

FOSSIL FUEL ABOLITION: LEGAL AND SOCIAL ISSUES

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I. INTRODUCTION

The scientific community agrees that release of over 565 gigatons of carbon dioxide equivalents into the atmosphere through 2050 would cause global warming in excess of the maximum tolerable level.¹ The Fifth Assessment Report of the Intergovernmental Panel on Climate Change (“IPCC”) is even more pessimistic with regard to the maximum tolerable level.² We have already burned through 570 gigatons of carbon dioxide equivalent (“CO₂e”)—out of one teraton available—leaving only 430 gigatons of burnable carbon remaining.³ Ever.

Currently, attempts to reduce the greenhouse gas (“GHG”) emissions rate—both domestically and globally—have focused on gradual reductions to achieve a sustainable rate by 2050. To date, these efforts have proven completely unsuccessful: carbon emissions global rates continue to increase.⁴ Although the IPCC has concluded that global greenhouse gas emissions must be cut between fifty and eighty percent by 2050,⁵ neither the now-lapsed Kyoto Protocol nor the most recent voluntary national commitments have come close.⁶ There is no realistic prospect that sustainable global controls on greenhouse gas emissions will be adopted in the next decade. Instead, the global community is on track to surpass the one teraton available in the next fifteen to twenty years.⁷ At that point, the only way to avoid climate catastrophe will be the cessation of emissions: the global abolition of fossil fuels. Abolition will be necessary, even though proven fossil fuel reserves of approximately two teratons of CO₂e will still be in the ground.⁸

1. See discussion *infra* Part II.

2. See *id.*; see also IPCC, CLIMATE CHANGE 2014: IMPACTS, ADAPTATION, AND VULNERABILITY, TOP LEVEL FINDINGS FROM THE WORKING GROUP II AR5 SUMMARY FOR POLICY MAKERS, https://www.ipcc.ch/report/ar5/wg2/docs/WGIIAR5_SPM_Top_Level_Findings.pdf [<https://perma.cc/B8XL-5ZGB>] [hereinafter IPCC TOP LEVEL FINDINGS].

3. See discussion *infra* Part II.

4. See Alex Pashley, *CO₂ Levels Make Largest Recorded Annual Leap*, *NOAA Data Shows*, *GUARDIAN* (Mar. 10, 2016, 11:34 AM), <http://www.theguardian.com/environment/2016/mar/10/co2-levels-make-largest-recorded-annual-leap-noaa-data-shows> [<https://perma.cc/N8QG-LQMZ>].

5. See IPCC TOP LEVEL FINDINGS, *supra* note 2.

6. See Max Paris, *Kyoto Climate Change Treaty Sputters to a Sorry End*, *CBC NEWS* (Dec. 31, 2012), <http://www.cbc.ca/news/politics/kyoto-climate-change-treaty-sputters-to-a-sorry-end-1.1184986> [<https://perma.cc/QUX8-UFXR>].

7. See discussion *infra* Part II.

8. See *id.*

Climate change's scientific logic mandates that abolition will be necessary. Although the climate activism movement has only recently explicitly adopted this goal, the inexorable math of the climate problem has made this result apparent for years. Political commentators have observed that abolition is the logical endpoint of the climate conundrum and have begun to speculate about the economic dislocations involved under the mantle of "The New Abolitionism." In 2008, Al Gore—one of the most prominent political advocates with regard to climate change—argued that fossil fuel use needed to be terminated within a decade.⁹ The Group of Seven ("G7") has called to end fossil fuel use by 2100.¹⁰ Even the Saudi Arabian Minister of Petroleum and Mineral Resources has been quoted as envisioning an end to fossil fuels by mid-century.¹¹

This Article will examine the practical, ethical, legal, and socio-political implications of fossil fuel abolition. First, the Article will consider the practical, ethical, and legal arguments in favor of fossil fuel abolition. Then, the Article will examine possible legal means and authorities to implement abolition in the United States, as well as potential legal objections to fossil fuel abolition. Finally, the Article will consider legal abolition's capacity to effect the far-reaching changes in our socio-economic system that a ban on fossil fuels will entail. The Article also will compare the climate reform movement to other social law reform movements in the past, including the civil rights movement, the temperance movement, and the slavery abolition movement. The Article concludes that there are strong practical, ethical, and legal arguments for fossil fuel abolition. However, the climate activism movement must mature before it is likely to achieve the necessary social consensus to implement abolition.

9. Elana Schor, *Gore Calls for End of Using Fossil Fuels for Electricity in US by 2018*, GUARDIAN (July 17, 2008, 2:34 PM), <http://www.theguardian.com/world/2008/jul/17/algore.energyefficiency> [https://perma.cc/NX58-KL2F].

10. Kate Connolly, *G7 Leaders Agree to Phase Out Fossil Fuel Use by End of Century*, GUARDIAN (June 8, 2015), <http://www.theguardian.com/world/2015/jun/08/g7-leaders-agree-phase-out-fossil-fuel-use-end-of-century> [https://perma.cc/2P49-XNQA].

11. Michael Rose, *Saudi Oil Minister Sees Eventual End of Fossil Fuels*, REUTERS (May 21, 2015, 11:10 AM), <http://www.reuters.com/article/2015/05/21/us-saudi-oil-climate-idUSKBN0061Y520150521?mod=related&channelName=ousivMolt> [https://perma.cc/FM86-TVJV].

II. THE SCOPE OF THE PROBLEM

Even among the environmental community, the monumental social and economic changes necessary to avoid catastrophic climate changes are not fully understood. Simply convincing everyone to switch their light bulbs to compact fluorescent lighting and to trade in their conventional automobiles for hybrids will not be sufficient. Social commentators, in addition to recent economic and technical studies, have established that it is possible to convert to a zero-carbon renewable energy economy.¹² However, the studies assume some fairly radical changes in individual conduct. Americans would have to trade their current housing stock in far-flung suburbs for ultra-efficient housing in urban transit-friendly settings and abandon their single-passenger automobile commutes for public transportation in order to realize these zero-carbon future visions.¹³ This conversion would have economic costs, but most economists now agree that these costs would be more than offset by future climate change response costs avoided.¹⁴ Even if economically offset, this adjustment to a new energy economy will involve a dramatic social adjustment as existing communities are reorganized in more energy efficient patterns.

The relentless mathematics of the climate change problem lay bare the extreme changes necessary to accommodate a climate-sustainable energy economy. Climate activist Bill McKibben points out in his “Do the Math” speaking tour and movie that the world can only afford to burn another 565 gigatons of CO₂e by mid-century to avoid catastrophic climate change.¹⁵ Oil and coal companies’ reserves exceed this

12. See Mark Z. Jacobson et al., *100% Clean and Renewable Wind, Water, and Sunlight (WWS) All Sector Energy Roadmaps for the 50 United States*, 8 ENERGY ENVTL. SCI. 2093 (2015), <https://web.stanford.edu/group/efmh/jacobson/Articles/I/USStatesWWS.pdf> [<https://perma.cc/95AD-WYUY>] (showing through a Stanford University study that each State can achieve 100% renewable energy by 2050); see generally GEORGE MONBIOT, *HEAT: HOW TO STOP THE PLANET FROM BURNING* (2009).

13. See, e.g., MONBIOT, *supra* note 12, at xix.

14. See, e.g., Dana Nuccitelli, *Climate Dollars and Sense—Preventing Global Warming Is the Cheap Option*, *GUARDIAN* (Apr. 22, 2014, 10:16 AM), <http://www.theguardian.com/environment/climate-consensus-97-per-cent/2014/apr/22/preventing-global-warming-cheaper-than-adapting> [<https://perma.cc/Y4WX-PTDN>].

15. See *Do the Math*, 350.ORG, <http://math.350.org/> [<https://perma.cc/RJM9-G8U2>] (last visited Feb. 1, 2016); see also Bill McKibben, *Global Warming’s Terrifying New Math*, *ROLLING STONE* (July 19, 2012), <http://www.rollingstone.com/politics/news/global-warmings-terrifying-new-math-20120719> [<https://perma.cc/S5WU-6LFR>].

threshold five-fold, and the globe is on track to cross the mid-century threshold in just fifteen years.¹⁶

Taking Bill McKibben's math one simple step further reveals the ultimate futility of attempting to allocate the remaining CO₂ increment: 565 gigatons of CO₂ that the planet can burn between 2013 and 2050 equals a maximum of about 15 gigatons per year. There are some 7 billion people on Earth.¹⁷ Simple division reveals an equally distributed per capita limit: 15 billion tons per year divided by 7 billion people equals roughly 2 tons per person per year, even assuming zero population growth.

This inexorable math reveals a fundamental challenge to treating carbon emissions as a mere allocation problem. Carbon pricing becomes inextricable from global anti-poverty and distributive justice: carbon footprints are directly proportional to global standard of living, and the (short-term) sustainable rate of carbon emissions is inconsistent with current middle class standards of living in the developed world. Assuming most peoples' total carbon footprint is about twice their direct personal carbon footprint,¹⁸ that leaves about one ton per person per year globally as a maximum direct carbon footprint. That is about 100 gallons of gasoline (20 pounds of CO₂ per gallon).¹⁹ That is enough to drive the average car 2,100 miles or a Prius hybrid 5,000 miles.²⁰ Or it is enough for

16. McKibben, *supra* note 15.

17. Robert Schlesinger, *The 2015 U.S. and World Populations*, U.S. NEWS & WORLD REP. (Dec. 31, 2014), <http://www.usnews.com/opinion/blogs/robert-schlesinger/2014/12/31/us-population-2015-320-million-and-world-population-72-billion> [https://perma.cc/3W9D-9SKX].

18. Although definitions of "direct" versus "indirect" carbon footprints vary, an individual's direct footprint can be seen as those carbon-emitting activities that an individual has control over on a short term basis, such as individual transportation and home heating and lighting choices, while an individual's indirect impact includes those carbon-emitting activities over which the individual lacks direct control, such as the heating and lighting at one's place of employment, the embedded carbon footprint of durable goods used by the individual, and carbon-emitting community activities. See *How Big Is Your Carbon Footprint?*, 3M WORLDLYWISE, <http://www.3m.co.uk/intl/uk/3mworldly-wise/carbon-footprint-homepage.htm> [https://perma.cc/L4R7-47PV] (last visited Feb. 1, 2016).

19. See *Greenhouse Gas Equivalencies Calculator*, EPA, <http://www2.epa.gov/energy/greenhouse-gas-equivalencies-calculator> [https://perma.cc/VC3C-9VK3] (last visited Feb. 1, 2016).

20. See *id.*; see also *Fuel Economy of 2015 Toyota Prius*, U.S. DEP'T ENERGY, https://www.fueleconomy.gov/feg/bymodel/2015_Toyota_Prius.shtml [https://perma.cc/SN6Q-QCNB] (last visited Feb. 1, 2016).

a one-way flight from New York to Los Angeles (or one round-trip flight, if one assumes the lowest carbon impacts presented by various carbon calculators). Or, according to one online carbon calculator, that one ton of CO₂e would represent just one-sixth of one individual's share of the energy consumption of a three-bedroom single family house in Atlanta that has already implemented every available energy conservation measure, including compact fluorescent lighting.²¹

Even in the short-term, a per capita allocation of the maximum rate of carbon emission is inconsistent with the middle class standard of living. Yet an economic allocation of carbon emissions based on purchasing power—achieved by a global price on carbon—would maintain existing global inequalities of consumption and living standards. An allocation approach to climate change runs afoul of global anti-poverty and development goals as well as notions of distributive and historical justice. It is no accident that global climate negotiations were frustrated by economic development and distributive justice: the emerging economies demand an allowance for fossil fuel-powered development commensurate with the developed post-industrial economies; the poorer nations of the world seek to link climate goals with global development and anti-poverty concessions.²²

This Article posits that attempts to limit carbon emissions to the 565 gigaton increment will be unsuccessful, and that the increment will be exhausted in the next two decades or so. Once the increment is used, fossil fuel abolition will be the only remaining practical response to global warming. In any event, an equal per capita allocation of the permissible increment—two tons per person—would essentially mean fossil fuel abolition in the United States, as this limit represents a ninety percent reduction in U.S. per capita emissions.

21. See *Carbon Footprint Calculator*, NATURE CONSERVANCY, <http://www.nature.org/greenliving/carboncalculator/index.htm> [https://perma.cc/9ZKB-7AXF] (last visited Feb. 1, 2016).

22. See Magdalena Mis, *800 Million Still Hungry and Poor Despite Progress of Millennium Goals: U.N.*, REUTERS (July 6, 2015, 1:23 PM), <http://www.reuters.com/article/2015/07/06/us-development-goals-un-idUSKCN0PG1ZI20150706> [https://perma.cc/FQ7L-LLWL].

III. THE CASE FOR FOSSIL FUEL ABOLITION

The case for fossil fuel abolition will rest on ethical, practical, and pragmatic considerations. First, no system of laws—domestic or international—will ban a practice without reaching the conclusion that the underlying practice is unethical.²³ The ethical basis of the ban might be utilitarian or deontologically based, but before a practice can be banned, it must be considered wrongful.²⁴ The ban's ethics may be based on simple avoidance of harm to others, utilitarian concepts of avoiding imminent societal harm, or more inchoate ethics of avoiding human destruction of natural systems.²⁵ A ban is also likely to become a practical matter of scientific necessity as the international economic system rapidly burns through the remaining allowable increment of greenhouse gas emissions. A fossil fuel ban may ultimately be the most pragmatic international response to climate change, as the simplicity of a ban avoids the unsolvable distributive justice problems of any system of allocating greenhouse gas emissions limits.

A. The Ethical Case: Avoiding Harm

Several writers have made the ethical case for limiting greenhouse gas emissions,²⁶ and this Article will not attempt to re-argue that case. In essence, the primary argument for limiting—and ultimately ceasing—greenhouse gas emissions proceeds from the basic ethical principle of avoiding harm to others.²⁷ Burning fossil fuels results in greenhouse gas emissions that will change the global climate in ways that will interfere with food production and cause sea level rise.²⁸ These changes will cause grievous harms to people globally, from food

23. STEVEN BARKAN, *LAW AND SOCIETY: AN INTRODUCTION* 150 (2009).

24. *See id.*

25. *See id.*

26. *See, e.g.*, Paul Baer, *Equity, Greenhouse Gas Emissions, and Global Common Resources*, in *CLIMATE CHANGE: A SURVEY* 394 (Stephen Schneider et al. eds., 2002); John C. Dernbach & Donald A. Brown, *The Ethical Responsibility to Reduce Energy Consumption*, 37 *HOFSTRA L. REV.* 985 (2009); Richard C.J. Somerville, *The Ethics of Climate Change*, *YALE ENV'T* 360 (June 3, 2008), http://e360.yale.edu/feature/the_ethics_of_climate_change/1365/ [<https://perma.cc/86QD-UE9N>].

27. *See* Dernbach & Brown, *supra* note 26.

28. *Climate Impacts on Global Issues*, EPA, <https://www3.epa.gov/climatechange/impacts/international.html> [<https://perma.cc/B8JF-2Z9U>] (last visited Feb. 2, 2016).

shortages, flooding, and civil strife as climate refugees move to higher ground.²⁹ Even if the global temperature increase is limited to two degrees Celsius above pre-industrial levels, grievous environmental and human harms are likely to result: the complete inundation and destruction of low-lying island nations, and a high-risk of casualties affecting millions of people from extreme weather events including hurricanes, floods, and heat waves in sensitive areas.³⁰ As the global temperature increases, the risk of disruptions to unique ecosystems, extreme weather events, inequitable distribution of impacts burdening the poor, global aggregate impacts, and large scale events all become “high” or “very high.”³¹ As these thresholds are exceeded, the partial loss of Arctic summer ice and the complete loss of the West Antarctic Ice Sheet become likely, causing even more extreme sea level rise, coastal inundation, and climate refugees.³² Additionally, the risk of reaching a global “tipping point” where thermal feedbacks cause a climate shift to a much hotter global climate unrecognizable to human beings is amplified.³³ These grievous harms make it unethical to cause greenhouse gas emissions in excess of a nation’s or an individual’s fair share, and these harms will make it unethical to emit any greenhouse gases once the global increment is depleted.

Although some utilitarian ethical systems allow for harm to others to serve a greater good, no system of ethics allows

29. *See id.*

30. *See* Petra Tschakert, Commentary, *1.5°C or 2°C: A Conduit’s View from the Science-Policy Interface at COP20 in Lima, Peru*, *Climate Change Responses*, 2015 2:3, at 1, <http://climatechangeresponses.biomedcentral.com/articles/10.1186/s40665-015-0010-z> [<https://perma.cc/EU5Q-VKML>].

31. *Id.* at 9 fig.3; IPCC TOP LEVEL FINDINGS, *supra* note 2.

32. *See* *Global Warming Puts the Arctic on Thin Ice*, NAT. RES. DEF. COUNCIL, <http://www.nrdc.org/globalwarming/qthinice.asp> [<https://perma.cc/5KBN-SXHZ>] (last visited Mar. 8, 2016); *see also* Carolyn Gramling, *Just a Nudge Could Collapse West Antarctic Ice Sheet, Raise Sea Levels 3 Meters*, *SCI. MAG.* (Nov. 2, 2015, 3:00 PM), <http://www.sciencemag.org/news/2015/11/just-nudge-could-collapse-west-antarctic-ice-sheet-raise-sea-levels-3-meters> [<https://perma.cc/R2CN-XVKC>].

33. JOHN C. AYERS, *GLOBAL CLIMATE CHANGE 13* (2011), <http://www.vanderbilt.edu/Sustainability/book/S1C6.pdf> [<https://perma.cc/92BU-7GSF>]; Brian Kahn, *Scientists Predict Huge Sea Level Rise Even If We Limit Climate Change*, *GUARDIAN* (July 10, 2015), <http://www.theguardian.com/environment/2015/jul/10/scientists-predict-huge-sea-level-rise-even-if-we-limit-climate-change> [<https://perma.cc/R2TT-SNX5>]; *see also* Anders Levermann & Johannes Feldmann, *Collapse of the West Antarctic Ice Sheet After Local Destabilization of the Amundsen Basin*, 112 *PROC. NAT’L ACAD. SCI.* 14191 (2015).

grievous harms to others to provide luxuries to some. This has led commentators to conclude that greenhouse gas emissions, other than for basic sustenance and shelter, are unethical—at least as long as no allocation system exists to prevent the harms from occurring.³⁴ A white paper prepared by the Rock Institute has concluded that no system of ethics would justify continued emissions of greenhouse gases by developed nations in excess of an equal per capita allocation of the remaining GHG increment.³⁵ Principles of distributive justice require priority be given to the least well-off, and principles of compensatory justice require that those who have benefited most from past greenhouse gas emissions have the weakest claim to an allocation exceeding equal distribution.³⁶

Some have argued that no ethical responsibility is owed to persons not yet in existence.³⁷ However, as Professor Simon Caney points out, this argument fails on two grounds.³⁸ First, climate change is harming and will harm people who already exist—today's children will suffer the future impacts of climate change.³⁹ Second, there is no ethically-valid reason to ignore harms to future persons.⁴⁰ Future persons will have the same fundamental right to the basic human needs for food and shelter as people now in existence.⁴¹

Another possible objection to an ethical duty to avoid greenhouse gas emissions is the collective nature of the harm: no single individual's or nation's greenhouse gas emissions can be independently responsible for the global climate harms.⁴² However, there should be an ethical duty to avoid aggregate harms once it is clearly apparent that they are occurring.⁴³

34. See Dernbach & Brown, *supra* note 26; Simon Caney, *Justice and the Distribution of Greenhouse Gas Emissions*, 5 J. GLOBAL ETHICS 125 (2009).

35. See generally DAVID BROWN ET AL., ROCK ETHICS INSTITUTE, WHITE PAPER ON THE ETHICAL DIMENSIONS OF CLIMATE CHANGE (2006), <http://rockethics.psu.edu/documents/whitepapers/edccwhitepaper.pdf> [<https://perma.cc/6DUP-8NG5>].

36. See *id.*

37. See Simon Caney, *Cosmopolitan Justice, Rights and Global Climate Change*, 19 CAN. J.L. & JURIS. 255 (2006).

38. See *id.*

39. *Id.* at 272–73.

