

In Favor of Entrenchment: Justifying Geoengineering Research in Democratic Systems

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ABSTRACT

This paper critically evaluates the ability of structurally democratic governments to address long-term, existential problems such as climate change using the example of geoengineering. The solution to these problems is to curtail strict democracies and, instead, entrench the right of future generations in valid constitutions.

Climate change is a problem that harms current generations and that will continue to harm future generations. Current generations are harmed as a result of changing temperatures, rising ocean levels, and unpredictable weather patterns. Future generations will experience much more severe effects. Most ethical theories acknowledge that individuals have some obligation to future generations. Unfortunately, this acknowledgement does not always translate into the field of political theory. Because of moral facts about representation and non-moral facts about the motivation that individuals have for stepping foot in the political arena, current democratic political institutions are ill-equipped to implement policies on behalf of current generations. This is a serious problem when it comes to solving for the harms caused by climate change. One potential solution to climate change is geoengineering—the new realm of “deliberate large-scale intervention in the Earth’s natural systems to counteract climate change.”¹ However, democracy has difficulty justifying this solution. In order to rightfully implement long-term climate change solutions like geoengineering research, it is necessary for democratic political institutions to entrench the rights of future generations in their constitutions.

This paper will first establish a two-pronged problem for democracy. Then, it will apply that problem to geoengineering. After addressing potential solutions

1 Oxford Geoengineering Programme. “What is geoengineering?” University of Oxford Martin School. 2018.

to the geoengineering dilemma, this paper advocates for entrenching the rights of future generations into a democratic constitution as a solution for the two problems discussed in the first two sections of the paper. Finally, this paper addresses multiple counterarguments to entrenchment and concludes that entrenchment is, in fact, a viable solution to justifying geoengineering research in the policy arena.

I. A PROBLEM FOR DEMOCRACY

If we assume that we have some obligations to future generations, then it is necessary to solve a two-pronged problem for dealing with claims of intergenerational justice in modern democratic societies. Although some people claim that democracy has many benefits related to the idea that citizens get to have input in important political decisions through electing representatives and voting on specific policies, a major downside of the democratic procedure is that on a purely structural level, it is ill-equipped to solve long-term problems.

The first prong of this democratic dilemma is that procedural accounts of representative democracy require that representatives be responsive to their constituents. This occurs through voting and tests of public approval. Neither of these methods allow representatives the leeway to directly make decisions on behalf of future generations as future generations are not the constituents of political representatives—as they do not yet exist. It is impossible for future generations to elect representatives or even have any measurable approval or disapproval for current policies. For policies with long time horizons, it will only be after the policies are implemented that future generations will weigh in on whether they approve of said implemented policy. This concern over time horizons establishes the second prong of the problem of integrating concerns about intergenerational justice in democratic procedures—because representatives want to be elected and maintain high approval ratings, they will often choose to focus on short-term projects. These short-term projects are policies that current people prioritize in their day-to-day lives. While this prong is an issue in general for democracy's ability to pass policies that address long-term problems, it is especially problematic in the case of policy concerning climate change. While many people are in favor of addressing climate change, they rarely vote for a politician based on a policy to address climate change. Even if a small portion of the population did vote in this manner, it would still be difficult for policymakers to collectively act to pass policies that mitigate climate change as they need to cater to all constituents. For example, as in the case of America's coal industry, politicians will often advocate for investing in economic advances that lead to increased resource use.

One might have an easy answer to this and say that politicians can simply

invest in decoupling in order to satisfy both current and future peoples. However, this two-pronged problem is not so easily addressed in cases where these sorts of justifications for certain environmental policies in a representative democracy reach counterintuitive conclusions that run in opposition to the interest of current people.

II. THE DILEMMA OF GEOENGINEERING

If we are to accept the context above claim that democracy is unable to establish a stable obligation to future generations, then a dilemma regarding geoengineering becomes apparent—geoengineering research to “arm the future” is unjustified and undesirable while actually implementing geoengineering is justified.

