not be as resistant as touted and in some cases the risk of proliferation may be worse than other fuels," says Stephen Ashley of the University of Cambridge. In an article published in the journal Nature online today, Ashley and his colleagues highlight the potential dangers of thorium fuel. When thorium is irradiated, or exposed to radiation to prepare it for use as a fuel in nuclear reactions, the process forms small amounts of uranium-232. That highly radioactive isotope makes any handling of the fuel outside of a large reactor or reprocessing facility incredibly dangerous. The lethal gamma rays uranium-232 emits make any would-be bomb-maker think twice before trying to steal thorium. But Ashley and his co-authors say a simple tweak in the thorium irradiation recipe can sidestep the radioactive isotope's formation. If an element known as protactinium-233 is extracted from thorium early in the irradiation process, no uranium-232 will form. Instead, the separated protactinium-233 will decay into high purity uranium-233, which can be used in nuclear weapons.