40. See *id.* at 263.

41. See *id.*

42. See Joakim Sandberg, “My Emissions Make No Difference”: *Climate Change and the Argument from Inconsequentialism*, 33 ENVTL. ETHICS 229 (2011).

43. WOUTER PEETERS ET AL., CLIMATE CHANGE AND INDIVIDUAL RESPONSIBILITY (2015).

This principle is similar to the imposition of joint and several liability for joint tortfeasors, where harm is not divisible.⁴⁴

The aggregate nature of global climate harm might also argue in favor of a regulatory approach, rather than a ban. The ethical arguments to date have focused on emitting greenhouse gases in excess of an individual's or a nation's fair share, begging the question of what a fair share is. However, this argument loses force once the permissible increment of cumulative GHG emissions has been reached—at that point everyone's fair share of allowable emissions will be zero. There may have been a time when the global climate system could be allocated like the sheep meadow in Garrett Hardin's tragedy of the commons, but that time has almost passed.⁴⁵

The collective nature of the climate harm may bear on the ethical case for a ban on fossil fuels in another way—by interrupting the but-for causal link between individual conduct and harm. As there is no direct causal link between any individual's use of fossil fuels and harm to any other person—present or future—the ethical case for banning fossil fuel use may not be as strong as for prohibiting homicide or assault, for example. However, this causation argument has been refuted.⁴⁶

44. *Burlington N. & Santa Fe Ry. Co. v. United States*, 556 U.S. 599 (2009); *United States v. BestFoods Corp.*, 524 U.S. 51 (1998); *United States v. Ne. Pharm. & Chem. Co.*, 810 F.2d 726 (8th Cir. 1986); *United States v. Wade*, 577 F. Supp. 1326 (E.D. Pa. 1983); *Landers v. E. Tex. Salt Water Disposal Co.*, 248 S.W.2d 731 (Tex. 1952).

45. Katha Pollitt, *Climate Change is the Tragedy of the Global Commons*, NATION (Apr. 22, 2014), <http://www.thenation.com/article/climate-change-tragedy-global-commons/> [https://perma.cc/T3SM-RALE].

46. Ben Almassi has written a persuasive analysis of the individual moral responsibility for climate change's collective harms. Ben Almassi, *Climate Change and the Ethics of Individual Emissions: A Response to Sinnott-Armstrong*, 4 PERSP. INT'L POSTGRADUATE J. PHIL. 15 (2012). Almassi responded to Walter Sinnott-Armstrong's suggestion that, due to the lack of but-for causation for climate change, there is nothing morally wrong with driving a gas guzzling SUV "just for fun." See *id.*; see also Walter Sinnott-Armstrong, *It's Not My Fault: Global Warming and Individual Moral Obligations*, in PERSPECTIVES ON CLIMATE CHANGE 221–53 (W. Sinnott-Armstrong & R. Howarth eds., 2005). Almassi draws on the threshold nature of climate change causality, reasoning that since all individual emissions increase the likelihood that climate change thresholds will be surpassed, and since no individual can be sure that their own emissions will not cause the threshold to be passed, individual "luxury" emissions are morally wrong even without certainty of a but-for causal relationship to a climate change harm to any individual. See Almassi, *supra*, at 15. He also notes the "contagious" nature of luxury emissions, which encourages other people to engage in such conduct and expands the effective emissions beyond those of the individual actor. See *id.* at 16.

The collective nature of the harm should not stand in the way of a ban. Environmental laws have banned other forms of collective harms, such as the use of lead additives in motor vehicle fuels⁴⁷ or the individual taking of an endangered species.⁴⁸ These bans recognize the necessity of banning individual conduct that increases the likelihood of a negative environmental result, despite the lack of direct but-for causation.

It bears noting that the utilitarian concern for harms to persons—present and future—is not the only possible ethical basis to limit or ban climate altering greenhouse gas emissions. Utilitarian concerns solely based on the adverse effects of climate change on human beings constitute a form of anthropocentric ethics—one that only recognizes intrinsic value in human beings, but not in environmental integrity itself.⁴⁹ The environmental ethics awakening of the mid-twentieth century recognized that non-human animals and natural systems also have intrinsic value worthy of recognition in any system of utilitarian ethics. The so-called “deep ecology movement” recognized that all living things have their own intrinsic value.⁵⁰ Environmental ethics that respect natural systems and hold that humans have no ethical right to destroy them, would hold that humans must avoid activities that destroy nature—including the natural climate system. This is the basis of Aldo Leopold’s “land ethic”: the idea that something is right when it tends to preserve the integrity, stability, and beauty of the biotic community, and wrong when it tends otherwise.⁵¹

This environmental ethic underlies such legislation as the Endangered Species Act and the Wilderness Act.⁵² It has its

47. See *Ethyl Corp. v. EPA*, 541 F.2d 1 (D.C. Cir. 1976).

48. 16 U.S.C. § 1538(a)(1)(B) (2012).

49. Andrew Brennan & Yeuk-Sze Lo, *Environmental Ethics*, in STANFORD ENCYCLOPEDIA OF ETHICS (E. N. Zalta ed., 2015), <http://plato.stanford.edu/entries/ethics-environmental/> [<https://perma.cc/7QDN-28E9>].

50. Arne Naess, *The Shallow and the Deep, Long Range Ecology Movement*, 16 INQUIRY 95 (1973), reprinted in THE DEEP ECOLOGY MOVEMENT: AN INTRODUCTORY ANTHOLOGY 3–9 (Alan Dregson & Yuichi Inoue eds., 1995).

51. ALDO LEOPOLD, A SAND COUNTY ALMANAC 262 (1949).

52. See Endangered Species Act of 1973, 16 U.S.C. §§ 1533–44 (2012); Wilderness Act, 16 U.S.C. §§ 1131–36 (2012); see also Holly Doremus, *Restoring Endangered Species: The Importance of Being Wild*, 23 HARV. ENVTL. L. REV. 1, 13 (1999).

roots in the basic human moral instincts of purity⁵³ and the corresponding natural human appreciation for nature.⁵⁴ This basic principle of environmentalism supplements the anthropocentric utilitarian harm-avoidance arguments for banning fossil fuels.

This environmental ethic is itself a form of utilitarianism, one that recognizes non-human ecological values as goal worthy. Non-utilitarian approaches to ethics exist as well. Deontological ethics is a form of rule-based or authority-based ethics; actions are judged by their consistency or inconsistency with an ethical maxim.⁵⁵ The Ten Commandments are a form of deontological ethics.⁵⁶ Aldo Leopold's land ethic might also be considered a form of deontological ethics.⁵⁷ Application of deontological ethics to the issue of climate change may be problematic, as deontological ethics are indeterminate—there is no objective way to determine whose “authoritative” ethical maxims are the correct ones. Indeed, the Supreme Court of the United States has cast some doubt on reliance on deontological (non-utilitarian) ethics as a source of liberty-reducing prohibitions in criminal law. In *Lawrence v. Texas*—striking down laws criminalizing same-sex sodomy—Justice Kennedy's majority opinion stated:

This case raises a different issue than *Bowers*: whether, under the Equal Protection Clause, moral disapproval is a legitimate state interest to justify by itself a statute that bans homosexual sodomy, but not heterosexual sodomy. It is not. Moral disapproval of this group, like a bare desire to harm the group, is an interest that is insufficient to satisfy rational basis review under the Equal Protection Clause. . . . Indeed, we have never held that moral disapproval, without any other asserted state interest, is a sufficient rationale under the Equal Protection

53. See JONATHAN HAIDT, *THE RIGHTEOUS MIND: WHY GOOD PEOPLE ARE DIVIDED BY POLITICS AND RELIGION* 15 (2012).

54. Nicholas A. Robinson, *Evolved Norms: A Canon for the Anthropocene*, in *RULE OF LAW FOR NATURE* 46–71 (Christina Voigt ed., 2014).

55. See J.P. Moreland, *Ethics Theories: Utilitarianism vs. Deontological Ethics*, CHRISTIAN RES. INST. (Apr. 17, 2009), <http://www.equip.org/article/ethics-theories-utilitarianism-vs-deontological-ethics/> [<https://perma.cc/HS3Q-92Q7>].

56. See WILFRED BECKERMAN, *ECONOMICS AS APPLIED ETHICS: VALUE JUDGEMENTS IN WELFARE ECONOMICS* 80 (2011).

57. J. BAIRD CALLICOTT, *IN DEFENSE OF THE LAND ETHIC: ESSAYS IN ENVIRONMENTAL PHILOSOPHY* (1989).

Clause to justify a law that discriminates among groups of persons.⁵⁸

Lawrence, in essence, rejected a deontological ethical maxim—the asserted Biblical prohibition against homosexual conduct—as a rational basis for drawing distinctions among people. This passage suggests that laws seeking to enforce deontological moral norms, unsupported by utilitarian ethical principles, might not survive rational basis scrutiny under either the Fifth Amendment’s Due Process Clause or the Fourteenth Amendment’s Equal Protection Clause.⁵⁹

With this caveat that deontological—authoritarian, rule-based—ethics may be a weak source of legal proscriptions, it bears noting that world religious leaders are moving in the direction of recognizing a proscription against harming the global climate system on theological grounds. The most striking recent development, of course, is Pope Francis’s *Laudato Si’*—an encyclical on the environment and climate change issued on June 18, 2015.⁶⁰ Pope Francis wrote that:

The creation accounts in the book of Genesis contain, in their own symbolic and narrative language, profound teachings about human existence and its historical reality. They suggest that human life is grounded in three fundamental and closely intertwined relationships: with God, with our neighbor and with the earth itself.⁶¹

....

... A very solid scientific consensus indicates that we are presently witnessing a disturbing warming of the climatic system. In recent decades this warming has been accompanied by a constant rise in the sea level and, it would appear, by an increase of extreme weather events, even if a scientifically determinable cause cannot be assigned to each particular phenomenon. Humanity is called to recognize the need for changes of lifestyle, production and consumption, in order to

58. *Lawrence v. Texas*, 539 U.S. 558, 582 (2003).

59. *Id.* at 599 (Scalia, J., dissenting); see also Susan Austin Blazier, *The Irrational Use of Rational Basis Review in Lawrence v. Texas: Implications for Our Society*, 26 CAMPBELL L. REV. 26, 31–32 (2004).

60. See POPE FRANCIS, ENCYCLICAL LETTER LAUDATO SI’ OF THE HOLY FATHER FRANCIS ON CARE OF OUR COMMON HOME (June 18, 2015), http://w2.vatican.va/content/dam/francesco/pdf/encyclicals/documents/papafrancesco_20150524_enciclica-laudato-si_en.pdf [https://perma.cc/LJQ9-R7ZD].

61. *Id.* at para. 66.

combat this warming or at least the human causes which produce or aggravate it.⁶²

Pope Francis has thus brought Catholic orthodoxy into the creation care movement of Christianity, which similarly holds that humans are stewards of God's creation and have a responsibility to preserve the global ecosystem intact.⁶³ This recognition of stewardship obligations stands in contrast to the so-called "dominion" theory of Judeo-Christian environmental thought, which relies on the Biblical injunction to humans to "be fruitful and multiply, and replenish the earth, and subdue it: and have dominion over the fish of the sea, and over fowl of the air, and over every living thing that moveth upon the earth."⁶⁴ Following Pope Francis's lead, a group of Islamic religious and environmental leaders issued its own call to phase out non-renewable energy and stop greenhouse gas emissions no later than 2050.⁶⁵ There is thus some deontological ethical support for a prohibition on burning fossil fuels.

The third major rule of ethical thought—virtue ethics—also provides ambiguous support for a prohibition against fossil fuel use. Virtue ethics looks to the motivations and character traits of the moral actor rather than to the effects (utilitarian) or rule-compliance (deontology) of the acts in question.⁶⁶ Virtue ethics has its roots in the ancient Greek philosophical traditions of Socrates and Aristotle, and seeks to promote a state of individual harmony through actions consistent with personal virtues such as courage, honesty, rationality, friendliness, and loyalty.⁶⁷ As virtue ethics seeks to promote individual self-realization and a state of harmony, its

62. *Id.* at para. 23.

63. See *European Parliament Address by Pope Francis*, C-SPAN (Nov. 25, 2014), <http://www.c-span.org/video/?323063-1/pope-francis-address-european-parliament> [<http://perma.cc/24W6-8GU2>].

64. See ANDREW KERNOHAN, ENVIRONMENTAL ETHICS: AN INTERACTIVE INTRODUCTION 194 (2012).

65. Denise Hassanzade Ajiri, *Islamic Leaders Echo Pope's Call for Action on Climate Change*, CHRISTIAN SCI. MONITOR (Aug. 18, 2015), <http://www.csmonitor.com/Science/2015/0818/Islamic-leaders-echo-pope-s-call-for-action-on-climate-change> [<https://perma.cc/U6NX-66XZ>].

66. See P. Gardiner, *A Virtue Ethics Approach to Moral Dilemmas in Medicine*, 29 J. MED. ETHICS 297 (2003).

67. See *id.*

application to a problem such as climate change may be impossibly anthropocentric and subjective. However, at least one writer has suggested that the virtue ethics values of love, respect, and care may apply to the non-human environment as well.⁶⁸

In sum, once the remaining increment of non-catastrophic greenhouse gas emissions has been exhausted, there will be a compelling utilitarian ethical case for an outright ban on the burning of fossil fuels, based both on the avoidance of harm to people and on the ethic of non-interference with natural ecosystems. Deontological and virtue ethics may also support such a ban, but with less certainty.

B. The Practical Case: Scientific Necessity

Once the greenhouse gas increment is used up, it will be impossible to avoid catastrophic harms while continuing to burn fossil fuels. Indeed, the two degrees Celsius of warming associated with that increment itself contemplates significant climate change and disruption to human settlement patterns, agriculture, and sea level.⁶⁹ Once this point of unacceptable impacts is reached, there is no other possible response to the crisis of global climate change and sea level rise other than banning further fossil fuel combustion. The possible alternative responses of geoengineering, carbon sequestration, or adaptation are likely to prove inadequate as alternative responses.

Although geoengineering techniques, such as sulfate aerosol dispersal to increase atmospheric reflectivity to solar radiation, have been suggested as a lower cost means of mitigating climate change, the available science neither supports the effectiveness nor safety of these techniques. A recent National Academy of Sciences report casts doubt on the feasibility of geoengineering as a practical matter—though it calls for further research.⁷⁰ Available models suggest that geoengineering responses to climate change will have their own serious climate impacts, such as disruption of the Indian

68. See John O'Neill, *The Varieties of Intrinsic Value*, 75 *MONIST* 119 (1992); see also JOHN BARRY, *RETHINKING GREEN POLITICS* 32 (1999).

69. See IPCC, *CLIMATE CHANGE: THE IPCC IMPACTS ASSESSMENT 1–3* (1990).

70. NAT'L RESEARCH COUNCIL, *CLIMATE INTERVENTION: CARBON DIOXIDE REMOVAL AND RELIABLE SEQUESTRATION 19–20* (2015).

monsoon essential to agricultural productivity on the Indian subcontinent.⁷¹ Geoengineering is also inherently unstable, as it depends on constant human intervention to maintain the climate. If geoengineering efforts are halted for any reason—such as war, unrest, or economic crises—extremely rapid and destructive climate change will follow.⁷²

Carbon sequestration and storage has also been suggested as an alternative measure that would allow continued use of fossil fuels—particularly coal—while mitigating the greenhouse gas impacts. Although some demonstration carbon capture and storage (“CCS”) plants are up and running, none promise to be economically feasible or competitive with non-GHG emitting renewable energy.⁷³

The third alternative response to climate change—so-called adaptation—is also an unacceptable alternative to the cessation of fossil fuel use. Adaptation measures propose to adjust human settlement and agricultural patterns to changing climate and rising sea level.⁷⁴ They include such measures as relocating coastal communities and engineered shore protection measures to cope with sea level rise.⁷⁵ The fundamental problem with reliance on adaptation measures is one of cost and resources; adaptation depends on financial resources to implement engineered responses to sea level rise as well as the availability of fertile land in newly-productive agricultural regions. Such measures will be unavailable to the gravest

71. See David Shukman, *Geo-engineering: Climate Fixes “Could Harm Billions,”* BBC NEWS (Nov. 26, 2014), <http://www.bbc.com/news/science-environment-30197085> [<https://perma.cc/HLV4-SV84>].

72. Andrew Snyder-Beattie, *Geoengineering Is Fast and Cheap, but Not the Key to Stopping Climate Change*, GUARDIAN (May 15, 2015), <http://www.theguardian.com/sustainable-business/2015/may/15/geoengineering-climate-change-greenhouse-gases> [<https://perma.cc/MAT9-R5G5>].

73. Chris Nelder, *Why Carbon Capture and Storage Will Never Pay Off*, ZDNET (Mar. 26, 2013), <http://www.zdnet.com/article/why-carbon-capture-and-storage-will-never-pay-off/> [<https://perma.cc/HR2V-K3QB>]; Ken Zweibel, *Should Solar Photovoltaics Be Deployed Sooner Because of Long Operating Life at Low, Predictable Cost?*, 38 ENERGY POL’Y 7519, 7528 (2010) (discussing the competitive quality of photovoltaic systems as compared with traditional energy production).

74. See generally Ian Burton, *Adaptation to Climate Change and Variability in the Context of Sustainable Development*, in CLIMATE CHANGE AND DEVELOPMENT 153 (Luis Gómez-Echeverri ed., 2000), <http://environment.yale.edu/publication-series/documents/downloads/a-g/Burton.pdf> [<https://perma.cc/YU8R-WJL8>].

75. See, e.g., Mark Gibbs, *Coastal Communities Need Implementable Plans—Even If Politically Unpopular*, PHYS.ORG (Dec. 4, 2015), <http://phys.org/news/2015-12-coastal-planseven-politically-unpopular.html> [<https://perma.cc/XJA4-YDMJ>].

victims of climate change in the Global South, where refugees from rising sea level and desertification are likely to lack the resources and lands needed to adapt.⁷⁶ Adaptation is a strategy for the wealthy nations, but is unlikely to work for poor nations.⁷⁷ When it becomes clear that adaptation will not prevent the unacceptable humanitarian impacts of climate change, drastic mitigation measures will become necessary.

C. The Pragmatic Case: Realpolitik and Simplicity

The history of effective environmental law reform is, unfortunately, one of reaction rather than proaction. The Clean Air Act was adopted in response to smog-choked cities, the Clean Water Act in response to the Cuyahoga River in flames, and the Superfund cleanup law in response to the evacuation of contaminated communities at Love Canal and Times Beach.⁷⁸ The current U.S. and international political climate suggests that an effective response to climate change is also likely to be reactive rather than proactive: that is, effective measures to mitigate climate change are not likely to be adopted until after grave humanitarian crises unambiguously caused by climate change are apparent.⁷⁹ At that point, by definition, any allocable increment of greenhouse gas emissions will have been used up. A proactive allocation response to limit greenhouse gas emissions rates is also unlikely to be successful because allocation problems are the hardest problems for environmental regulation to solve, invoking both distributive justice issues and libertarian resistance to government direction of private activity.

It appears nearly impossible that the global community, let alone the United States, will implement an allocation scheme

76. See Ruth Gordon, *The Triumph and Failure of International Law*, 34 N.C. CENT. L. REV. 63, 75 (2011).

77. See generally Alice Kaswan, *Domestic Climate Change Adaptation and Equity*, 42 ENVTL. L. REP. 11125 (2012).

78. ZYGMUNT J.B. PLATER, ENVIRONMENTAL LAW AND POLICY 465, 524, 679 (4th ed. 2010).

79. See Nsikan Akpan et al., *Why the Paris Talks Won't Prevent 2 Degrees of Global Warming*, PBS (Dec. 2, 2015), <http://www.pbs.org/newshour/updates/why-the-paris-talks-wont-prevent-2-degrees-of-global-warming/> [https://perma.cc/UAP5-4LUN] (“Even if aggressive deals are reached in Paris . . . , climate change could still be on track to drive millions from their homes through drought, famine, sea-level rise and extreme storms like cyclones.”).

for the remaining 565 gigatons of useable fossil fuels before the increment is already used up. Several structural factors militate against successful enactment and implementation of an effective allocation scheme. These include both the cultural cognition challenges facing the reality of climate science, the related tendency of major legislation to be responsive to an observed crisis rather than an anticipated one, along with the “super wicked” nature of the climate response problem—at least as long as it is defined as an allocation problem.⁸⁰ The world appears destined to suffer at least some of the devastating impacts of climate change, and by the time a response is implemented, the only possible mitigation may be a complete ban on burning fossil fuels.