Current geoengineering research focuses on the possibility of manipulating the Earth in such a way as to mitigate—or, hopefully, to solve for—the effects of climate change. While there are many proposals in the scientific community regarding specific forms of geoengineering such as injecting sulfate aerosols into the Earth’s atmosphere to increase the Earth’s albedo and decrease the Earth’s temperature, all forms of current geoengineering research are affected by the dilemma of democratic procedure.² There exists an important higher-order claim in discussions of policy justification that the rationale for certain advocacies and the way that those rationales interact within an overarching political framework is important for determining the extent to which policies are justified.³ Proponents of geoengineering research often make the argument that even if our current population is not in favor of actually implementing geoengineering, it is important to “arm the future” with the information needed to implement geoengineering if future generations are put into a position where they must implement geoengineering for their own survival.⁴

Contrastingly, a rationale for *implementing* geoengineering does not categorically ignore the overarching context of democracy. An argument of this sort could proceed in the following fashion: current people are being harmed as a result of climate change. Constituents also have an interest in mitigating climate change. There has already been substantial research into geoengineering policies that prove it is both feasible and cost-effective. Therefore, there is a justification

2 Gardiner, Stephen M. “Is ‘Arming the Future’ with Geoengineering Really the Lesser Evil?” *Climate Ethics*. Oxford University Press, Oxford, UK, 2010, pp. 285.

3 Gardiner, Stephen M. “Is ‘Arming the Future’ with Geoengineering Really the Lesser Evil?” *Climate Ethics*. Oxford University Press, Oxford, UK, 2010, pp. 285.

4 Keith, David W. “Toward a Responsible Solar Geoengineering Research Program.” *Issues in Science and Technology*. National Academies of Sciences, Engineering, and Medicine: The University of Texas at Dallas, Arizona State University, 2017, pp. 77.

for politicians to support the implementation of geoengineering to benefit current people.⁵ This is not mere conjecture—in recent memory, members of the Environmental Protection Agency in the United States have lobbied for funds for real-world geoengineering testing and testified to congress proclaiming the wonders of geoengineering.⁶ Members of the Trump administration and high-level Republicans have publicly advocated for geoengineering as a method of solving for climate change and some pundits claim that their reason for doing this lies in protecting the interest of constituents in the oil industry.⁷ ⁸ Current people have an interest in implementation and would benefit from a successful deployment of, for example, stratospheric spraying—the introduction of “small, reflective particles into the upper atmosphere to reflect some sunlight before it reaches the surface of the Earth” would act as a way to almost immediately decrease the temperature of the planet and mitigate the current effects of climate change.⁹

The question then becomes why politicians have not made more of an attempt to secure funds to create a real-world test for geoengineering. The answer is deceptively simple—people may not like climate change, but they also do not like the idea of messing with the environment or they believe that there exists a slippery slope in geoengineering, potentially leading to continued adjustments of the environment.¹⁰ While public opinion might be in favor of the idea of researching geoengineering, they are wary of implementation.

III. ONE POTENTIAL RESPONSE TO THE GEOENGINEERING DILEMMA

One might claim that interest in geoengineering research within the current population is reason enough for politicians to advocate for it. This is not a cat-

5 Keith, David. *A Case for Climate Engineering*. MIT Press: Cambridge, MA, 2013, pp. 9.

6 Lukacs, Martin. “Trump presidency ‘opens door’ to planet-hacking geoengineer experiments.” *The Guardian*, 27 March, 2017.

7 While the particular group advocating for geoengineering might be members of the oil industry, they are not the only ones who would benefit from a successful deployment of geoengineering. Climate change is a threat to everyone on the planet. The world’s current economy is somewhat dependent on oil. Politicians would (ideally) not only consider the interests of oil companies in a decision to implement geoengineering. They would seek to look at the wider effects on the overall economy and constituents who do not work at oil companies. In the context of implementing geoengineering successfully and ending the effects of climate change for current people, people outside the oil industry would benefit from the decision.

8 Lukacs, Martin. “Trump presidency ‘opens door’ to planet-hacking geoengineer experiments.” *The Guardian*, 27 March, 2017.