1. Wicked and Super Wicked Problems

Professor Richard Lazarus has famously described climate change as a “super wicked problem.”⁸¹ The term “wicked problem” was originally coined in the planning literature as a problem that cannot be defined without reference to potential solutions, leading to intractable path dependencies for pluralistic negotiation of problem definition and resolution.⁸² The term has been expanded to include problems with multiple definitions, interdependence between problem definition and solution, and polycentric competing interests affected by both the problem and its proposed resolutions.⁸³ Professor Lazarus describes climate change as a “super wicked problem” because climate change has the added complications of the cost of delayed action, the lack of incentive to act by the parties best positioned to address the problem, and the lack of sufficient governmental structures to respond to the scope of the problem.⁸⁴ Significantly, Professor Lazarus anticipates that a successful legal response to climate change will require a “precommitment strategy” to remove the legal framework from

80. See Richard Lazarus, *Super Wicked Problems and Climate Change: Restraining the Present to Liberate the Future*, 94 CORNELL L. REV. 1153, 1178, 1181–82 (2009).

81. See *id.* at 1159.

82. See generally Horst W. J. Rittel & Melvin M. Webber, *Dilemmas in a General Theory of Planning*, 4 POL'Y SCI. 155, 160–69 (1973) (introducing the term “wicked problems” to describe nature of social policy problems).

83. See, e.g., Lazarus, *supra* note 80, at 1159–61.

84. See *id.*

the action of ordinary politics once the wrenching reallocations required by the response come into play.⁸⁵

By definition, “wicked problems” are those problems whose definition depends in part on the nature of the proposed solutions.⁸⁶ So long as the solution to climate change remains an allocation scheme—whether it is allocation via carbon pricing schemes such as cap and trade or carbon taxes, allocation via rationing, or international allocation via negotiated allowances as in the Kyoto Accords⁸⁷—climate change will remain a super wicked problem, as multiple solutions and multiple stakeholders compete for implementation and allocation. The allocation problem necessarily becomes mired in intractable debates about the relative merits of carbon taxes versus a system of cap and trade,⁸⁸ as well as the fundamental distributive justice problems involved in any allocation scheme.⁸⁹ Moreover, any system of allocation of carbon emissions requires the construction of a highly-complex system of accounting and monitoring to ensure proper allocation of limits and compliance.⁹⁰ On the other hand, climate change might cease to be a wicked problem if the global community—prompted by leadership from the most powerful nations—came to realize that burning fossil fuels in an industrialized world is always unsustainable and a violation of basic human values due to the harms it causes, as the global community eventually came to view slavery.⁹¹ If the solution is perceived to be as simple as a ban, the complexities and competing interests for allocation disappear, and the problem may no longer be “wicked.” The practical question is whether—and when—such a global consensus might appear.

As a practical matter, statutory bans have been more effective in U.S. environmental law than environmental

85. *See id.* at 1158.

86. *See* C. West Churchman, *Wicked Problems*, 14 *MGMT. SCI.* 151 (1967).

87. *See, e.g., Kyoto Protocol*, FED. MINISTRY FOR ENV'T, NATURE CONSERVATION, BLDG. & NUCLEAR SAFETY, <http://www.bmub.bund.de/en/topics/climate-energy/climate/international-climate-policy/kyoto-protocol/> [https://perma.cc/89MU-LFWD] (last updated Oct. 23, 2015).

88. *See* Lazarus, *supra* note 80, at 1186.

89. *Id.* at 1185.

90. *Id.* at 1186.

91. *See infra* Section V.C.3.

quality-based allocation schemes. The quality-based emissions allocation approaches of both the Clean Water Act and the Clean Air Act have failed on their own terms, with forty percent of U.S. water bodies still listed as impaired as of 2014 and over 160 air quality areas still failing to meet national ambient air quality standards.⁹² It is no accident that these quality based regulatory schemes have not been fully implemented, as the allocation elements of compliance⁹³ require hard political choices about how to allocate scarce emissions resources. Flat environmental prohibitions, such as the ban on taking endangered species⁹⁴ or the ban on lead in gasoline implemented under the Clean Air Act,⁹⁵ have been more effective in achieving their environmental goals. Addressing climate change at the global level poses even more intractable allocation challenges, as the developing nations have a compelling argument based on principles of distributive justice for larger allocations than the industrialized nations that are largely responsible for the problem, while the industrialized nations are loath to give up the economic advantages of their outsized share of global emissions.⁹⁶ Barry Commoner, one of the founders of the late twentieth century environmentalist movement, argued decades ago for the simplicity and effectiveness of outright bans.⁹⁷

92. See CLAUDIA COPELAND, CONG. RESEARCH SERV., CLEAN WATER ACT AND POLLUTANT TOTAL MAXIMUM DAILY LOADS 2 (2012), <https://www.fas.org/sgp/crs/misc/R42752.pdf> [<https://perma.cc/8WK2-JSQR>]; *Criteria Pollutant Nonattainment Summary Report*, EPA (Oct. 1, 2015), <http://www3.epa.gov/airquality/greenbook/anc13.html#Notes> [<https://perma.cc/TTT5-VZVT>] (listing nonattainment areas).

93. This includes Total Maximum Daily Loads under the Clean Water Act and State Implementation Plans under the Clean Air Act. See 33 U.S.C. § 1313(d)(1)(C) (2012); 42 U.S.C. § 7410 (2012).

94. *The Endangered Species Act Works: 100 Success Stories*, CTR. FOR BIOLOGICAL DIVERSITY, http://www.biologicaldiversity.org/campaigns/esa_works/ [<https://perma.cc/HJT4-38NN>] (last visited May 29, 2016) (“The Endangered Species Act is one of the most successful environmental laws in U.S. history and America’s foremost tool for protecting biodiversity.”). But see *infra* notes 229–230 and accompanying text.

95. See *infra* notes 110–111 and accompanying text.

96. See Gordon, *supra* note 76, at 75.

97. Barry Commoner, *Why We Have Failed*, in *LEARNING TO LISTEN TO THE LAND* 163, 164–65 (Bill Willers ed., 1991).

2. Cultural Cognition Challenges for a Law-Based Response to Climate Change

As self-government evolves as a global norm, legislative response to social problems is increasingly dependent on achieving political consensus that action is required. However, achievement of the level of political consensus necessary to support effective measures to mitigate climate change in the developed world must overcome several cognitive biases that militate against timely political consensus concerning the need to respond to climate change. These cognitive biases include avoidance of cognitive dissonance, the availability heuristic, loss aversion, status quo preferences, optimism, confirmation bias, inability to process low-probability events, and framing.⁹⁸ In addition, what Professor Dan Kahan calls “cultural cognition,” or beliefs based on social group identification, works against acceptance of climate science by self-identified conservatives and Republicans in the United States.⁹⁹

These cognitive factors all militate against a strong legislative response to climate change, at least in the short-term. Even as public opinion polls show growing acceptance of climate science in the United States, these same polls continue to place climate change near the bottom of public rankings of the importance of the issue.¹⁰⁰ This may be the availability heuristic at work: without recent, visible examples of the harm caused by climate change, the issue will take a back seat to economic issues and violent conflicts.¹⁰¹

Similarly, it is hard to think of another example where any system of government took action to prevent a predicted future cataclysm for which there was no past example. Cassandra’s

98. See Karl S. Coplan, *Climate Change, Political Truth, and the Marketplace of Ideas*, 2012 UTAH L. REV. 545, 553 (2012); see also GEORGE MARSHALL, DON’T EVEN THINK ABOUT IT: WHY OUR BRAINS ARE WIRED TO IGNORE CLIMATE CHANGE 20 (2014).

99. See generally Dan M. Kahan, *Cultural Cognition and Public Policy*, 24 YALE L. & POL’Y REV. 149 (2006).

100. Coral Davenport & Marjorie Connelly, *Most Republicans Say They Back Climate Action, Poll Finds*, N.Y. TIMES (Jan. 30, 2015), http://www.nytimes.com/2015/01/31/us/politics/most-americans-support-government-action-on-climate-change-poll-finds.html?_r=0 [https://perma.cc/WQZ3-DWSU]; Seth Motel, *Polls Show Most Americans Believe in Climate Change, but Give It Low Priority*, PEW RES. CTR. (Sept. 23, 2014), <http://www.pewresearch.org/fact-tank/2014/09/23/most-americans-believe-in-climate-change-but-give-it-low-priority/> [https://perma.cc/M79M-G5ME].

101. See Coplan, *supra* note 98, at 554–55.

warnings to King Priam of Troy were absolutely correct but were ignored, and her name has ironically become synonymous with undue alarmism.¹⁰² Major legislative initiatives in the United States, as elsewhere, have all been taken in response to visible crises that were already under way: the New Deal economic regulations and safety nets adopted in the wake of the Great Depression, civil rights legislation adopted in response to visible injustice and violence directed at African Americans, and our system of environmental regulation adopted in the wake of visible pollution disasters such as Love Canal, Times Beach, Missouri, and the Cuyahoga River in flames.¹⁰³ No such legislative initiatives resulted from predictions of future harm in the absence of recent exemplars.

This reactive nature of legislative initiative, unfortunately, suggests that any major legislative response will be deferred until the effects of climate change reach visible, unambiguous, crisis proportions. No weather or climate event to date in the United States has reached such proportions. Hurricanes Sandy and Katrina, summer heat waves, and unprecedented tornado outbreaks are not sufficiently certain to prompt this response. The scientific consensus that supports anthropogenic climate change is lacking on the issue whether any of these specific weather events can be attributed to climate change as opposed to natural variability in weather.¹⁰⁴

It is hard to say when such a series of weather catastrophes sufficiently certain to be climate change-related will occur, but by definition they will not occur until catastrophic climate change is already upon us.¹⁰⁵ In such case, it will already be too late for a system of allocation and rationing of fossil fuels: the world will surpass the 565 gigaton limit long before events prompt an effective legislative response. As Bill McKibben's

102. See Philip Davies, *The Cassandra Complex: How to Avoid Generating a Corporate Vision That No One Buys Into*, in SUCCESS IN SIGHT: VISIONING 103–04 (1998) (describing mythology of Cassandra); Diego Gambetta, *Reason and Terror*, BOS. REV., April/May 2004, <http://bostonreview.net/us/diego-gambetta-reason-and-terror> [<https://perma.cc/3QUR-LAVS>] (stating that many people do not want to be seen as an undue alarmist like Cassandra).

103. PLATER, *supra* note 78.

104. Kevin E. Trenberth et al., *Attribution of Climate Extreme Events*, 5 NATURE CLIMATE CHANGE 725 (2015).

105. See Robin Kundis Craig, "Stationarity is Dead"—Long Live Transformation: Five Principles for Climate Change Adaptation Law, 34 HARV. ENVTL. L. REV. 9 (2010).

analysis has pointed out, the world is on track to exceed this increment by 2030.¹⁰⁶

As this increment is passed and global temperatures continue to rise, the grievous humanitarian harms of global climate change will eventually become apparent and undeniable. Once a pattern of extreme weather events such as heat waves, floods, storms, and coastal inundation becomes undeniable, the U.S. political system may be expected to reach consensus and respond to the threat as it ultimately did to the extreme environmental disasters of the mid-twentieth century. At that point, there will likely be a political consensus that a response to climate change is necessary. There will be no increment of greenhouse gas emissions left to allocate, and a ban on fossil fuels will be the only effective mitigation against further, more severe climate impacts.

IV. EFFECTUATING THE BAN

Assuming that at some point in the future a political consensus supporting a ban on fossil fuels develops, there remains the question of what legal form such a ban would take. While the most obvious vehicle for such a ban would appear to be federal legislation under the commerce or treaty powers, there is the possibility of effectuating such a ban administratively under the existing authority to regulate motor vehicle fuels under the Clean Air Act's section 211, or by designating greenhouse gases as a criteria pollutant under Title I of the Act and imposing a ban as part of a federal implementation plan. Keeping in mind Professor Lazarus's suggestion that the social resistance to greenhouse gas regulations might require a precommitment strategy that removes the ban from ordinary political processes,¹⁰⁷ we should consider the possibility of effectuating such a ban via constitutional amendment or statutory independent agency. This Part of the Article will summarize possible sources of legal authority to accomplish such a ban in the United States, keeping in mind that decades may pass before such a ban is

106. Bill McKibben, *Why I'll Get Arrested to Stop the Burning of Coal*, YALE ENV'T 360 (Feb. 19, 2009), http://e360.yale.edu/feature/why_ill_get_arrested_to_stop_the_burning_of_coal/2124/ [<https://perma.cc/HV8D-2F35>].

107. See Lazarus, *supra* note 80, at 1158.

accomplished and that the state of law will undoubtedly change between now and then.

A. Existing Statutory Authority

Some of the most effective U.S. regulatory environmental responses have taken the form of outright bans on products or activities implemented pursuant to statutory authority broad enough to encompass such bans. The Environmental Protection Agency (“EPA”) banned the use of the pesticide DDT—with a limited public health exception—in 1972 under the existing authority of the Federal Insecticide, Fungicide, and Rodenticide Act with a prod from the Ninth Circuit Court of Appeals.¹⁰⁸ The DDT ban is credited with restoring endangered populations of peregrine falcons and bald eagles.¹⁰⁹ Similarly, EPA banned lead additives in gasoline in 1996 under the Clean Air Act’s section 211, which allows EPA to ban fuel additives as well as fuels.¹¹⁰ The ban on lead additives had huge public health benefits, and may even be responsible for the decline in crime rates in the early years of the twenty-first century.¹¹¹ EPA has also banned the manufacture and use of polychlorinated biphenyls (“PCBs”) under the authority of the Toxic Substances Control Act.¹¹²

Although it may not currently be politically exercisable, existing authority under the Clean Air Act authorizes EPA to ban the use of fossil fuels, both for mobile and stationary sources. Clean Air Act section 211 grants EPA broad authority to prohibit the sale of specific motor vehicle fuels, while Title I of the Clean Air Act allows EPA to establish National Ambient Air Quality Standards (“NAAQS”) for criteria pollutants and a

108. *Envtl. Def. Fund, Inc. v. EPA*, 465 F.2d 528 (D.C. Cir. 1972).

109. Scott W. Reed, *Fish Gotta Swim: Establishing Legal Rights to Instream Flows Through the Endangered Species Act and the Public Trust Doctrine*, 28 IDAHO L. REV. 645, 652–53 (1992) (citing MICHAEL BEAN, THE ENDANGERED SPECIES PROGRAM, AUDUBON WILDLIFE REPORT 369–70 (1986)).

110. See Prohibition on Gasoline Containing Lead or Lead Additives for Highway Use, 61 Fed. Reg. 3,832, 3,832 (Feb. 2, 1996) (to be codified at 40 C.F.R. pt. 80); Regulation of Fuels, 42 U.S.C. § 7545(n) (2012).

111. Rick Nevin, *How Lead Exposure Relates to Temporal Changes in IQ, Violent Crime, and Unwed Pregnancy*, 83 ENVTL. RES. 1, 21 (2000).

112. See Polychlorinated Biphenyls Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions, 40 C.F.R. pt. 761 (2016).

federal implementation plan to achieve such standards where state implementation plans are unable to do so.

1. Clean Air Act Section 211: Prohibition of Motor Vehicle Fuels

Clean Air Act section 211(c) provides that:

The Administrator may, from time to time on the basis of information obtained under subsection (b) of this section or other information available to him, by regulation, control or prohibit the manufacture, introduction into commerce, offering for sale, or sale of any fuel or fuel additive for use in a motor vehicle, motor vehicle engine, or nonroad engine if, in the judgment of the Administrator, any fuel or fuel additive or any emission product of such fuel or fuel additive causes or contributes to air pollution . . . that may reasonably be anticipated to endanger the public health or welfare¹¹³

This section gives EPA the clear authority to ban the manufacture or sale of fossil fuels for motor vehicle and nonroad engines. All fossil fuels generate carbon dioxide as an emissions product.¹¹⁴ Carbon dioxide is the principle greenhouse gas.¹¹⁵ Greenhouse gases are clearly air pollutants and cause air pollution; the Supreme Court so held in *Massachusetts v. EPA*.¹¹⁶ The Administrator has already made a determination that greenhouse gas pollution endangers the public health and welfare.¹¹⁷ This finding was sustained against industry challenge by the D.C. Circuit¹¹⁸ and left undisturbed by the Court.¹¹⁹

Section 211(c)(2) requires that, before imposing such a ban, the Administrator must consider all relevant scientific and

113. 42 U.S.C. § 7545(c)(1) (2012).

114. *Overview of Greenhouse Gases: Carbon Dioxide Emissions*, EPA, <http://www3.epa.gov/climatechange/ghgemissions/gases/co2.html> [<https://perma.cc/F4KM-HAGN>] (last visited Mar. 8, 2016).

115. *Id.*

116. *See Massachusetts v. EPA*, 549 U.S. 497 (2007); *see also Overview of EPA Endangerment Finding*, ENVTL. DEF. FUND, <https://www.edf.org/climate/overview-epa-endangerment-finding> [<https://perma.cc/Y4NQ-QBBD>] (last visited Mar. 8, 2016).

117. Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, 74 Fed. Reg. 66,496, 66,496–546 (Dec. 15, 2009) (to be codified at 40 C.F.R. ch. I).

118. *Delta Constr. Co. v. EPA*, 783 F.3d 1291, 1294 (D.C. Cir. 2015).

119. *Massachusetts v. EPA*, 549 U.S. 497 (2007).

medical data, make a further finding that emissions controls cannot prevent air pollution causing the endangerment, and make a further finding that the ban of a fuel under this section will not cause the use of substitute fuels that cause a greater endangerment.¹²⁰ It would seem that the Administrator could make such findings—there is no conceivable emissions control (such as carbon capture and storage) that might control carbon dioxide emissions from mobile sources, and non-fossil fuel substitutes such as electric power, hydrogen fuels, or biomass-derived liquid fuels would not cause greater greenhouse gas impacts than fossil fuels.

2. Clean Air Act Title I National Ambient Air Quality Standards

Section 211 of the Clean Air Act is limited to transportation fuels, so it would not provide complete authority to EPA to prohibit the use of fossil fuels in other economic sectors, particularly the electrical generation, agricultural, and cement production sectors. However, the NAAQS regulatory program for criteria pollutants under Title I of the Clean Air Act would provide sufficient authority to prohibit the use of fossil fuels in this sector, as well, for an EPA inclined to exploit its authority to the fullest.

Clean Air Act Title I establishes a program of health and welfare based ambient air quality standards, the NAAQS.¹²¹ States must develop plans—State Implementation Plans (“SIP”)—designed to bring air quality within the state into compliance with these standards.¹²² If EPA determines that a State’s implementation plan will not achieve compliance with an air quality standard, EPA may adopt a Federal Implementation Plan (“FIP”) with federally enforceable control measures that would apply within the state.¹²³

Section 108 of the Clean Air Act provides for the designation of criteria pollutants for which NAAQS will be established.

120. See 42 U.S.C. § 7545(c)(2) (2012).

121. See *Key Federal Laws: The Clean Air Act*, CHEMALLIANCE.ORG, <http://www.chemalliance.org/tools/?subsec=25> [https://perma.cc/NX79-KBWV] (last visited Mar. 10, 2016).