9 Oxford Geoengineering Programme. “What is geoengineering?” University of Oxford Martin School. 2018.

10 Keith, David W. “Toward a Responsible Solar Geoengineering Research Program.” *Issues in Science and Technology*. National Academies of Sciences, Engineering, and Medicine: The University of Texas at Dallas, Arizona State University, 2017, pp. 73.

egorical solution—it is only contingent on the beliefs of current people and those beliefs could change. If geoengineering research proved to be useful and effective, it might be the case that current people would lose interest in its novelty. Support for policies can fade, and in the case of climate change it would be a mistake to let solutions be determined solely by what could be transient interest. If one accepts that a successful implementation of geoengineering will take time, resources, and extensive research then it can be argued that choosing to stop researching geoengineering is a harm to the future generation that requires that research for its survival.

IV. ADDRESSING THE DEMOCRATIC AND THE GEOENGINEERING DILEMMAS

Up until this point, this paper has put forth two problems—democracy’s two-pronged dilemma and the geoengineering paradox. The two-pronged dilemma states, first, that democracy does not have a structure to address the interest of future citizens and, second, that it is ill-equipped to work on long-term projects to address long-term issues. The geoengineering paradox has been presented as an application of democracy’s two-pronged dilemma and states that democracy justifies implementing geoengineering but not researching it. If one accepts these problems and believes that we have some obligation to future generations, then a solution is needed.

A solution to democracy’s two-pronged dilemma and the geoengineering paradox is for democratic states to entrench the rights of future generations in their constitutions and laws using legal language that requires policymakers to maintain a certain element of respect for future generations. This would entail positively affirming that human rights extend to the future. Ideally, this entrenchment would be flexible and focus on ideals of intergenerational equality—it would prioritize the interest of future generations to maximize their ability for free choice and maintain a standard of living that is at least at the median of the standard of living of current generations. The content and interpretation of the entrenchment of the rights of future generations is somewhat variable, but the benefits to entrenchment are multifold.

First, entrenchment would allow policymakers to permissibly make decisions in the interest of future generations and avoid the first prong of the democratic problem. It would provide a structural justification for pursuing policies beyond that which can be justified by an obligation to be responsive to their constituency. Although future generations still cannot express approval or disapproval for current policies, a policymaker has reason to virtually represent their interests to the best of their ability.

The second benefit is also clear—entrenchment solves the second prong of the democratic problem. Entrenchment provides a constitutional obligation to give care towards future generations and take on long-term projects. Even in cases where short-term projects might support a bid for reelection, policymakers must consider whether these short-term projects conflict with the rights of future generations. A practical example can be seen in a political debate on whether to invest in jobs in coal or green energy. Although coal jobs might have some small, short-term benefits to a single politician’s constituency, it would be impermissible to make a conscious choice to support an industry that has the ability to exacerbate environmental harms. Instead, the politician might advocate for investing in renewable energy and training programs to transition coal miners to work at a new renewable energy plant. In cases where there are geographic concerns about the feasibility of renewable energy, the burden of the politician would be to determine whether any industry practices could be changed in order to improve the sustainability of the local coal plant. Entrenchment implies consideration of the future rather than a categorical prioritization of interests.

Third, and most relevant to the geoengineering dilemma, entrenchment allows for there to be an overarching political context that legitimizes the rationale for research in the name of “arming the future.” It allows politicians to support geoengineering research even in the context where the benefits of the policy will not be realized for decades-long after their time in office is done. It represents fulfilling a contractual obligation. If a politician were to propose a policy that would violate the constraints of entrenchment, then she would be liable to something like impeachment. Impeachment acts as a way to punish politicians who break laws. As entrenching the rights of future generations would be akin to proposing a law constraining conduct, the violation of entrenchment would be a violation of the law. This would give individuals and structures within the government the ability to impose sanctions on those policymakers who would seek to disrespect future generations.

V. RESPONDING TO POTENTIAL OBJECTIONS TO ENTRENCHMENT

Even if one accepts that entrenching basic rights for future generations addresses democracy’s two-pronged dilemma and the geoengineering dilemma, there are still a few powerful objections to entrenchment.

A. ENTRENCHMENT IS UNDEMOCRATIC

One could make the argument that any entrenchment of any value into a constitution is undemocratic as it could constrain the ability of policymakers to

be responsive to their constituents. Values that are entrenched in a constitution—a document made by one group of people that often continues on to future generations—do not always represent the views of current people. To entrench the rights of future generations in a constitution would be to impose values on future generations; something inherently undemocratic.

This is a relatively weak argument for two main reasons. First, entrenchment in this case is something that allows for procedural fairness and respects democratic tenets of equality. If one was a proponent of democracy, then she would advocate for both of these features as prerequisites for a democratic process to take place.

Second, and most powerfully in the context of this paper, entrenchment explains the reason that the paradox of geoengineering exists. People often recognize respect for future generations as a value that they either have or ought to have. Although they themselves may disagree with implementing geoengineering, that does not mean that they categorically want to take that choice away from others. Although democracies do not necessarily need to possess liberal values, they often do because of concerns about fairness and equality. In order to ensure that future generations maintain an ability to choose, it is necessary to implement certain political protections against current generations unknowingly limiting the options of future generations.

B. AN EPISTEMIC WORRY

One more powerful objection to entrenchment is the notion that current people do not even know what is in the interest of future people. After all, one of the benefits of democracy is that people can voice their own interests and concerns to policymakers. Future people cannot do this as they do not yet exist. Norms and values change over time, and opinions about policy can often be shaped by these changes. Apart from a concern about what interests future people will have, there may also be a second, purely epistemic worry that consists of something akin to the following: we cannot know what the future holds with any certainty, and we cannot make policy to address problems that we do not know about. Therefore, any policy to help the future will rely on incomplete information.

First, this epistemic question applies to current people too. If individuals do not vote, policymakers are still tasked with considering them in their decisions. We do not say that they have done something wrong if policymakers make an imperfect decision—we only say they made a mistake when the decision they make directly violates the rights of those people who are not their constituents. For example, a decision to invest in infrastructure in one town that 40% of the town refrained from voting on. That by itself is not a problem. If the infrastructure investment requires bulldozing the home of someone who did not vote for this

plan, then that person could say that her personal rights were disrespected and the policymaker did something wrong.

Second, certain interests have remained the same. Basic goods that are key to survival are a prerequisite for having higher order interests, interests that relate to ethical determinations of what a good life would entail. In terms of higher order interests, “although moral variety undoubtedly exists, it is less extensive than is often supposed...[as] commonalities define the distinctively human forms of life.”¹¹ Certain interests are human interests, and entrenchment focuses on the consideration of these interests. Even if one disagrees with the idea that there can be one common conception of the “good life” as espoused by the Skidelskys’, approaches of determining a good life based on what a rational individual would want or what capabilities we wish individuals to have also require attention to ensuring basic goods. Basic goods are “in general necessary for the framing and the execution of a rational plan of life” and capabilities require asking “what is so-and-so able to do and be?”¹² Food, clean water, and shelter are all requirements for safe living, and all of those requirements are threatened by climate change.

Third, in terms of the specific policy of “arming the future” with geoengineering research, current people are not telling the future what to do. Instead, current people would be maximizing the choices that the future can make by providing them with information. Entrenchment as a justifying account of why it would be permissible to “arm the future” does not entail an epistemic overreach as no decision is being made; the future does not need to use the information that they would be given. They have the freedom to refuse to implement geoengineering if *they* do not believe it is what is best for them.

Finally—to address the purely epistemic worry that nobody can predict the future on a policy level—it is important to recognize that it is likely the case that climate change will pose an existential risk to some future generation. Although it is always difficult to calculate epistemic uncertainty, it is plausible to say that we are relatively certain that if climate change is currently affecting people, it will likely affect future people as well. It is also worth noting that in our current democratic system, policymakers *do* recognize climate change as an existential risk to future generations and often act in the international arena to combat it like with the Kyoto Protocol or the Paris Accords.¹³

11 Skidelsky, Edward and Skidelsky, Robert. *How Much is Enough?: Money and the Good Life*. New York, NY, 2012, pp. 146-147.