122. *Id.*

123. *Id.*

This section directs the Administrator of EPA to establish the criteria pollutants list for those air pollutants:

- (A) emissions of which, in his judgment, cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare;
- (B) the presence of which in the ambient air results from numerous or diverse mobile or stationary sources; and
- (C) for which air quality criteria had not been issued before December 31, 1970 but for which he plans to issue air quality criteria under this section.¹²⁴

As noted, EPA has already made the finding that greenhouse gases endanger public health and welfare.¹²⁵ In a 1976 case, *NRDC v. Train*, the Second Circuit held that despite the conditional last sentence of this provision, once the Administrator has made the endangerment finding for a pollutant under any other section of the Act, listing of that pollutant as a criteria pollutant becomes mandatory.¹²⁶ Whether listing of GHGs as criteria pollutants is mandatory or discretionary, the Administrator clearly has the discretionary authority under section 108 to list them based on the prior endangerment finding.

If GHGs were listed as criteria pollutants, the Administrator would be charged with developing the NAAQS for GHGs.¹²⁷ Because the endangerment finding for GHGs was based on health concerns and public welfare concerns, the Administrator would be charged with establishing primary NAAQS for these pollutants.¹²⁸ The primary NAAQS must be set at a level that,

124. 42 U.S.C. § 7408 (2012).

125. See *Overview of EPA Endangerment Finding*, *supra* note 116.

126. *Nat. Res. Def. Council v. Train*, 545 F.2d 320, 323 (2d Cir. 1976); CTR. FOR BIOLOGICAL DIVERSITY & 350.ORG, PETITION TO ESTABLISH NATIONAL POLLUTION LIMITS FOR GREENHOUSE GASES PURSUANT TO THE CLEAN AIR ACT (2009), http://www.biologicaldiversity.org/programs/climate_law_institute/global_warming_litigation/clean_air_act/pdfs/Petition_GHG_pollution_cap_12-2-2009.pdf [<https://perma.cc/7JXH-6FK4>]; Zachary D. Ludens, *Stemming a Rising Tide: Why the Clean Air Act Following Massachusetts v. EPA Provides a Sensible Vehicle Through Which to Regulate Greenhouse Gas Emissions*, 68 U. MIAMI L. REV. 251 (2013); Patricia Ross McCubbin, *EPA's Endangerment Finding For Greenhouse Gases and the Potential Duty to Adopt National Ambient Air Quality Standards to Address Global Climate Change*, 33 S. ILL. U. L.J. 437 (2009).

127. 42 U.S.C. § 7408.

128. 42 U.S.C. § 7409 (2012).

“allowing an adequate margin of safety, are requisite to protect the public health.”¹²⁹ Based on current science, a limit of somewhere between 350 and 400 ppm of CO_{2e} in the atmosphere is necessary to prevent the most catastrophic health impacts of global warming.¹³⁰

Once a NAAQS for GHGs were established, each State would be charged with amending its SIP to demonstrate compliance with the GHG NAAQS within three years.¹³¹ Of course, due to the global nature of greenhouse gas emissions, no SIP could possibly demonstrate compliance with a GHG NAAQS, as atmospheric GHG concentrations are beyond the control of any one State. EPA could thus use its authority under section 110(c) of the Clean Air Act to reject the SIPs as inadequate and to adopt a nationwide FIP for GHGs.¹³² EPA has broad discretion to incorporate measures necessary to achieve a primary NAAQS. As with the SIPs, a FIP:

Shall . . . include enforceable emissions limitations and other control measures, means, or techniques (including economic incentives such as fees, marketable permits, and auctions of emissions rights) . . . as may be necessary or appropriate to meet the applicable requirements¹³³

Regulations included in a FIP are federally enforceable.¹³⁴ This authority appears broad enough to include a ban on fossil fuels as the only effective means to meet a NAAQS for GHGs.

There is precedent for EPA using the FIP process to address intractable interstate air pollution issues that are beyond the reach of individual state SIPs. In 1998, EPA issued the so-called “NO_x SIP Call,” requiring States to revise their SIPs in order to address ozone NAAQS violations in downwind states, as required by the 1990 amendments to the Clean Air Act.¹³⁵

129. *Id.*

130. See *The Science*, 350.ORG, <http://350.org/about/science/> [<https://perma.cc/NVH3-4JZH>] (last visited Mar. 5, 2016).

131. 42 U.S.C. § 7410(a)(1) (2012).

132. See 40 C.F.R. pt. 62 (2016) (setting forth the Administrator’s approval and disapproval of SIP plans based on satisfaction of the requirements of the relevant section of the Clean Air Act).

133. 42 U.S.C. § 7410(a) (2012).

134. *Id.* § 7410(a)(5)(A)(i).

135. See Finding of Significant Contribution and Rulemaking for Certain States in the Ozone Transport Assessment Group Region for Purposes of Reducing Regional Transport of Ozone, 63 Fed. Reg. 57,356 (Oct. 27, 1998) (providing the final NO_x SIP Call).

EPA's authority to issue the SIP call was upheld in *Michigan v. EPA*.¹³⁶ When States failed to submit adequate revisions, EPA imposed a FIP that incorporated an interstate emissions trading scheme—the Clean Air Interstate Rule (“CAIR”).¹³⁷ Although portions of the CAIR were struck down on judicial review, EPA's basic authority to implement a FIP with detailed regulatory requirements for individual pollution sources was upheld.¹³⁸

The successor rule to the CAIR, the Cross-State Air Transport Rule, maintains these regulations and the interstate trading scheme adopted by the CAIR, and this approach survived review by the Supreme Court.¹³⁹ In another interstate pollution situation, the EPA adopted the Regional Haze Rule, requiring reductions in sulfur dioxide emissions at power plants in states that were upwind of national parks and other areas designated for exceptional air clarity.¹⁴⁰ EPA subsequently rejected inadequate SIP submissions for compliance with the regional haze emissions limits and instead imposed its own individual emissions limits for individual power plants as part of a FIP.¹⁴¹ These FIP limits were upheld by the Tenth Circuit in *Oklahoma v. EPA*.¹⁴²

Although it might be argued that a FIP banning fossil fuel use nationwide might itself be insufficient to make progress towards achieving a hypothetical GHG NAAQS, given the global nature of the problem, it seems unlikely that any court would strike down such a FIP on the grounds that it was insufficiently rigorous. Moreover, the Supreme Court has held that a SIP—and implicitly a FIP—need not take technological or economic feasibility into account in establishing limits on emissions.¹⁴³

136. *Michigan v. EPA*, 213 F.3d 663 (D.C. Cir. 2000).

137. See *Clean Air Interstate Rule (CAIR)*, EPA, <http://archive.epa.gov/airmarkets/programs/cair/web/html/index.html> [https://perma.cc/CFX7-HEE6] (last visited Mar. 8, 2016) (describing CAIR and stating that it was replaced in 2015 by the Cross-State Air Pollution Rule).

138. *North Carolina v. EPA*, 531 F.3d 896, 908 (D.C. Cir. 2008).

139. *EPA v. EME Homer City Generation, L.P.*, 134 S. Ct. 1584 (2014).

140. Regional Haze Regulations, 64 Fed. Reg. 35,714 (July 1, 1999) (to be codified at 40 C.F.R. pt. 51).

141. *Id.*

142. *Oklahoma v. EPA*, 723 F.3d 1201, 1204 (10th Cir. 2013).

143. *Union Elec. Co. v. EPA*, 427 U.S. 246 (1976).

At least theoretically, then, existing statutory authority under the Clean Air Act would allow EPA to ban the use of fossil fuels in both mobile and stationary sources. Imposition of such a ban through administrative action by an executive agency would fall within the long tradition of presidential executive actions in response to crises, such as President Lincoln's adoption of the Emancipation Proclamation and President Franklin Roosevelt's imposition of bank holidays during the Great Depression.¹⁴⁴ Action pursuant to existing statutory authority such as the Clean Air Act, in response to a global crisis such as catastrophic climate change, would make such executive action relatively likely to survive judicial review.¹⁴⁵ Nevertheless, such action could not be taken unless the national political climate were sufficiently favorable to avoid congressional action repealing EPA authority to regulate greenhouse gas emissions.¹⁴⁶

B. New Legislation

Although the Clean Air Act likely provides sufficient authority for the Executive Branch to effectuate a near-complete ban on the use of fossil fuels, a future President seeking to implement such a ban may wish to have more specific legislative authority, or it may be that a future Congress may take the lead in implementing climate protections. Indeed, the great environmental protection initiatives of the early 1970s—NEPA, the Clean Air Act, and the Clean Water Act—were all legislative initiatives taken with the reluctant cooperation of President Nixon.¹⁴⁷ Past legislation illustrates the effectiveness of statutory bans in achieving environmental results. Congress could ban the sale

144. See President Abraham Lincoln, Emancipation Proclamation (Jan. 1, 1863), http://www.archives.gov/exhibits/featured_documents/emancipation_proclamation/index.html [<https://perma.cc/WB8C-NYEB>]; President Franklin Roosevelt, Proclamation 2040—Bank Holidays (Mar. 9, 1933), <http://www.presidency.ucsb.edu/ws/?pid=14485> [<https://perma.cc/6SZZ-5G86>].

145. *Youngstown Sheet & Tube Co. v. Sawyer*, 343 U.S. 579 (1952).

146. S. 66, 114th Cong. (2015); H.R. 4813, 113th Cong. (2014); S.J. Res. 30, 113th Cong. (2014); H.R. Con. Res. 57, 113th Cong. (2014).

147. Although President Nixon created the EPA and signed the 1970 Clean Air Act into law, he vetoed the 1972 Federal Water Pollution Control Act Amendments (now known as the Clean Water Act), which was passed over his veto. See *Domestic Politics*, PBS, <http://www.pbs.org/wgbh/americanexperience/features/general-article/nixon-domestic/> [<https://perma.cc/ZF3Q-P6UK>] (last visited Mar. 8, 2016).

or use of fossil fuels in the exercise of its power to regulate interstate commerce or as an exercise of the treaty power (assuming an international treaty banning fossil fuels were negotiated).¹⁴⁸ Although there might be constitutional objections to such a ban based on the Takings Clause of the Fifth Amendment or based on a claim of deprivation of some fundamental right protected by the Due Process Clause of the Fifth Amendment, such claims are unlikely to succeed. As with other absolute bans, there is some risk that exceptions and bypass provisions will be adopted legislatively, administratively, or judicially.

1. Statutory Bans

Congress has in the past reacted to environmental crises by adopting statutory bans on environmentally harmful activities. Such bans have included the Endangered Species Act's prohibition against taking or trading in endangered species, the "Delaney Clause" prohibition against cancer causing chemical residues in food products, and the phaseout of ozone depleting chlorofluorocarbons.¹⁴⁹ Such legislative bans are almost certainly within the scope of Congress's Commerce Clause power, and might also be effectuated under the Treaty Clause power. Although some have questioned whether Fifth Amendment takings compensation might be due to holders of fossil fuel reserves in the event of such a ban,¹⁵⁰ existing precedent precludes a claim for such compensation.¹⁵¹ However, such statutory bans on ubiquitous activities tend to provoke bypass provisions and exceptions—whether created by

148. See U.S. CONST. art. I, § 8, cl. 3; see also U.S. CONST. art. II, § 2, cl. 2.

149. See Endangered Species Act § 9, 16 U.S.C. § 1538 (2012); Food Additives Amendment of 1958, Pub. L. No. 85-929, § 4, 72 Stat. 1784, 1785–86 (codified as amended at 21 U.S.C. § 348 (2012)); *Phaseout of Class I Ozone-Depleting Substances*, EPA, <http://www.epa.gov/ods-phaseout/phaseout-class-i-ozone-depleting-substances> [<https://perma.cc/H96D-N8RZ>] (last visited Mar. 6, 2016).

150. Nicholas S. Cortese, Note, *Drawing Lines in the Shale: Local Zoning Bans, the Takings Clause, and the Clash to Come If New York State Promulgates Hydrofracking Regulations*, 64 SYRACUSE L. REV. 489, 508 (2014); Christopher Hayes, *The New Abolitionism*, NATION (Apr. 22, 2014), <http://www.thenation.com/article/new-abolitionism/> [<https://perma.cc/C2X7-KKB7>]; Mireya Navarro, *New York Judge Rules Town Can Ban Gas Hydrofracking*, N.Y. TIMES (Feb. 21, 2012), http://www.nytimes.com/2012/02/22/nyregion/town-can-ban-hydrofracking-ny-judge-rules.html?_r=0 [<https://perma.cc/2PSP-AYGA>].

151. Palazzolo v. Rhode Island, 533 U.S. 606 (2001).

legislation, administrative rulemaking, or judicial interpretation.

a. Constitutional Authority

i. Commerce Authority

Most environmental regulation and prior statutory bans have been implemented as an exercise of Congress's commerce power. The Commerce Clause authorizes Congress "to regulate commerce with foreign nations, and among the several states, and with the Indian tribes."¹⁵² This grant of authority to regulate commerce has expanded over the years to include plenary authority to regulate in three categories related to interstate movement of goods and value: (1) instrumentalities of commerce—that is, objects moving in commerce and the transportation infrastructure that moves them, (2) channels of commerce, and (3) activities which, in the aggregate, substantially affect interstate commerce.¹⁵³ The Supreme Court's modern decisions have put a further gloss on this third category, requiring that the effect on commerce be "substantial," that the regulated activity itself be "economic" activity, and implicitly, that the power claimed by Congress not be so broad as to usurp the general police powers reserved to the States under our system of federalism.¹⁵⁴ Under the Necessary and Proper Clause, Congress enjoys such legislative powers as are "appropriate" to implement its regulation of commerce.¹⁵⁵

The Court upheld Congress's exercise of the third category of the commerce power to adopt general environmental protection legislation in *Hodel v. Virginia Surface Mining & Reclamation Ass'n*.¹⁵⁶ In *Hodel*, coal mining trade associations and States challenged provisions of the Surface Mining Control and Reclamation Act requiring that surface mine operators restore and revegetate land disturbed by surface mining activities.¹⁵⁷ The Court had no trouble finding that the environmental

152. U.S. CONST. art. I, § 8, cl. 3.

153. *United States v. Lopez*, 514 U.S. 549, 558 (1995).

154. *Id.* at 559.

155. *See Gonzales v. Raich*, 545 U.S. 1, 38 (2005); *McCulloch v. Maryland*, 17 U.S. 316, 415 (1819).

156. *Hodel v. Va. Surface Mining & Reclamation Ass'n*, 452 U.S. 264 (1981).

157. *Id.* at 268.

effects of surface mining had an impact on interstate commerce sufficient to invoke the commerce power, and the Court specifically endorsed the rationale that uniform national environmental standards were an appropriate limitation on economic competition by States to lower their environmental standards.¹⁵⁸

Nevertheless, Congress's power to protect environmental values pursuant to the Commerce Clause is not unlimited. The Court has in recent decades limited the scope of the commerce power, albeit in non-environmental contexts. In *United States v. Lopez*, the Court struck down provisions of the Gun-Free School Zones Act that criminalized mere possession of a firearm on school grounds, holding that Congress may not regulate non-economic activity, such as mere possession of an object, based on inferences about the aggregate impacts of such conduct on interstate commerce.¹⁵⁹ Likewise, in *United States v. Morrison*, the Court struck down provisions of the Violence Against Women Act making certain acts of violence committed against women a federal crime, rejecting congressional findings that violence against women throughout society had a substantial impact on interstate commerce.¹⁶⁰

These cases suggest that the Court will not uphold regulation of non-economic activity under the Commerce Clause based solely on an aggregate impact of the activity on the national economy. These cases may cast some doubt upon Congress's power to protect environmental values from private, non-business conduct. Indeed, Chief Justice John Roberts, then sitting as a judge of the United States Court of Appeals for the District of Columbia Circuit, expressed doubt that the Endangered Species Act could constitutionally be applied to a property owner's fence construction that potentially interfered with the habitat of an endangered toad that lived only in California.¹⁶¹

Clearly, Congress would have the authority to ban the quintessentially economic activities of purchasing and selling

158. *Id.* at 280.

159. *Lopez*, 514 U.S. at 567.

160. *United States v. Morrison*, 529 U.S. 598 (2000).

161. *See Rancho Viejo, LLC v. Norton*, 334 F.3d 1158, 1160 (D.C. Cir. 2003) (Roberts, J., dissenting); *see also id.* at 1159 (Sentelle, J., dissenting) (referring to fence construction as non-economic activity like gun possession).

fossil fuels pursuant to the Commerce Clause as well as quintessentially commercial activities such as importation and interstate transportation of fossil fuels. There can be no serious question that fossil fuel sales and commerce, as well as the climate change impacts of greenhouse gases, substantially affect the national economy. There may be a wrinkle when it comes to a ban on fossil hydrocarbons for fuel use. Hydrocarbons have commercial uses other than as fuels, such as chemical feedstocks for manufacturing and fertilizers.¹⁶² A ban on fossil fuels would have to allow for commerce in fossil hydrocarbons for non-fuel, non-GHG generating uses, while simultaneously banning the use of such fossil hydrocarbons for GHG-emitting energy production. Such a ban on the private use of an otherwise lawful substance might arguably be considered non-economic conduct beyond the reach of the commerce power, just like the fence construction in the challenge to the Endangered Species Act prohibition against taking an endangered species.

The Supreme Court addressed the question of bans on personal possession and use of illicit drugs under the Controlled Substances Act in *Gonzales v. Raich* and held that individual possession bans were authorized under the Necessary and Proper Clause of the Constitution as an appropriate means of implementing the comprehensive regulation of an interstate market in illicit drugs.¹⁶³ The Court reached this conclusion despite the premise that such possession and use was not an economic activity and would not be subject to commerce power regulation except for its connection to the interstate market in illicit drugs.¹⁶⁴ *Raich* thus suggests that Congress might ban individual possession and use of fossil fuels as part of an overall ban on the manufacture, transport, or sale of fossil fuels in interstate commerce. *Raich* does not fully address the question of whether the commerce power authorizes Congress to regulate the possession or use of a substance for particular purposes (such as the use of fossil hydrocarbons as fuel rather than as

162. See *Overview of Greenhouse Gases: Nitrous Oxide Emissions*, EPA, <http://www3.epa.gov/climatechange/ghgemissions/gases/n2o.html> [<https://perma.cc/3AM7-W8TT>] (last visited Mar. 10, 2016).

163. *Gonzales v. Raich*, 545 U.S. 1, 22 (2005).

164. *Id.*

chemical feedstocks). Nonetheless, the Controlled Substances Act also prohibits possession of certain specified drugs for illicit purposes—i.e., the possession or use of prescription drugs without a prescription.¹⁶⁵ *Raich* only addressed the constitutional validity of the total ban on possession or use of Schedule I controlled substances. However, its reasoning that such a ban is “necessary and proper” to implement regulation of the interstate market in these drugs is arguably broad enough to support a ban on possession or use for particular purposes.

The Court’s more recent decision rejecting the commerce power as authority for enactment of the Affordable Care Act (“ACA”)—*National Federation of Independent Business v Sebelius*¹⁶⁶—might also be read as casting some doubt on Congress’s authority to regulate private, non-commercial conduct, such as the use of fossil fuels for heating or transportation purposes. In *Sebelius*, the Court held that the individual mandate provision of the ACA was not a valid exercise of the commerce power or the Necessary and Proper Clause.¹⁶⁷ The individual mandate provision of the ACA requires all individuals, subject to certain income limitations, to purchase health insurance.¹⁶⁸ The Court held that neither the Commerce Clause nor the Necessary and Proper Clause could be construed to reach individual inactivity and require affirmative conduct such as the purchase of a service in the market.¹⁶⁹ As far as the commerce power was concerned, the Court held that inactivity was by its very nature non-economic and thus not subject to regulation based on aggregate substantial impacts on the national economy.¹⁷⁰ As far as the necessary and proper power was concerned, the Court held that the Necessary and Proper Clause could not be read to invoke a “great substantive and independent power,” such as a regulation requiring affirmative activity.¹⁷¹ A ban on the use of fossil fuels would not seem to run directly afoul of *Sebelius*, as Congress would clearly be regulating activity rather than

165. 21 U.S.C. § 844(a) (2012).

166. *Nat’l Fed’n of Indep. Bus. v. Sebelius*, 132 S. Ct. 2566 (2012).

167. *Id.* at 2587.

168. 26 U.S.C. § 5000A(a) (2012).

169. *Sebelius*, 132 S. Ct. at 2587, 2592.

170. *Id.* at 2589.

171. *Id.* at 2591.

inactivity. However, the Court's expansive notion of what individual conduct counts as "non-economic" might plausibly be argued to preclude regulation of private, noncommercial individual use of fossil hydrocarbons.¹⁷²

ii. Treaty Power

In order to be effective in mitigating global climate change, a ban on fossil fuels will necessarily have to reflect a global consensus that such a ban is necessary. Such a consensus is also likely to find reflection in an international treaty to which the United States will be a party. The treaty power—combined with Congress's implementation authority under the Necessary and Proper Clause—would be an obvious alternative source of legislative authority to implement an international ban on the use of fossil fuels.

Article II, Section 2, Clause 2 of the Constitution grants the President the "Power, by and with the Advice and Consent of the Senate, to make Treaties, provided two thirds of the Senators present concur."¹⁷³ Article I, Section 8, Clause 18 of the Constitution provides that "[t]he Congress shall have Power . . . [t]o make all Laws which shall be necessary and proper for carrying into Execution the foregoing Powers, and all other Powers vested by this Constitution in the Government of the United States, or in any Department or Officer thereof."¹⁷⁴ As the treaty power is one of the powers vested by the Constitution in the U.S. government, the Necessary and Proper Clause, by its terms, authorizes Congress to adopt legislation to execute the treaty power.

In *Missouri v. Holland*, the Supreme Court interpreted the combined treaty power and Necessary and Proper Clause expansively.¹⁷⁵ The Court upheld federal legislation limiting hunting seasons for migratory waterfowl as a necessary and proper means of implementing the Migratory Bird Treaty between the United States and the United Kingdom (on behalf of Canada).¹⁷⁶ According to the Court, "[i]f the treaty is valid

172. See generally James R. May, *Healthcare, Environmental Law, and the Supreme Court*, 43 ENVTL. L. 233 (2013).

173. U.S. CONST. art. II, § 2, cl. 2.

174. U.S. CONST. art. I, § 8, cl. 18.

175. See *Missouri v. Holland*, 252 U.S. 416 (1920).

176. See *id.* at 435.

there can be no dispute about the validity of the statute” that implements it “as a necessary and proper means to execute the powers of the Government.”¹⁷⁷ The Court rejected a Tenth Amendment challenge to the Migratory Bird Treaty Act that was based on the States’ traditional exclusive role in regulating the hunting of wild animals.¹⁷⁸

Missouri v. Holland remains the Court’s only direct statement on the scope of Congress’s power to implement U.S. treaties through domestic legislation. There is an implicit limit on the scope of the *Holland* holding, in that the underlying treaty must be “valid” and must deal with a subject that is an appropriate matter for an agreement among nations. The Court had no trouble finding that the protection of migratory birds that transit across international boundaries was an appropriate matter for an international treaty. So, too, would a limitation on the use of fossil fuels whose emissions cross international boundaries and which are causing a global climate crisis be an appropriate matter for an international treaty. Indeed, greenhouse gas emissions are already subject of one international treaty to which the United States is a signatory—the United Nations Framework Convention on Climate Change.¹⁷⁹ In addition, the principle that all nations have an obligation to limit pollution emissions within their borders that cause harmful impacts beyond their borders is now a well-established principle of customary international law.¹⁸⁰ Indeed, the case widely seen as establishing the customary international law principle against cross-boundary pollution, the Trail Smelter Arbitration, is directly applicable to the cross-boundary pollution issues of climate change.¹⁸¹ It would appear that under existing law, Congress would have ample authority to implement a ban on the use of fossil fuels as

177. *See id.* at 432.

178. *Id.*

179. *See generally* U.N. Conference on Environment and Development: Framework Convention on Climate Change, May 9, 1992, 31 I.L.M. 849.

180. *See* Trail Smelter (U.S. v. Can.), 3 R.I.A.A. 1905 (Trail Smelter Arb. Trib. 1941); U.N. Conference on Environment and Development, *Rio Declaration on Environment and Development*, princ. 2, U.N. Doc. A/CONF.151/26 (Vol. I), annex I (Aug. 12, 1992).

181. Russell A. Miller, *Surprising Parallels Between Trail Smelter and the Global Climate Change Regime*, in *TRANSBOUNDARY HARM IN INTERNATIONAL LAW: LESSONS FROM THE TRAIL SMELTER ARBITRATION* (Rebecca Bratspies & Russell A. Miller eds., 2006).

a means of implementing an international treaty adopting such a ban.

It is hard to predict whether the expansive treaty implementation power of *Missouri v. Holland* will survive until fossil fuel abolition becomes a political reality. The Court recently avoided revisiting *Missouri v. Holland* in *Bond v. United States*.¹⁸² *Bond* addressed the application of the Chemical Weapons Convention Implementation Act of 1998 to a domestic crime of attempted poisoning with a chemical substance.¹⁸³ A majority of the Court declined to address the scope of the necessary and proper power to implement a treaty by criminalizing conduct traditionally regulated by the States.¹⁸⁴ Rather, the Court applied the “clear statement” rule of avoiding constitutional issues by interpreting the statute narrowly, as being inapplicable to Bond’s purely domestic criminal conduct.¹⁸⁵ Three Justices dissented however, and would have reached—and narrowed—the scope of the Treaty Clause implementation power.¹⁸⁶ Justice Scalia’s dissent reasoned that the Necessary and Proper Clause literally only authorizes legislation that supports the making of treaties, and not legislation supporting the implementation of a treaty once made.¹⁸⁷ This reasoning would overrule *Missouri v. Holland* and would not authorize implementing legislation effectuating a hypothetical international treaty banning the use of fossil fuels. Justice Thomas’s dissent in *Bond* would limit the treaty power itself to authorize only treaties dealing with conduct of relations between nations, rejecting any treaty that purports to address the conduct of individual citizens.¹⁸⁸ Under Justice Thomas’s approach, a treaty prohibiting the use of fossil fuels would be beyond the scope of the treaty power. It remains to be seen whether either of these positions ultimately garners the support of a majority on the Court.

182. *Bond v. United States*, 134 S. Ct. 2077, 2098 (2014).

183. *Id.* at 2083.

184. *Id.* at 2081.

185. *Id.* at 2088.

186. *Id.* at 2102.

187. *Id.* at 2098.

188. *Id.* at 2103.

b. Constitutional Objections

Whether a ban on fossil fuels is implemented legislatively or administratively, there will likely be constitutional objections made to the ban. Some commentators have questioned whether owners of fossil fuel reserves should be entitled to compensation for the loss of value of their assets.¹⁸⁹ Under current law, such a claim is not likely to succeed under the Takings Clause of the Fifth Amendment.¹⁹⁰ Constitutional resistance to the ban on fossil fuels might also take the form of a fundamental rights based claim, most likely based on the right to travel.

i. Takings

Oil, gas, and coal reserves reported by energy sector companies represent approximately five times more burnable carbon than can safely be converted to greenhouse gas carbon dioxide without exceeding the two degrees Celsius that the IPCC considers the maximum survivable increase in planetary temperatures.¹⁹¹ An effective response to climate change—which, as explained above, is most likely to take the form of a ban on fossil fuels once the increment is reached—will effectively require that these reserves largely be left in the ground. This has led to discussion in the financial press about whether these energy companies are overvalued by a market that continues to attribute value to these unburnable reserves—a so-called fossil fuel asset bubble.¹⁹² This situation led Christopher Hayes to suggest that these energy companies

189. Hayes, *supra* note 150.

190. *Lingle v. Chevron*, 544 U.S. 528 (2005).

191. *Do the Math*, *supra* note 15.

192. BLOOMBERG NEW ENERGY FIN., BLOOMBERG CARBON RISK VALUATION TOOL (2013), http://about.bnef.com/content/uploads/sites/4/2013/12/BNEF_WP_2013-11-25_Carbon-Risk-Valuation-Tool.pdf [<http://perma.cc/BK6R-68W5>]; NICK ROBINS, ANDREW KEEN & ZOE KNIGHT, COAL AND CARBON: STRANDED ASSETS: ASSESSING THE RISK (2012); *Unburnable Fuel*, ECONOMIST (May 4, 2013), <http://www.economist.com/news/business/21577097-either-governments-are-not-serious-about-climate-change-or-fossil-fuel-firms-are>. [<http://perma.cc/ZHR7-PHMY>]; *Financial Analyses of Stranded Assets & the Carbon Bubble*, U. WIS.-OSHKOSH, <http://www.uwosh.edu/es/climate-change/divestment/carbon-bubble> [<http://perma.cc/89EU-KVEV>] (last visited Feb. 17, 2016).

may be entitled to compensation should climate regulations destroy the value of their assets.¹⁹³

There is some historical precedent for compensating asset holders for the loss of value associated with a radical restructuring of economic arrangements. When Great Britain abolished slavery in its colonies in 1833, the legislation provided for approximately twenty million pounds of compensation to be paid to the slaveholders—the equivalent of 16.5 billion pounds in 2013.¹⁹⁴ This payout represented forty percent of the annual spending budget of Great Britain at the time.¹⁹⁵ The United States, of course, did not pay compensation to slaveholders upon the adoption of the Emancipation Proclamation or the Thirteenth Amendment.

If anything, the business of extracting and selling fossil fuels may seem to be less inherently morally repugnant than the business of buying, selling, and forcing the labor of human beings. At first blush, the fossil fuel industry's legal and fairness-based claims for compensation may seem stronger than those of the nineteenth century slaveholders. Fifth Amendment Takings doctrine, however, would not support a claim for compensation by owners of stranded fossil fuel assets. A government ban on fossil fuels would not constitute a physical appropriation or destruction of personal property by the government, so a traditional takings claim would not lie.¹⁹⁶ The Supreme Court long ago rejected a takings claim in an analogous case of regulatory asset obsolescence in *Mugler v. Kansas*.¹⁹⁷ In *Mugler*, a distillery owner argued unsuccessfully that Kansas's prohibition against the production or sale of alcoholic beverages constituted an unconstitutional taking of

193. Hayes, *supra* note 150 (comparing the demands of the opponents of slavery and the opponents of fossil fuels, both of which ask “that some of the wealthiest people in the country . . . give up their wealth”); *see also* Cortese, *supra* note 150, at 491 (arguing that regulation which prevents mineral rights holders from exploiting their property interests may lead to regulatory takings claims).

194. NICHOLAS DRAPER, *THE PRICE OF EMANCIPATION 2* (Cambridge University Press, 2010); *Legacies of British Slave-Ownership*, U. C. LONDON DEP'T HIST. (2015), <http://www.ucl.ac.uk/lbs/project/context/> [<http://perma.cc/NC2R-ECV2>].

195. Sanchez Manning, *Britain's Colonial Shame: Slave-Owners Given Huge Payouts After Abolition*, INDEPENDENT (Feb. 23, 2013), <http://www.independent.co.uk/news/uk/home-news/britains-colonial-shame-slave-owners-given-huge-payouts-after-abolition-8508358.html> [<http://perma.cc/BHD8-9CLS>].

196. *Andrus v. Allard*, 444 U.S. 51, 65–66 (1979).

197. *Mugler v. Kansas*, 123 U.S. 623 (1887).

the distillery, which was rendered worthless by the ban.¹⁹⁸ *Mugler* has been applied more recently by lower courts to reject takings claims based on the value-destroying effects of fishing quotas on trawlers¹⁹⁹ and double-hull safety requirements on newly obsolete single-hulled oil barges.²⁰⁰ In *Andrus v. Allard*, the Supreme Court rejected a takings challenge asserted against the Endangered Species Act prohibition against the sale or interstate transportation of articles made from endangered species.²⁰¹ A ban on the sale and use of fossil fuels would seem to present a weaker claim for compensation than the claim rejected in *Allard*, as such a ban would not eliminate all possible marketable uses for fossil fuels. For example, crude oil would still be a valuable feedstock for chemical, fertilizer, and plastics production.

A fairness-based claim for compensation is also less than compelling. The political system owes business corporations no duty to protect asset values against obsolescence. Anyone investing in fossil fuel reserves since the turn of the twenty-first century has done so with full knowledge of the scientific consensus that an effective response to global warming would entail severe restrictions on the continued use of fossil fuels. The entire theory of our capitalist free market economic system is that those who invest in a business with full knowledge of the existential threats facing that business deserve no protection from their market losses.²⁰²

ii. Fundamental Rights

Legislation that effects a radical social or economic restructuring not uncommonly meets judicial resistance, often in the form of recognition or expansion of previously unrecognized “fundamental rights” protected by the Due Process Clause of the Fifth and Fourteenth Amendments. Thus, the Missouri Compromise, seeking to confine slavery to the existing southern states, spawned the Court’s expanded recognition of the substantive property rights of slave owners

198. *Id.*

199. *See* *Conti v. United States*, 48 Fed. Cl. 532, 536 (2001).

200. *Maritrans Inc. v. United States*, 342 F.3d 1344 (Fed. Cir. 2003).

201. *See generally Andrus*, 444 U.S. 51.

202. *See, e.g.,* Matthew J. Gustin, *The O’Bannon Court Got It Wrong: The Case Against Paying NCAA Student-Athletes*, 42 W. ST. L. REV. 137, 147 (2015).

protected by the Due Process Clause in *Dred Scott v. Sandford*.²⁰³ Wage and hour legislation empowering workers in relation to their employers was held to violate a substantive right to “freedom of contract” in *Lochner v. New York*.²⁰⁴ State and federal attempts to limit the traditional power of moneyed interests in politics gave rise to cases such as *First National Bank v. Bellotti* and *Citizens United v. Federal Elections Commission*, recognizing and expanding a right to political expression on the part of business corporations.²⁰⁵ Even the *National Federation of Independent Business* case, rejecting the commerce power justification for the Affordable Care Act’s restructuring of the health care industry in the United States, can be read as an implicit endorsement of an unrecognized right to refrain from entering into a contract, as Chief Justice Roberts’s opinion for the majority in that case reasoned that to force individuals to purchase health insurance involved the exercise of a “great substantive and independent power” beyond the scope of the powers implied by the Necessary and Proper Clause of the Constitution.²⁰⁶

It can be expected that a restructuring of the energy economy as extreme as a ban on the use of fossil fuels will attract some sort of rights-based constitutional challenge. Recognition of an autonomy-based fundamental right to burn fossil fuels seems a bit far-fetched under current Supreme Court doctrine, which has resisted expansion of autonomy-based fundamental rights to include practices that cause harms that the legislature seeks to limit. Thus, in *Washington v. Glucksberg*, the Court declined to recognize an autonomy-based fundamental right to life-ending medical choices.²⁰⁷ Similarly, the Court limited the extent of its protection of the free exercise of religion when confronted with a religious practice—peyote use—deemed by the legislature to be harmful.²⁰⁸

A more likely vehicle for a rights-based challenge to a ban on the use of fossil fuels might be a claim of an impermissible burden on the constitutionally recognized right to interstate

203. *Dred Scott v. Sandford*, 60 U.S. 393 (1857).

204. *Lochner v. New York*, 198 U.S. 45 (1905).

205. *Citizens United v. Fed. Election Comm’n*, 130 S. Ct. 876 (2015); *First Nat’l Bank v. Bellotti*, 435 U.S. 765 (1978).

206. See *Nat’l Fed’n of Indep. Bus. v. Sebelius*, 132 S. Ct. 2566, 2593 (2012).

207. *Washington v. Glucksberg*, 521 U.S. 702 (1997).

208. *Emp’t Div. v. Smith*, 494 U.S. 872 (1990).

travel. The right to travel has a long pedigree, having first been recognized by Justice Washington in *Corfield v. Coryell*, which held that “the right of a citizen of one state to pass through, or to reside in any other state, for purposes of trade, agriculture and professional pursuits” is a privilege or immunity protected by Article IV, Section 2 of the Constitution.²⁰⁹ This right of free interstate movement was likewise recognized in *The Slaughterhouse Cases* as being one of the few federal privileges and immunities protected by the Privileges and Immunities Clause of the Fourteenth Amendment.²¹⁰ The Court struck down a one-dollar fee on persons exiting Nevada in *Crandall v. Nevada*, finding the power to levy any tax on interstate travel to be inconsistent with federal sovereignty.²¹¹ In *United States v. Guest*, the Court upheld a civil rights indictment for interfering with the right to travel, calling the right “fundamental.”²¹² More recently, in the latter part of the twentieth century, the Court has struck down durational residency requirements for state public assistance benefits as violative of the right to interstate migration, grounding its analysis in heightened equal protection scrutiny²¹³ and Fourteenth Amendment Privileges and Immunities.²¹⁴ The right to travel encompasses a fundamental right to unfettered interstate travel, while the right to international travel is subject to reasonable restrictions.²¹⁵ Although the Supreme Court has suggested in dicta that there is no fundamental right to intrastate travel, circuit courts remain split on the question.²¹⁶

Even assuming a ramping up of renewable energy technologies, a ban on fossil fuels will likely make long distance travel much more expensive or much less convenient. Although liquid biofuels are already proven substitutes for

209. *Corfield v. Coryell*, 6 F. Cas. 546, 552 (E.D. Pa. 1823).

210. *Slaughter-House Cases*, 83 U.S. 36 (1872).

211. *Crandall v. Nevada*, 73 U.S. 35 (1867).

212. *United States v. Guest*, 383 U.S. 745, 764 (1966).

213. *Shapiro v. Thompson*, 394 U.S. 618 (1969).

214. *Saenz v. Roe*, 526 U.S. 489 (1999).

215. See Raymond C. James, *The Right to Travel Abroad*, 42 *FORDHAM L. REV.* 838, 838–40 (1974).

216. Andrew C. Porter, *Toward a Constitutional Analysis of the Right to Intrastate Travel*, 86 *NW. U. L. REV.* 820, 821 (1992).

fossil fuels for ground and air transportation,²¹⁷ the planetary energy balance dictates that renewable liquid fuels can never be as plentiful—and therefore as cheap—as fossil fuels have been.²¹⁸

Accordingly, a ban on fossil fuels might be subject to a claim that the extreme increase in the cost of long distance travel constitutes an unconstitutional burden on the right to interstate travel. Such a claim is plausible, but would be unlikely to succeed under current law. In *Williams v. Fears*,²¹⁹ the Supreme Court declared that the “right of locomotion” was a liberty protected by the Due Process Clause in considering a challenge to a Georgia license tax on emigrant agents. The Court found that the tax impacted the right to interstate travel only indirectly.²²⁰ Nevertheless, the Court has rejected claims that the right to drive a car is fundamental, upholding restrictions on qualifications for driver’s licenses and declining to require pre-deprivation process for license suspension or revocation.²²¹

Circuit courts have similarly rejected claims against regulations making air travel more expensive or less convenient. Most memorably, the Ninth Circuit rejected a claim that the effect of air travel rate regulation was to make air travel unaffordable in violation of the constitutional right to travel.²²² The Court declared that a “rich man can choose to drive a limousine; a poor man may have to walk. The poor man’s lack of choice in his mode of travel may be unfortunate,

217. See Don Looper & Aaron Ball, *Feel the Heat: Biofuels Are a Hot Investment, but Don’t Get Burned* . . . , HOUS. LAW. MAG., Jan./Feb. 2007, at 22, 23–24.

218. With the exception of nuclear energy, all fuels represent stored solar energy that has reached Earth. Fossil fuels consist of solar energy that was amassed and stored over a period of millions of years and consumed in a matter of centuries. *Where Does the Energy in Fossil Fuels Come From?*, MICH. TECH. U., <http://tecalive.mtu.edu/meec/module19/Page4.htm> [<https://perma.cc/GK6S-V4VY>] (last visited May. 15, 2016). Renewable energy, by definition, can only represent the amount of solar energy that has reached the Earth over the same time frame that it is consumed. Thus, renewable energy can never be as plentiful as fossil fuels have been during the two centuries of intense fossil fuel consumption since the industrial revolution.

219. *Williams v. Fears*, 179 U.S. 270, 274 (1900).