12 Skidelsky, Edward and Skidelsky, Robert. *How Much is Enough?: Money and the Good Life*. New York, NY, 2012, pp. 147-148.

13 Even if someone accepts that treaties, recycling, and cutting back on emissions are 100% effective and will save the planet, it does not undermine this paper. This paper is centrally focused on how entrenchment is one solution to democracy’s problems in justifying geoengineering research underneath the assumption that we have

C. PRIORITIZING THE PRESENT

Another strong objection to entrenchment is the worry that policymakers would be prohibited from prioritizing the present. If there are side constraints against harming the future, policymakers may feel like they either cannot make any decision or can only make decisions that benefit the future for fear of being impeached for shirking their duties to the future.

First, this misunderstands the goal of entrenchment. Entrenchment states that there is a prohibition against harming future generations with current policies. It prohibits policymakers from ignoring future generations in their calculations. It allows policymakers to permissibly take action that benefits future generations without someone claiming that they are shirking their obligations to the present. It does not state that policymakers should *only* prioritize future generations; it simply places a side constraint on what sorts of policies can be permissibly implemented. We still may not harm the present with our policies.

Second, stating that a certain group has rights that should be protected does not imply that the current generation does not have rights. Entrenching the rights of future people does not take away the rights of current people. Certain policies might prioritize future people over current people, but in the case of justifying climate change policy that is not the case, especially when it comes to geoengineering research to “arm the future.”¹⁴

Third, to address the worry about undue prioritization in regard to taxation, there is a mistake in assuming that geoengineering research does not benefit current people. Scientific research has numerous fringe benefits. It benefits scientists and educational institutions in terms of providing funding and jobs as well as attracting new talent. Furthermore, there is no guarantee that an individual’s taxes go towards something that will benefit her in specific terms. If someone agrees to exist within the bounds of government and pay taxes, she agrees to pay for a set of government services rather than a specific service. There is no real mechanism to withhold a person’s taxes from being used towards services that do not directly benefit her as money is fungible.

Finally, a worry about considering the interests of future people is akin to worrying about the interests of current people. A democratic system gives everyone input into the decision-making process, but equality of input does not entail

some obligation to future generations. The issue of international treaties also brings up another implied limit to this paper’s argument— this paper addresses a single democratic state’s obligation to its own people and it does so in a vacuum. Obligations to other states in the international arena are not discussed because this paper is short.

14 Someone could respond that geoengineering research does harm the present because it increases the risk that geoengineering would actually be deployed. This response depends on research falling into the wrong hands or a complete lack of ability to track people capable of performing the science necessary to implement geoengineering— conditionals easily preventable with smart policy decisions and resources that a politician would need to consider as a part of their obligation to current generations.

that everyone's input will be included in the final decision. Consideration of future interest does not imply that those interests will always override current interests; it is the job of policymakers to make reasoned decisions rather than a problem with entrenchment.

To this final response, there is a separate worry, namely the way that democracy often considers interests is via some majority rules system. It is because of this that there can exist a tyranny of the majority where the interests of the minority are systematically discounted. If consideration of future people is meant to mean that policymakers are to consider each of the votes of the infinite future people, then it may mean that in a democratic system would always side with the infinite future people because they numerically outweigh current people.

This interpretation of entrenchment is a mistake. First, consideration of basic interests does not require counting individual votes as the interests remain the same and simply act as a constraint. Second, side constraints on what policymakers can permissibly vote for exist in our current system in order to curtail the harms of the tyranny of the majority. While individual policies can fall into the trap of the tyranny of the majority, policymakers do not have the right to infringe on the basic rights of the minority.

VI. CONCLUSION

If one wishes to justify funding geoengineering research to “arm the future,” then it is necessary to solve democracy's two-pronged problem and address its relationship with the dilemma of geoengineering. While policymakers have the ability to make any law, it is important that the laws they create are justified by a broader framework. By entrenching the rights of future generations to basic necessities that would be harmed by climate change, policymakers would have a codified reason to invest in policies that can “arm the future” with information about how to quickly counteract climate change.

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