220. See *id.* at 278.

221. See *Dixon v. Love*, 431 U.S. 105, 112–16 (1977).

222. *Monarch Trav. Servs. v. Associated Cultural Clubs*, 466 F.2d 552 (9th Cir. 1972).

but it is not unconstitutional.”²²³ The Fifth Circuit similarly rejected a challenge to air routing regulations that made air travel less convenient, declaring “the argument reduces to the feeble claim that passengers have a constitutional right to the most convenient form of travel. That notion, as any experienced traveler can attest, finds no support whatsoever.”²²⁴

These cases, however, provide an exception where the effect of the regulation burdening individual locomotion has the effect of completely cutting off available means of travel.²²⁵ A complete ban on fossil fuels might make transcontinental and intercontinental air travel prohibitively expensive for all but the wealthiest members of society, opening up such a ban to a claim that it effectively precludes such travel in violation of the constitutional right.

While no court has characterized such an interest as a fundamental right subject to heightened scrutiny, two district court decisions in the Ninth Circuit have recognized that the expense and burdens of alternatives to air transport for international trips make the denial of the option of air travel the equivalent of a ban on international travel. According to the Northern District of California:

While the Constitution does not ordinarily guarantee the right to travel by any particular form of transportation, given that other forms of travel usually remain possible, the fact remains that for international travel, air transport in these modern times is practically the only form of transportation, travel by ship being prohibitively expensive.²²⁶

These district courts addressed the Transportation Security Agency’s “No-Fly List” and determined that the excluded air passengers had a due process protected liberty interest which guaranteed the provision of adequate procedures for an individual to challenge their inclusion on the list. These courts

223. *Id.* at 554.

224. *City of Houston v. FAA*, 679 F.2d 1184, 1198 (5th Cir. 2000); *see also* *Green v. Transp. Sec. Admin.*, 351 F. Supp. 2d 1119 (W.D. Wash. 2005) (stating right to travel is subject to reasonable restrictions).

225. *See generally* Timothy Baldwin, *The Constitutional Right to Travel: Are Some Forms of Transportation More Equal Than Others?*, 1 NW. J.L. & SOC. POL’Y 213 (2006).

226. *Latif v. Holder*, 969 F. Supp. 2d 1293, 1303 (D. Or. 2013) (citing *Ibrahim v. Homeland Security*, 2012 WL 6652362, *7 (N.D. Cal. 2012)).

did not declare that the right to international air travel was a fundamental right subject to strict scrutiny. Indeed, Supreme Court precedent precludes a declaration that the right to international travel is a fundamental right.²²⁷

c. Exceptions and Bypass Provisions

There are few true absolutes in the law. As Professor Zygmunt Plater has observed, the history of absolute prohibitions in environmental law has been a history of judicial, administrative, and legislative exceptions and bypasses.²²⁸ The best example of this process is the prohibition against any federal project that would threaten the continued existence of a species, contained in section 7 of the Endangered Species Act.²²⁹ The absolute prohibition of section 7 ultimately gave way to the section 7(e) endangered species committee process for exempting federal activities deemed sufficiently important from the ban.²³⁰

Other attempts at absolute bans have likewise drawn statutory or judicial exceptions. The Thirteenth Amendment ban on involuntary servitude, for example, has been interpreted not to prohibit military conscription²³¹ or prison labor.²³² During prohibition, Congress legislated an exemption from the ban on the production or sale of alcohol for sacramental wine.²³³ It is hard to predict what exceptions and bypasses may arise under a ban on fossil fuel use; one can easily imagine an exception for national defense uses.

C. Achieving a Fossil Fuel Ban Through Constitutional Amendment

Professor Lazarus has suggested that the severity of economic adjustments to be wrought by effective mitigation of climate change may require some form of pre-commitment strategy to insulate greenhouse gas regulation from the

227. *Kent v. Dulles*, 357 U.S. 116 (1958); see generally Jeffrey Kahn, *International Travel and the Constitution*, 56 UCLA L. REV. 271 (2008).

228. See PLATER, *supra* note 78, at 446–48.

229. 16 U.S.C. § 1536(a)(2) (2012).

230. *Id.* § 1536(e).

231. See *Arver v. United States*, 245 U.S. 366, 390 (1918).

232. *United States v. Reynolds*, 235 U.S. 133, 149–50 (1914).

233. National Prohibition Act, Pub. L. No. 66-66, tit. II, § 6, 41 Stat. 305, 310 (1919).

inevitable political backlash.²³⁴ One of the arguments of this Article in favor of a simple ban on the sale and use of fossil fuels is that it avoids the political and economic allocation issues that are inevitable in a system of taxation, marketable permits, or direct regulation. An outright ban on fossil fuels would not require an independent agency to administer.

However, a legislatively or administratively imposed ban on the sale or use of fossil fuels would still be subject to political backlash and legislative reversal. It may be that the most efficacious means of protecting a ban on fossil fuels from legislative reversal would be a constitutional amendment banning fossil fuels. Such an amendment would also resolve potential challenges to federal authority to implement a ban. While the likelihood of achieving the congressional resolution and ratification by three fourths of the States may seem fanciful in today's political climate, the premise of this Article is that the coming climate disaster will eventually become sufficiently urgent that a political consensus in favor of a ban on fossil fuels will become possible, just as the political consensus in favor of strong action against water, land, and air pollution developed in the 1970s.

As discussed in the next Part of this Article, there are historical examples of social change movements achieving the ultimate pre-commitment of constitutional amendment. The ultimate success of the abolition movement in achieving the adoption of the Thirteenth Amendment in the nineteenth century is one example. Another example is the success of the temperance movement in achieving ratification of the Eighteenth Amendment in the early twentieth century. The very different experiences with these two constitutional amendments may provide a useful frame to consider the prospects for successful implementation of a fossil fuel ban.

V. MEETING THE SOCIAL-POLITICAL CHALLENGE OF A FOSSIL FUEL BAN: THE NEW ABOLITIONISM MEETS THE OLD ABOLITIONISM

Reducing greenhouse gas emissions in the United States to a level that is consistent with avoiding catastrophic global climate change will require fundamental changes in the U.S.

234. See Lazarus, *supra* note 80, at 1193.

energy economy.²³⁵ Addressing climate change will also require fundamental changes to individual personal choices about where people live, work, play, and how they heat and cool their homes.²³⁶ While efficiency and renewable energy technologies may be able to carry us a long way towards achieving the necessary independence from fossil fuels, full achievement of this goal is inconsistent with current U.S. energy consumption patterns under which many Americans choose to live far from their jobs, drive to work in large single-passenger vehicles, and fly long distances for recreational, social, and business reasons.²³⁷

The working assumption among institutions, organizations, and scholars is that the radical economic and social change necessary to address global warming will be driven by law and legal institutions.²³⁸ Much ink has been spilled discussing the relative merits of a whole panoply of legal tools, ranging from economic controls such as emissions trading regimes and carbon taxes to traditional regulatory controls such as emissions limits, to the extension of common law doctrines of tort liability or public trust as a means of controlling greenhouse gas emissions.²³⁹ The premise of the first half of

235. *Reducing Greenhouse Gas Emissions*, EPA, <https://www3.epa.gov/climatechange/reducing-emissions.html> [<https://perma.cc/YUW4-RZX7>] (last visited May 15, 2016).

236. *Sources of Greenhouse Gas Emissions: Transportation*, EPA, <https://www3.epa.gov/climatechange/ghgemissions/sources/transportation.html> [<https://perma.cc/7T3Y-D62V>] (last visited May 15, 2016).

237. U.S. DEP'T OF STATE, UNITED STATES CLIMATE ACTION REPORT 2014, at 68–69 (2014), <http://www.state.gov/documents/organization/219038.pdf> [<https://perma.cc/T3QM-TGV7>].

238. *See, e.g.*, UNITED NATIONS ENVTL. PROGRAMME, THE ROLE OF LEGAL INSTRUMENTS TO SUPPORT GREEN LOW-EMISSION AND CLIMATE RESILIENT DEVELOPMENT (2013), http://www.unep.org/delc/Portals/119/publications/Role_Legal_Instruments_Climate_Resilient.pdf [<https://perma.cc/X9BC-3R9V>] (last visited Jan. 29, 2016); Geoffrey Palmer, *The Implications of Climate Change for International Law and Institutions*, 2 TRANSNAT'L L. & CONTEMP. PROBS. 205, 213 (1992); *About the Center*, SABIN CTR. FOR CLIMATE CHANGE L., <http://web.law.columbia.edu/climate-change/about-center> [<https://perma.cc/MSL9-HAED>] (last visited Jan. 29, 2016).

239. *See generally* David Belis, *Climate Finance in the European Union: Domestic and International Challenges*, in RESEARCH HANDBOOK ON CLIMATE CHANGE MITIGATION LAW 509 (Geert Van Calster et al. eds., 2015); Maxine Burkett, *Legal Rights and Remedies*, in THE LAW OF ADAPTATION TO CLIMATE CHANGE: U.S. AND INTERNATIONAL ASPECTS 823 (Michael B. Gerrard & Katrina Fischer Kuh eds., 2012); KEN COGHILL ET AL., FIDUCIARY DUTY AND THE ATMOSPHERIC TRUST 2 (2012); Darragh Conway, *Blazing Trail or Flickering Flame? Market Mechanisms Under the UNFCCC*,

this Article is that some sort of legal ban on fossil fuel use will eventually be necessary. The working assumption behind these discussions is that—properly implemented—legal change is capable of prompting the sort of permanent social change that will be required to address climate change.

This represents a tremendous national and global change in economic and social arrangements to be achieved in a matter of a few decades. The magnitude and abbreviated timeframe for this necessary change would place it among such progressive national transformations as the elimination of slavery, school desegregation, gender and race equality, and prohibition. If anything, the necessary time frame may be shorter than it took to achieve, or partially achieve, these other progressive goals. Under what circumstances can law reform achieve cultural reform on this scale?

Law-driven social changes of this magnitude are not unprecedented, but seem relatively few. Climate activists in the United States consciously draw on the civil rights movement of the 1960s in both their rhetoric and their tactics, hoping to repeat the relatively successful social change accomplished by 1960s civil rights legislation.²⁴⁰ However, the civil rights struggle is not the only paradigm for fundamental social and economic change driven by law. Other examples of such fundamental change include abolition, prohibition, gender equality, school desegregation, and to a lesser extent, the twentieth century development of the administrative state, the New Deal, and the 1970s environmental law revolution. At least one of these social change initiatives (prohibition) was an abject failure, another (abolition) was a complete success. The others have had moderate—but incomplete—success at achieving the degree of social restructuring.

in RESEARCH HANDBOOK ON CLIMATE CHANGE MITIGATION LAW, *supra*, at 425; Nidhi Srivastava, *Climate Change Mitigation in India*, *in* RESEARCH HANDBOOK ON CLIMATE CHANGE MITIGATION LAW, *supra*, at 634; THERESA M. THORP, CLIMATE JUSTICE: A VOICE FOR THE FUTURE (2014).

240. See Mark Hertsgaard, *The Making of a Climate Movement*, NATION (Oct. 22, 2007), <http://www.thenation.com/article/making-climate-movement/> [<https://perma.cc/W54N-7EGM>]; Michael Svoboda, *From Social Change to Climate Change: Lessons from the 1960s?*, YALE CLIMATE CONNECTIONS (Jan. 9, 2014), <http://www.yaleclimateconnections.org/2014/01/from-social-change-to-climate-change-lessons-from-the-1960s/> [<https://perma.cc/E2ZT-GDJR>].

While climate activism has begun to take on the mantle of the “New Abolitionism,” climate activists and law reform advocates have yet to adopt the implication of this sobriquet—that the proper response to human induced climate change is a total ban on the burning of fossil fuels.²⁴¹ Rather, climate law reform advocates argue for putting a price on carbon, effectively converting the problem from one of moral and ethical responsibility for destruction of the planetary ecosystem to one of proper economic allocation of a limited resource.²⁴² It is the premise of this Article that such a ban is the logical and rhetorically consistent response to human-induced climate change, and that the abolition movement of the eighteenth and nineteenth centuries provides the most promising analogue for successful law-induced cultural reform. Conversely, prohibition serves as a cautionary example of a failed law reform movement; the civil rights movement may be a flawed analogue. In short, the climate movement (at least in the United States) consciously models itself on the civil rights movement, but bears some unfortunate similarities to the temperance movement of the nineteenth and twentieth centuries, and needs to become more like the globally successful movement for the abolition of slavery of the eighteenth and nineteenth centuries.

The mainstream U.S. environmental movement has yet to confront the distributive justice problem inherent in an allocation approach to a phaseout of carbon emissions.²⁴³ Achievement of a global middle class with a U.S. middle class carbon footprint is utterly inconsistent with confining global emissions to the 565 gigatons remaining. Yet a visit to the websites of the national environmental organizations does not reveal that any of these organizations are telling their members or the public at large to be abandoning their gas-powered cars, moving out of their single-family houses, or even eschewing air travel, as if the nation and the world can achieve a carbon neutral energy future without all of these things

241. See Hayes, *supra* note 150.

242. The author admits to having espoused this view in the past. See Karl S. Coplan, *Public Trust Limits on Greenhouse Gas Trading Schemes: A Sustainable Middle Ground?*, 35 COLUM. J. ENVTL. L. 287 (2010).

243. See Eric A. Posner & Cass R. Sunstein, *Climate Change Justice*, 96 GEO. L.J. 1565 (2008).

happening.²⁴⁴ Something has to give: either the hugely disproportionate U.S. carbon footprint—even among the constituents of environmental organizations—or aspirations for a more equal global economic distribution.

It is not surprising that U.S. environmental organizations, fearful of alienating their own membership, have chosen to avoid taking a position on the global allocation of the 565 gigaton carbon increment or what that would mean for the price of gasoline, airline tickets, and the lifestyles of their members. This organizational behavior is consistent with what some social scientists have described as the resource mobilization model of social movements, in which social movements act primarily to perpetuate themselves, much like business firms, and frame issues and grievances in ways that will not alienate their supporters.²⁴⁵

Existing technologies do exist to replace most, but not all, the accoutrements of middle class life.²⁴⁶ However, these solutions cost more than their fossil-powered equivalents and have not been widely adopted—even among environmentalists.²⁴⁷ Carbon pricing mechanisms hope to achieve conversion to renewables by driving up the price of carbon until renewable energy alternatives enjoy a price advantage.²⁴⁸ Thus, the unspoken premise behind carbon pricing strategies is to achieve carbon neutrality by making a fossil-powered lifestyle more expensive than its renewable alternative—not by making

244. See generally CONSERVATION FUND, <http://www.conservationfund.org> [<https://perma.cc/QNZ6-U299>] (last visited Apr. 3, 2016); GREENPEACE, <http://greenpeace.org> [<https://perma.cc/YBH5-563B>] (last visited Apr. 3, 2016); SIERRA CLUB, <http://www.sierraclub.org> [<https://perma.cc/ALJ6-FRLS>] (last visited Apr. 3, 2016).

245. STEVEN M. BUECHLER, UNDERSTANDING SOCIAL MOVEMENTS: THEORIES FROM THE CLASSICAL ERA TO THE PRESENT 111 (2011).

246. HELEEN DE CONINCK & ROBERT BYRNE, LOW-CARBON TECHNOLOGY FOR THE RISING MIDDLE CLASS (2013), <http://climatestrategies.org/wp-content/uploads/2014/10/Policy-Brief-Low-carbon-technology-for-the-rising-middle-class.pdf> [<https://perma.cc/N2RG-69HH>].

247. KENNETH GILLINGHAM & JAMES SWEENEY, BARRIERS TO IMPLEMENTING LOW CARBON TECHNOLOGIES (2012), <http://web.stanford.edu/group/peec/cgi-bin/docs/policy/research/Barriers%20to%20Implementing%20Low%20Carbon%20Technologies.pdf> [<https://perma.cc/VS2U-3YYS>].

248. Kevin Kennedy et al., *Putting a Price on Carbon: A Handbook for U.S. Policymakers* 2 (World Res. Inst., Working Paper, 2015), http://www.wri.org/sites/default/files/carbonpricing_april_2015.pdf [<https://perma.cc/DF85-FV7B>].

alternative fuels less expensive (though some mitigation through economies of scale, subsidies, or technological innovation are hoped for). While a zero carbon economy is technically feasible, it will require a huge reallocation of technology and an abandonment of investments in existing carbon-dependent infrastructure: not just the fossil fuels that must remain in the ground,²⁴⁹ but the automobiles, power plants, planes, suburbs, houses, and highways that have been built in reliance on their continued availability.²⁵⁰ Some markers of middle class existence in the developed world—large single family houses, single passenger cars, and cheap air travel—may simply be unavailable in a zero carbon energy economy.

Nor is there any visible global movement towards achieving the necessary rate of carbon emissions. Allocation approaches to limiting carbon emissions have failed to achieve the necessary reductions where implemented²⁵¹ and have failed politically in the United States. Based on current trends, limiting carbon emissions to 565 gigatons by mid-century would seem to require implementation of a zero carbon global energy economy by the year 2030, as the 565 gigaton increment will be fully used up by then.²⁵²

A. Can Law Change Culture?

The underlying premise of much of the climate change debate among legal scholars and economists is that as long as the governing system of laws generates the appropriate legislative, judicial, or regulatory set of rules, then the market and social economies will come into line, conform, internalize the rules,

249. Hayes, *supra* note 150.

250. John H. Cushman, Jr., *Is 'Net-Zero' Carbon Goal to Rescue the Climate Plausible?*, INSIDE CLIMATE NEWS (Feb. 20, 2015), <http://insideclimatenews.org/news/20022015/net-zero-carbon-goal-rescue-climate-plausible> [<https://perma.cc/LN5R-AJZN>].

251. See Jutta Brunnée & Stephen J. Toope, *Interactional International Law and the Practice of Legality*, in INTERNATIONAL PRACTICES 108, 124 (Emanuel Adler & Vincent Pouliot eds., 2011) (stating the Kyoto Protocol's targets were too modest to achieve the necessary reductions).

252. Alex Morales, *World Set to Exhaust 75% of Carbon Budget by 2030, UN Says*, BLOOMBERG (Oct. 30, 2015), <http://www.bloomberg.com/news/articles/2015-10-30/world-set-to-exhaust-75-of-carbon-budget-by-2030-un-says> [<https://perma.cc/L94L-TC5Y>].

and achieve the desired results.²⁵³ This breezy optimism about the power of law reform to effect social and economic change is not necessarily justified, as the three prime examples examined in this Article illustrate. Law reform in these cases is just the beginning—a tentative beginning—of social reform of this magnitude.

Prohibition may well be the starkest example of law reform that failed as social reform.²⁵⁴ But even the law reform movement most generally hailed as a success—the civil rights movement—is an incomplete success at best and has taken over a generation to internalize. Just as *Brown v. Board of Education*²⁵⁵ did not immediately (or ultimately) integrate American public schools, the emancipation and equality promises of the Thirteenth and Fourteenth Amendments have taken generations to internalize.

Indeed, some legal scholars have questioned the efficacy of legal change to accomplish progressive social change. Professor Gerald Rosenberg argues that *Brown* did not prompt any of the modest improvements in race relations and social integration that followed from it: “In terms of judicial effects, then, *Brown* and its progeny stand for the proposition that courts are impotent to produce significant social reform.”²⁵⁶ Professor Gerald Torres has similarly questioned whether law reform, controlled by elites, is sufficient to accomplish social reform.²⁵⁷ Torres notes that the *Brown* decision, addressed to racial classifications in education rather than equality of resources, failed to achieve its promise of improved educational outcomes due to white flight, tracking, and provocation of class anxieties among the lower-income whites left in integrated school systems.²⁵⁸ Torres argues for an expanded understanding of the role of law in social change and inclusion of non-elites in

253. David Gelles, *To Achieve Paris Climate Goals, U.S. Will Need New Laws*, N.Y. TIMES (Dec. 19, 2015), http://www.nytimes.com/2015/12/20/business/energy-environment/to-achieve-paris-climate-goals-us-will-need-new-laws.html?_r=0 [https://perma.cc/BG4Q-PMSD].

254. *The Temperance Movement and Prohibition*, ENCYCLOPEDIA.COM, <http://www.encyclopedia.com/article-1G2-2587100023/temperance-movement-and-prohibition.html> [https://perma.cc/729Q-79DP] (last visited May 15, 2016).

255. 347 U.S. 483 (1954).

256. GERALD N. ROSENBERG, *THE HOLLOW HOPE: CAN COURTS BRING ABOUT SOCIAL CHANGE?* 71 (2d ed. 2008).

257. Gerald Torres, *Legal Change*, 55 CLEV. ST. L. REV. 135, 140 (2007).

258. *Id.*

this understanding, what he and Professor Lani Gunier have dubbed “Demosprudence.”²⁵⁹ And Professor Thomas Stoddard has similarly noted the potential disconnect between law reform and social internalization of the reformed norms.²⁶⁰ Stoddard commented on the disconnect he observed between the normative laws in New Zealand guaranteeing equal rights regardless of sexual preference and the complete invisibility of gays in New Zealand society.²⁶¹ Stoddard thus points out the distinction between “rule shifting” and “culture shifting.”²⁶² Stoddard identifies four factors that must be present for rule changing to effect culture change: “For ‘culture-shifting’ to take place, all four factors must be engaged. The four factors are these: (1) A change that is very broad or profound; (2) Public awareness of that change; (3) A general sense of the legitimacy (or validity) of the change; and (4) Overall, continuous enforcement of the change.”²⁶³

These scholars recognize that legal change is just a part of remedial societal change. As the failed example of prohibition and the incomplete success of the civil rights reforms illustrate, the relationship between law reform and the underlying social movement is key to the success of remedial laws. Perhaps Richard Kluger, in his history of the desegregation effort, put it best:

But law, in a democracy, cannot impose that resolution by the force of the state alone. Democracy is too unruly for that. That is its great weapon against the would-be tyrant; that is the agony it imposes on the most enlightened reformer. Law in a democracy must contend with reality. It has to persuade. It has to induce compliance by its appeal to shared human values and social goals. How well law succeeds in winning, however reluctantly, the abandonment of unjust private advantage is perhaps the severest, and best, measure of that society’s humanity.²⁶⁴

259. *Id.* at 141.

260. See Thomas B. Stoddard, *Bleeding Heart: Reflections on Using the Law to Make Social Change*, 72 N.Y.U. L. REV. 967, 974 (1997).

261. *Id.* at 972.

262. *Id.* at 977–78.

263. *Id.* at 978.

264. RICHARD KLUGER, *SIMPLE JUSTICE* 745 (2004).

As Kluger points out, successful law reform “has to persuade.”²⁶⁵ It must have a social component as well as a political and legal component, thus the prospects for successful law reform cannot be considered without reference to the larger social movement of which that law reform is a part. Social movements must convince a substantial portion of society of the justness of their cause, and they must motivate individuals to participate and identify with the movement.²⁶⁶ Issue framing plays an important role in this process, and social and legal reform movements depend heavily on identifying victims of injustice and the villains causing that injustice to recruit adherents to their cause.²⁶⁷ The nature of these victims and villains may have some bearing on the ultimate success of the reform movement.

B. Climate Activism in the United States: The Civil Rights Model

While nearly all of the national environmental organizations in the United States have active climate advocacy programs, one organization, 350.org, has stepped forward as the leading social activist group organized specifically around the climate change issue. 350.org’s name refers to the number of parts per million of CO₂ the global atmosphere must be reduced to in order to avoid catastrophic climate change.²⁶⁸ 350.org has explicitly adopted the mantle of the civil rights activists of the 1960s and the anti-apartheid South African divestment activists of the 1970s and 1980s.²⁶⁹ Like the civil rights movement, 350.org has deployed protest rallies and civil disobedience to publicize its cause.²⁷⁰ Its more recent campaigns have included a rally in Washington, D.C., culminating in a march on the White House to protest the anticipated approval of the Keystone XL shale oil pipeline.²⁷¹

265. *Id.*

266. BUECHLER, *supra* note 245, at 146.

267. *Id.*; see, e.g., Eve Bratman, *Villains, Victims, and Conservationists? Representational Frameworks and Sustainable Development on the Transamazon Highway*, 39 HUM. ECOL. 441, 441–42 (2011).

268. See *What We Do*, 350.ORG, <http://350.org/about/what-we-do/> [<https://perma.cc/A44Y-S7VD>] (last visited Jan. 29, 2016).

269. *Id.*

270. *Id.*

271. *Id.*

Many protestors at this rally were arrested after refusing orders to break up the unpermitted demonstration.²⁷² Other acts of civil disobedience have included trespassing on mountaintop removal coal mine property in order to interfere with coal mining operations.²⁷³ 350.org's most recent campaign—"Fossil Free"—seeks to organize college students to hold sit-ins in university offices to demand disinvestment of endowments from fossil fuel industry investments.²⁷⁴ This campaign is explicitly modeled on campus divestment campaigns of the 1970s and 1980s as a protest against South Africa's apartheid policy.²⁷⁵

C. The Possible Climate Activism Analogues: Law Driven Social Change Paradigms in the United States

Climate activists thus seek to take on the mantle of the 1960s civil rights activists and have adopted many of the civil rights activists' tactics. But the civil rights struggle of the 1960s is not the only analog for achieving social change through activism for legal changes. Nor is it necessarily the most apt analog. Practically from its birth as a nation, the United States has spawned social activist movements, from the abolitionist and temperance movements of the early nineteenth century, through the prohibitionists and suffragists of the early twentieth century, to the civil rights movement of the mid-twentieth century, and the environmental movement of the later twentieth century.

These activist movements have leveraged political activism into legal change, which in turn implemented social and economic reordering of a scale similar to those necessary to

272. Jamie Henn, *KeystoneXL Protest at the White House Leads to Mass Arrests*, 350.ORG (Mar. 2, 2014), <http://350.org/press-release/keystone-xl-protest-at-the-white-house-leads-to-mass-arrests/> [<https://perma.cc/VE7F-M5EA>].

273. See *100 Arrested in Washington as Part of Appalachia Rising Mobilization*, 350.ORG, <http://350.org/100-arrested-washington-part-appalachia-rising-mobilization/> [<https://perma.cc/5NC2-V3ZG>] (last visited Mar. 5, 2016); *Four Anti-Mountaintop Removal Activists Arrested at Home*, COAL IS DIRTY, <http://www.coal-is-dirty.com/four-anti-mountaintop-removal-activists-arrested-home> [<https://perma.cc/SH6A-WVKE>] (last visited May 15, 2016).

274. *About Fossil Free*, FOSSIL FREE, <http://gofossilfree.org/about-fossil-free/> [<https://perma.cc/8Z4P-CD49>] (last visited Jan. 29, 2016).

275. See *Desmond Tutu Endorses Divestment Action at Harvard*, 350.ORG (Mar. 3, 2015), <http://350.org/press-release/desmond-tutu-endorses-divestment-action-at-harvard/> [<https://perma.cc/5UCQ-NADM>].

respond to climate change. In each case, activists challenged existing social and economic arrangements and relationships, and in each case, defenders of the status quo made similar arguments about the impracticality and social disruptiveness of the changes demanded by the activists. These movements have used various legal tools, ranging from legislative reform to litigation to constitutional amendment, in order to achieve their social and economic restructuring goals. The rhetoric used by each of these social change movements echoes their predecessors. The following discussion investigates and compares features of these social change efforts in order to provide context for the current activism for the social change necessary to address climate change.

The civil rights movement has served as the prototype for every U.S. social movement since, and is the model consciously adopted by climate change activists in the United States.²⁷⁶ Similarities and dissimilarities with this movement thus bear examination. In addition, the temperance movement of the nineteenth and twentieth centuries and the abolition movement of the eighteenth and nineteenth centuries are comparable to the climate response movement in the scope of economic and social readjustment they seek and their reliance on law reform as their primary means of achieving this adjustment.²⁷⁷ The successes and failures of these movements, and the similarities and dissimilarities in their strategies and tactics, may have a bearing on the prospects for a successful law-mediated response to climate change.

1. Civil Rights and Racial Equality Movement

Since climate activists claim the mantle of the civil rights marchers of the 1960s, it is worth examining the similarities and differences between the climate movement and the civil rights movement first. Climate stabilization and racial equality share some salient features—as with any social change movement, the activists are pitted against existing social and political institutions that seek to maintain existing hierarchies and economic, social, and political arrangements.

276. THEODORE O. WINDT, JR., *PRESIDENTS AND PROTESTERS: POLITICAL RHETORIC IN THE 1960S* 163 (1990).

277. A comparison to other movements, such as women's suffrage, the 1970s environmental movement, and marriage equality, may also be instructive.

Racial equality, like climate change, can be described as a “wicked” problem—a problem that defies easy solution because the problem’s nature cannot be fully defined without reference to the solutions contemplated.²⁷⁸

Climate activists are also relying on the same legal tools as the civil rights activists of the twentieth century. Just as judicial dismantling of school segregation was the holy grail of the NAACP when a legislative solution was politically impossible, some contemporary climate activists (e.g., Our Children’s Trust) are pressing litigation to invoke the public trust doctrine to achieve judicially mandated imposition of climate change solutions.²⁷⁹ Just as the civil rights activists of the 1960s pressed—successfully—for national legislation banning race discrimination in employment, education, and places of public accommodation, contemporary climate activists are pushing for comprehensive legislation limiting carbon emissions to sustainable levels. And, of course, climate activists have adopted some of the social activism tools deployed by the civil right activists of the 1960s, including mass demonstrations and acts of civil disobedience.

Yet, despite these positive parallels, there are some cautionary parallels and distinctions between the civil rights movement and the climate stabilization movement. If the goal of climate stabilization is a zero carbon energy and transportation economy, then the civil rights movement may not be the best model. The school desegregation decision and the 1960s civil rights legislation succeeded in eliminating de jure school segregation and much overt discrimination in employment and places of public accommodation.²⁸⁰ But half a century later, de facto school segregation persists, and social and economic racial inequality continues.²⁸¹ If the goal of

278. Lazarus, *supra* note 80, at 1159.

279. *2015 Federal Lawsuit, OUR CHILDREN’S TRUST*, <http://ourchildrenstrust.org/us/federal-lawsuit> [https://perma.cc/8V7M-R68N] (last visited Feb. 2, 2016).

280. See Lincoln L. Davies, *Lessons for an Endangered Movement: What a Historical Juxtaposition of the Legal Response to Civil Rights and Environmentalism Has to Teach Environmentalists Today*, 31 ENVTL. L. 229, 292 (2001) (describing the effects of the Civil Rights Act of 1964, which prohibited segregation in public accommodations, prohibited discrimination in employment, and symbolized “that the nation as a whole would not tolerate such blatant, violent racism”).

281. See Sarah Childress, *A Return to School Segregation in America?*, PBS (July 2, 2014), <http://www.pbs.org/wgbh/frontline/article/a-return-to-school-segregation-in->

climate stabilization activists is the achievement of a zero carbon society within fifteen (or even fifty) years, then the civil rights movement is an example of failure rather than success.

There is also some inconsonance between the civil rights demonstrations and acts of civil disobedience of the 1960s and those of contemporary climate activists. Both use mass protests and acts of civil disobedience to draw public attention to their cause and demonstrate the depth of their own personal commitment to the cause,²⁸² but the organizers and participants in the earliest civil rights demonstrations consisted largely of the African American victims of racial injustice in this country. The civil rights movement can justly claim to have been a grievance-initiated rather than a resource mobilization-initiated movement. To be sure, the civil rights movement ultimately recruited northern middle class whites to their cause,²⁸³ but this was only after the movement had already achieved some of its most significant legal and social victories, including *Brown* and the Montgomery bus boycott. Climate activists have adopted the slogan “climate justice” in support of their cause in recognition of the differential impacts climate change will have on developing nations and communities of color.²⁸⁴ But the victims of climate injustice are by and large missing from the climate activists’ demonstrations. These victims tend to be geographically and temporally remote from the U.S. climate activism community. The People’s Climate March in New York City in September 2014 set aside over twenty-five city blocks for the staging of the marchers, with barely four blocks set aside for the marchers representing climate victim communities.²⁸⁵ If anything, the

america/ [https://perma.cc/Z4CY-CB8R] (“By 2011, the percentage of black students in majority white schools was 23.2 percent—slightly lower than it was in 1968.”); Jolie Lee, *Still Apart: Map Shows States with Most-Segregated Schools*, USA TODAY (May 15, 2014), <http://www.usatoday.com/story/news/nation-now/2014/05/15/school-segregation-civil-rights-project/9115823/> [https://perma.cc/3JSQ-E3XK] (citing racial discrimination, movement of affluent families, and housing discrimination as factors that contribute to continued segregation in schools).

282. Marilyn Sewell, *Civil Disobedience and Climate Change*, HUFFINGTON POST (Aug. 5, 2015), http://www.huffingtonpost.com/marilyn-sewell/civic-disobedience-and-cl_b_7935984.html [https://perma.cc/M56E-78GK].

283. DOUG MCADAM, FREEDOM SUMMER 37 (1988).

284. *Climate Justice*, 350.ORG, <http://350.org/category/topic/justice/> [https://perma.cc/HKN3-5BFG] (last visited May 15, 2016).

285. *The People’s Climate March Lineup*, PEOPLE’S CLIMATE MARCH, <http://2014.peoplesclimate.org/lineup/> [https://perma.cc/WA6H-GKGS] (last visited Apr.

marchers and protesters, consisting of those Americans who can afford to fly to Washington, D.C. and New York City, are more likely to be on the “giving” end of climate injustice than on the receiving end. There is no small irony in the fact that simply by flying to one of these protests and returning home, many of the protesters have greatly exceeded that one-ton annual per capita direct carbon footprint the world needs to achieve. This lack of true climate victims among the marchers not only makes for poor television, it dilutes the power of the message compared to the civil rights marches of the 1960s.

The civil rights movement included clear victims and villains. African Americans were being beaten, murdered, and arrested simply for seeking to exercise the basic rights and enjoy the basic equalities that are drawn into the nation’s founding documents.²⁸⁶ The villains were the Southern police chiefs siccing attack dogs on peaceful protestors, the lynch mobs attacking the freedom riders, and the government officials who refused to register eligible African Americans to vote.²⁸⁷ Not only does the climate movement lack such clear individual victims, it also lacks clear individual villains as well. Climate activists have focused their attention on the fossil fuel industry and cast that industry as the villain.²⁸⁸ This may be useful framing for recruitment and motivation of its members, but it lacks the visceral appeal of individual cruelty and violence directed at the civil rights activists. And the climate activists’ choice to cast the fossil fuel industry as its villain suffers ultimately from a problem of misdirection: it is not the extraction and distribution of fossil fuels that is the primary cause of climate change, it is the burning of those fuels. And the people who burn those fuels are for the largest part the

3, 2016); see Ari Phillips, *More than 310,000 People Descend on New York to March for Climate Action*, THINKPROGRESS (Sept. 21, 2014), <http://thinkprogress.org/climate/2014/09/21/3570150/peoples-climate-march/> [<https://perma.cc/2PSP-KMJF>].

286. Simone Sebastian, *Don’t Criticize Black Lives Matter for Provoking Violence. The Civil Rights Movement Did, Too*, WASH. POST (Oct. 1, 2015), <https://www.washingtonpost.com/posteverything/wp/2015/10/01/dont-criticize-black-lives-matter-for-provoking-violence-the-civil-rights-movement-did-too/> [<https://perma.cc/4CKU-XMYM>].

287. See SARA BULLARD, *FREE AT LAST: A HISTORY OF THE CIVIL RIGHTS MOVEMENT AND THOSE WHO DIED IN THE STRUGGLE* (1989).

288. Mike Gold, *Climate Change Super Villains*, RIVERDALE PRESS (Dec. 31, 2014), <http://riverdalepress.com/stories/Climate-change-super-villains,56073>.

very supporters of the climate justice movement, middle-class Americans.

One can understand the movement's choice not to cast its own supporters as villains, but at some point issue framing must confront issue reality, and full implementation of a climate response will require social change even among the liberal middle-class supporters of the climate movement, not just on the part of Exxon Mobil. It is telling that the Montgomery bus boycott required every African American in Montgomery, Alabama to give up their usual mode of commuting to work and to ride-share (and in many cases walk) to work for an entire year.²⁸⁹ That the climate movement has not yet asked such a sacrifice from its adherents indicates a certain failure, to date, to internalize the true goals of the movement and to identify the true cause of the climate grievances.

The climate activists' acts of civil disobedience also lack some of the rhetorical force of those of the 1960s civil rights activists. Pure civil disobedience involves a public violation of an unjust law as a means of demonstrating the injustice of the law as well as publicizing the injustice.²⁹⁰ When Rosa Parks refused to surrender her bus seat to a white passenger, she was arrested for violating the very segregation laws that she was seeking to overturn.²⁹¹ Similarly, the sit-ins at segregated lunch counters were a protest against the use of trespass laws to deprive African Americans of equal treatment at private establishments open to the public.²⁹² When a climate protester is arrested for failing to disperse at an unpermitted demonstration, it is not the laws regulating public demonstrations that the activist is opposed to. The arrests still help call attention to the activists' cause—particularly when the arrestees include leaders of the climate activism community like James Hansen, Robert F. Kennedy, Jr. (and his

289. *Rosa Parks and the Montgomery Bus Boycott*, U.S. HIST., <http://www.ushistory.org/us/54b.asp> [<https://perma.cc/GAL2-UP93>] (last visited May 16, 2016).

290. *Civil Disobedience*, MERRIAM-WEBSTER, <http://www.merriam-webster.com/dictionary/civil%20disobedience> (last visited May 16, 2016).

291. *Rosa Parks and the Montgomery Bus Boycott*, *supra* note 289.

292. *Freedom Struggle*, SMITHSONIAN NAT'L MUSEUM AM. HIST., <http://americanhistory.si.edu/brown/history/6-legacy/freedom-struggle-2.html> [<https://perma.cc/M4WR-S6ES>] (last visited May 16, 2016).

son Conor), veteran civil rights leader Julian Bond, and the President of the Sierra Club.²⁹³ But these acts of civil disobedience lack the moral persuasion of an arrest for violating a law that is itself patently unjust.

Climate activism consciously invokes the civil rights protests of the 1960s. To be sure, there are parallels. But there are also significant differences, which may make reliance on the civil rights model of activism and legal change imperfectly effective both politically and legally.

2. Prohibition

Many aspects of the climate stabilization battle call to mind another, less flattering analogue—that of prohibition. Prohibition should serve as a cautionary tale for the climate response movement. As an unsuccessful example of law-mediated social change, climate law reformers should pay close attention to the spectacular failure of prohibition. Yet there are uncanny parallels between the temperance movement and the current incarnation of climate activists in the United States. These parallels include the casting of a powerful consumer industry as the villain in the conflict, an evolution in goals from moderation to an outright ban, similar political and social mobilizing tactics, reliance on a precommitment strategy, anti-libertarianism of the movement's goals, the assault on a consumer product in widespread use, the failure of many in the movement to internalize the change sought by the movement, and ultimately, the moralism underlying the movement.

a. Casting Industry as Villains

As noted above, the climate movement has chosen to cast the fossil fuel industry, and its prominent individual titans, as the villains in the conflict.²⁹⁴ The temperance movement similarly

293. See Robert F. Kennedy, Jr. *Arrested: Waterkeeper President Joins Others in Climate Change Rally Outside White House*, HUFFINGTON POST (Feb. 13, 2013), http://www.huffingtonpost.com/2013/02/13/robert-f-kennedy-jr-arrested_n_2679609.html [https://perma.cc/H985-YGV5]; *Top NASA Scientist Arrested (Again) in White House Protest*, FOX NEWS (Feb. 13, 2013), <http://www.foxnews.com/science/2013/02/13/top-nasa-climate-scientist-arrested-again-in-white-house-protest.html> [https://perma.cc/WUM4-ACM6].

294. Gold, *supra* note 288.

cast the brewing and saloon industry as its villains.²⁹⁵ In both cases, a consumer industry is cast as greedy and corrupt, acting without heed to the damage and destruction its practices are causing. In both cases, the industry is accused (with some justice) of having subverted the democratic political system.

The rhetorical parallels are at times uncanny. Norman Clark, a historian sympathetic to the temperance movement, described the movement's characterization of the liquor industry in the following terms:

At every level of municipal or state responsibility, the liquor interests polluted politics They repeatedly financed campaigns in opposition to women's suffrage, and they did their best—and performed at their worst—in perverting democratic practice in the many state and local referenda on the question of licensing saloons.²⁹⁶

Temperance advocate Reverend Mark Matthews similarly (and contemporaneously) described the liquor industry as

the most fiendish, corrupt, and hell-soaked institution that ever crawled out of the slime of the eternal pit. . . . [Congress] has been dominated by the liquor interests for the last forty-two years, and the two great political parties are rum-soaked, saloon cursed, and without conscience on the abolition of this great enemy.²⁹⁷

Current day descriptions of the fossil fuel industry echo these characterizations. Bill McKibben echoes the eighteenth century temperance advocates in his description of the fossil fuel industry:

These companies are a rogue force. They are outlaws. They are not outlaws against the law of the state, they get to write those for the most part. But they are outlaws against the laws of physics. If they carry out their business plan, the planet tanks The thing that is holding us back above all else is the

295. *Roots of Prohibition*, PBS, <http://www.pbs.org/kenburns/prohibition/roots-of-prohibition/> [https://perma.cc/JE9B-QCSP] (last visited May 16, 2016).

296. NORMAN H. CLARK, *DELIVER US FROM EVIL: AN INTERPRETATION OF AMERICAN PROHIBITION 4–5* (W.W. Norton & Co., 1976).

297. DALE E. SODEN, *THE REVEREND MARK MATTHEWS: AN ACTIVIST IN THE PROGRESSIVE ERA 94–95* (U. of Wash. Press, 2001).

simple fact that the fossil fuel industry cheats. Alone among industries they are allowed to pour out their wastes for free.²⁹⁸

Activist Robert F. Kennedy, Jr. describes the industry in similar terms of political corruption:

“They have so rigged the system that we cannot go to court. The oil industry has turned Congress into indentured servants. Even Obama in his State of the Union has to doff his cap to big oil and genuflect to them.”²⁹⁹

These parallel vilifications of industry are important because in both cases, the movement chooses to identify the industry purveyors of a product as the source of the externalities associated with its use by the consumer. Put simply, brewing beer and distilling liquor does not destroy families any more than pumping oil out of the ground causes climate change. In both cases, the externalities that social change movements seek to address are caused by the consumption, not the production, of the product in question. But from a resource mobilization and framing perspective, vilifying the industry that provides the offensive product is more effective, at least in the short term.

In addition to casting the industry itself as the villain, both movements have identified industry leaders for particular demonization. In the case of the temperance movement, the individual villains were the patriarchs of German-American brewing families, including Adolphus Busch. Indeed, anti-German sentiment during World War I has been identified as a factor giving national prohibition the political boost it needed to become a constitutional amendment.³⁰⁰ In the modern day case of climate activists, the individual villains are the Koch brothers, oil industry magnates whose anti-environmental

298. See 350.org, *Do the Math—The Movie*, YOUTUBE (Aug. 13, 2015), <https://www.youtube.com/watch?v=KuCGVwJIRd0> (quoting Bill McKibben at 00:14:20).

299. *Interview with Robert F. Kennedy Jr.*, ABC NEWS (Apr. 14, 2009), <http://abcnews.go.com/Blotter/story?id=7400698&page=1> [<https://perma.cc/DA6H-RRHG>].

300. See Thomas Welskopp, *Prohibition in the United States: The German-American Experience, 1919–1933*, 53 BULL. GHI 31, 32 (2013), http://www.ghi-dc.org/files/publications/bulletin/bu053/bu53_031.pdf [<https://perma.cc/5FYK-7PTZ>].

political donations and support for climate-denier foundations have earned them the special scorn of the climate movement.³⁰¹

b. Evolution from Moderation to Prohibition, and from State-Level Response to Federal

As its name implies, the temperance movement started out as a movement seeking moderation, not complete abstinence, in the consumption of alcoholic beverages. It was only after moderation-directed “temperance” efforts failed to effect meaningful changes in behavior did the movement adopt prohibition as its goal.³⁰² Climate activism is in the process of undergoing a similar conversion, turning from advocacy of market based and rationing-style controls on fossil fuels, as advocated by mainstream environmental organizations, to the unstated goal of abolition of fossil fuels implicit in Bill McKibben’s argument that fossil fuel reserves beyond the 565 gigaton increment be left in the ground.³⁰³ Although 350.org currently advocates simply for divestment from fossil fuel industry investments rather than a ban on fossil fuels, commentators have begun to recognize that McKibben’s argument is an implicit call for fossil fuel abolition.³⁰⁴

There is also a parallel evolution from state-level to federal-level responses. Thwarted politically at the federal level, temperance advocates succeeded in turning many states dry. With the failure of the 2009 Climate Bill,³⁰⁵ climate advocates have had more success at the state level with the implementation of regional state greenhouse gas emissions trading programs, such as the Northeast’s Regional Greenhouse Gas Initiative as well as California’s adoption of comprehensive legislation seeking to achieve a fifteen percent reduction in

301. See, e.g., Eric Holthaus, *Researchers: Exxon, Koch Family Have Powered the Climate-Denial Machine for Decades*, SLATE (Dec. 1, 2015), http://www.slate.com/blogs/future_tense/2015/12/01/exxonmobil_koch_family_have_powered_climate_change_denial_for_decades.html [<https://perma.cc/AT3J-332D>].

302. JOSEPH R. GUSFIELD, *SYMBOLIC CRUSADE: STATUS POLITICS AND THE AMERICAN TEMPERANCE MOVEMENT* 7 (2d ed. 1986).

303. *Do the Math: Frequently Asked Questions*, 350.ORG, <http://math.350.org/questions/> [<https://perma.cc/J9RQ-E36Y>] (last visited May 16, 2016).

304. Hayes, *supra* note 150.

305. H.R. 2454, 111th Cong. (2009).

state-wide carbon emissions by 2020.³⁰⁶ Temperance advocates turned their attention back to the national stage when the Supreme Court held that state bans on importation of alcohol violated the Dormant Commerce Clause.³⁰⁷ Ironically, some aspects of California's renewable energy plan, as well as the renewable energy requirements in some of the regional greenhouse gas control alliances, have now been challenged on the grounds they violate the Dormant Commerce Clause.³⁰⁸

c. Political Tactics

Although climate activists' tactics may seem to be inspired by the civil rights movement, those tactics themselves echoed many of the tactics adopted to great success by the temperance and suffrage movements of the late nineteenth and early twentieth centuries. Long before the 1963 Civil Rights March on Washington, D.C., there was the 1913 Temperance March on Washington, D.C.³⁰⁹ The temperance movement had its political arms, including the National Prohibition Party as well as strategic candidate endorsements and lobbying efforts.³¹⁰

The temperance movement also had its moments of direct-action civil disobedience. The Women's Anti-Saloon League blockaded saloons that were operating legally, while Carrie Nation later made a career of "hatchetizing" saloons operating illegally in violation of state anti-saloon laws.³¹¹ These acts of

306. Global Warming Solution Act, A.B. 32, 2005-06 Reg. Sess. (Cal. 2006) (codified at CAL. HEALTH & SAFETY CODE § 38500 (West 2016)); see REGIONAL GREENHOUSE GAS INITIATIVE, <http://www.rggi.org/> [<https://perma.cc/PF67-DPA4>] (last visited Apr. 3, 2016).

307. *Granholt v. Heald*, 544 U.S. 460 (2005).

308. See *Pac. Merch. Shipping Ass'n v. Goldstene*, 639 F.3d 1154 (9th Cir. 2011); see also Glen C. Hansen, *The Commerce Clause as a Sword to Challenge California's Efforts to Curb Greenhouse Gas Emissions*, ABBOTT & KINDERMANN LAND USE L. BLOG (July 31, 2012), <http://blog.aklandlaw.com/2012/07/articles/air-quality/the-commerce-clause-as-a-sword-to-challenge-californias-efforts-to-curb-greenhouse-gas-emissions/> [<https://perma.cc/RK36-YRTF>].

309. See *The March to National Prohibition*, WESTERVILLE PUB. LIBR., <http://www.westervillelibrary.org/antisaloon-national-prohibition-march> [<https://perma.cc/WPM5-2636>] (last visited Mar. 5, 2016).

310. *Temperance Movement*, ENCYCLOPEDIA.COM, http://www.encyclopedia.com/topic/temperance_movements.aspx [<https://perma.cc/G5ZV-3E4V>] (last visited May 29, 2016).

311. See, e.g., *Carry Nation Smashes Bar*, HISTORY, <http://www.history.com/this-day-in-history/carry-nation-smashes-bar> [<https://perma.cc/7797-Z2HW>] (last visited Mar. 13, 2016).

civil disobedience have echoes in the modern day climate activists chaining themselves to the White House fence to protest the Keystone XL Pipeline and to more direct action activists who chain themselves to mountaintop removal coal mining equipment.³¹²

Beyond these more common forms of public advocacy, the climate movement echoes the temperance movement in its use of science and public education as well. Temperance advocates relied on a developing scientific consensus that alcohol was an addictive drug with no medicinal properties,³¹³ just as climate activists rely on the global scientific consensus that anthropogenic carbon emissions will cause a catastrophic change in the global climate. Temperance advocates succeeded in incorporating anti-alcohol education in the public school curriculum,³¹⁴ just as today's climate activists struggle to ensure that public schools teach the scientific consensus concerning anthropogenic climate change.³¹⁵

d. Pre-Commitment Strategy

Anticipating political resistance in implementation, the temperance movement adopted the ultimate pre-commitment strategy: a constitutional amendment prohibiting the sale or use of intoxicating liquor.³¹⁶ The solution to climate change may well require some super-legislative legal change to implement, such as a constitutional amendment or international treaty.³¹⁷ Climate legislation can be undone as soon as the painful social adjustments begin to kick in, just like

312. See *supra* notes 270–273 and accompanying text.

313. Jack S. Blocker, Jr., *Did Prohibition Really Work? Alcohol Prohibition as a Public Health Innovation*, 96 AM. J. PUB. HEALTH 233, 234 (2006) (noting that at one point every State required schools to include “Scientific Temperance Instruction” in their curriculum, even though teachers doubted the “scientific” nature of the materials).

314. *Id.*

315. See, e.g., Joy Resmovits, *Portland Schools Tried to Change How They Teach Climate Change—and Ignited a Firestorm*, L.A. TIMES (May 24, 2016), <http://www.latimes.com/local/education/la-na-portland-schools-climate-change-20160524-snap-story.html> [<https://perma.cc/JMH5-J4YJ>] (reporting that a school district's attempt to update its textbooks to align with modern science was politicized and even characterized as a book ban).

316. See U.S. CONST. amend. XVIII (repealed 1933).

317. Recall that Professor Richard Lazarus has argued that climate stabilization remedies must be made immune from the usual legislative processes of amendment and repeal. See Lazarus, *supra* note 80.

early attempts at prohibition accomplished at the legislative level were soon undone. Prohibition was ultimately imposed through constitutional amendment.

e. Anti-Libertarianism

Both prohibition of alcoholic beverages and a probable prohibition on the burning of fossil fuels are anti-libertarian; that is, they both profoundly limit freedom of individual action in modern society. Prohibition limits the freedom to choose to imbibe intoxicating liquors, a ban on fossil fuels would limit the unfettered freedom of movement and of travel that is made possible by cheap energy in the form of fossil fuels. Both activities have come to have profound significance for self-definition and autonomy—and alcohol had done so by the time that prohibition was adopted.

The parallels between intoxication and fossil fuels may run deeper than is first apparent, especially when one considers that the American car culture in its current form is almost entirely dependent on cheap and freely available fossil fuels. Alcohol's attraction has always included its ability to induce feelings of power, invulnerability, and control³¹⁸—exactly the same feelings induced by driving an automobile.³¹⁹ “Being in the driver’s seat” is more than a metaphor; it is a statement of cultural values, and one that is not satisfied by public transportation or car pools. A century of advertising has infused American individuality, self-definition, class identification, and personal autonomy with one’s choice of automobile.³²⁰ Western culture may not give this autonomy up any more easily than it was willing to give up the feelings of power and control, however illusory, that come with alcohol.

318. CLARK, *supra* note 296, at 60.

319. See generally SARAH REDSHAW, IN THE COMPANY OF CARS: DRIVING AS A CULTURAL AND SOCIAL PRACTICE 11, 69–70, 89–92 (2008); see also *Emotion Detectors Studied to Make Driving Safer*, AUTOINSURANCE CTR., <http://www.autoinsurancecenter.com/emotion-detectors-studied-to-make-driving-safer.htm> [<https://perma.cc/A43Z-M8YF>] (last visited Feb. 2, 2016) (describing “intoxicating” feelings of “power” and “invincibility” when an angry driver gets behind the wheel).

320. See JANE MOECKLI & JOHN D. LEE, THE MAKING OF DRIVING CULTURES 59 (2007), <https://www.aaafoundation.org/sites/default/files/MoeckliLee.pdf> [<https://perma.cc/K8QN-5BAX>] (“[T]he car and driving have always referenced the American experience of and desire for freedom, individualism, self-realization, prosperity, and progress.”).

Of course, libertarian ideals recognize that personal liberty must have a limit when personal choices cause harm to other people.³²¹ The externalities of fossil fuel consumption undoubtedly justify restrictions on their use in the classic libertarian sense—but they may not in the American cultural tradition of libertarianism. Alcohol also had—and continues to have—its externalities. Temperance advocates sought to address the very real externalities of liquor consumption in the form of destroyed lives and working class families deprived of their needed income. Alcohol continues to kill 88,000 Americans each year.³²² Even if climate change causes Hurricane Katrina-scale events to be an annual occurrence starting in 2050 (and no climate scientist is making such a prediction), a hundred times more Americans will die from the effects of alcohol consumption than will be killed by climate change through 2100 (this does not consider, of course, geographically remote populations that are more likely to suffer the most severe impacts of climate change).³²³ The judgment that one externality justifies autonomy limits while the other does not reflects an implicit value judgment about the worth of the autonomy interest at stake compared to the externalities involved.

Although some defenders of segregation couched their arguments in terms of individual liberty and freedom of association,³²⁴ the civil rights movement did not seek to limit freedom of individual private action in nearly so fundamental a way.

321. JOHN STUART MILL, ON LIBERTY 144–45 (Harvard Press, 1863).

322. CTR. FOR DISEASE CONTROL, ALCOHOL USE AND YOUR HEALTH, <http://www.cdc.gov/alcohol/pdfs/alcoholyourhealth.pdf> [https://perma.cc/DUW9-5V9M] (last visited Apr. 3, 2016).

323. IFAD & THE GLOBAL MECHANISM, CLIMATE CHANGE IMPACTS IN THE ASIA/PACIFIC REGION 1 (2009), <http://www.ifad.org/events/apr09/impact/pacific.pdf> [https://perma.cc/7XD6-TJHS]; J. Maarten Troost, *Kiribati Faces Its Future, and a Rising Ocean*, L.A. TIMES (Nov. 13, 2013), <http://articles.latimes.com/2013/nov/13/opinion/la-oe-troost-climate-change-kiribati-20131113> [https://perma.cc/4SQ8-ZYL4]; Jane Addison, *Impact of Climate Change on Health and Wellbeing in Remote Australian Communities: A Review of Literature and Scoping of Adaptation Options* 10 (Coop. Research Ctr. for Remote Econ. Participation, Working Paper No. CW014, 2013), http://www.crc-rep.com.au/resource/CW014_ImpactClimateChangeHealthWellbeing.pdf [https://perma.cc/6GSS-KE4R].

324. See Herbert Wechsler, *Toward Neutral Principles of Constitutional Law*, 73 HARV. L. REV. 1, 34 (1959).

f. Assault on a Ubiquitous Consumer Product

Implicit in the previous discussion of autonomy and liberty interests, both the temperance movement and the climate movement attack the use of a consumer product in widespread use throughout society. This was not the case in the civil rights movement.

g. Failure to Internalize the Social Change Goals

There is an inherent contradiction between the climate movement's implicit goal to ban fossil fuel consumption and its organization of rallies and marches that depend on fossil fuel consumption to bring its adherents together. The temperance movement shared this contradiction—albeit to a much lesser extent—as many of its adherents were drinkers. To be sure, the temperance movement included a large proportion of moralistic teetotalers, but some supporters of prohibition were themselves drinkers. As historian Norman H. Clark wrote of the author Jack London:

Yet Jack London, like many other drinkers of heroic capacities, poured himself still another glass while musing over his dedicated support of Prohibition. He did not find his support either awkward or dishonest.³²⁵

American climate activists similarly see nothing dishonest or awkward about burning fossil fuels at an unsustainable rate in order to maintain their lifestyle and carry out their protest activities.³²⁶ Some, like alcoholic prohibitionists seeking government help to cure their own alcoholism, may consciously be seeking government regulation to limit their own ability to make choices that, collectively, are destructive to the global ecosystem. Others, like those upper-class prohibitionists who supported prohibition as a means to avoid the socially destructive effects of alcohol on the working class but had every intention on maintaining their own personal wine cellars, may believe that effective climate change regulation will not limit their own lifestyle choices. Indeed, the language of the

325. CLARK, *supra* note 296, at 1.

326. Bill McKibben, *A Moral Atmosphere*, ORION MAG. (Mar. 28, 2013), <https://orionmagazine.org/article/a-moral-atmosphere/> [https://perma.cc/4VL6-4CQ8].

Eighteenth Amendment's prohibition of "intoxicating beverages" left some ambiguity about whether that term would be applied to beer and wine as well as distilled liquors.³²⁷ Some supporters of prohibition may, indeed, have been surprised to learn that it limited their own glass of wine with dinner.

Regardless, the failure of the climate movement to date to internalize its own message about the immorality of burning fossil fuels and the absolute necessity to end the practice should be a warning sign for successful cultural implementation of a legal response to climate change. Unlike the temperance movement, there is no mainstream climate advocate who has completely foresworn the use of fossil fuels.³²⁸ If the temperance movement was unable to gain cultural acceptance of prohibition despite the positive example of legions of teetotalers, there is little reason to expect climate activists to gain cultural acceptance for a ban on fossil fuels.

h. Moral Underpinnings of the Movement

Sociologist Joseph Grusfield's study of the temperance movement characterized the movement as a values and status-oriented movement rather than a grievance-prompted movement.³²⁹ That is, temperance advocates consisted of middle-class Protestants who saw their status and Victorian family values as threatened by the urban immigrant labor who frequented the saloons.³³⁰ These white, middle-class Protestants saw hard work, devotion to family, and sobriety as moral imperatives and reacted to the waning social commitment to abstinence from alcohol as a marker of status.³³¹ Thus, prohibition was an attempt to use the legal and political process to impose one set of lifestyle and family values on the larger population and thus contained the seeds of its own failure.³³²

³²⁷ CLARK, *supra* note 296, at 9.

³²⁸ Sociologist Clare Saunders, *Environmental Networks and Social Movement Theory*, has identified some countercultural environmental communities in London that forswear use of automobiles. *See generally* CLARE SAUNDERS, *ENVIRONMENTAL NETWORKS AND SOCIAL MOVEMENT THEORY* (2013).

³²⁹ *See* GUSFIELD, *supra* note 302.

³³⁰ *Id.* at 98–100, 105–06, 124.

³³¹ *Id.* at 125–26.

³³² *Id.* at 110, 111–38.

As suggested above, the lack of true climate victims among the leadership (and by and large even the membership) of the climate activist movement may render it susceptible to a similar characterization as a values-oriented movement rather than a grievance-oriented movement.³³³ Indeed, the climate policy debate in the United States has become inextricably intertwined with the so-called “culture wars” between the right and the left.

One need not credit the climate-denier’s claim that climate science is an elaborate hoax dreamed up by a liberal cabal in order to impose its communitarian vision on the rest of society to inquire into the extent to which the framing of the climate issue by activist organizations reflects its own sense of cultural values. Certainly, environmentalism in general, and climate activism in particular, reflect a set of moral and cultural values that cannot be defended on pure utilitarian grounds alone, such as the value of leaving natural habitats (including the global climate ecosystem) undisturbed, or the value of preserving the current ecosystem balance for future generations. Climate activism runs some risk of becoming a values-oriented movement (and perhaps suffering the same fate as prohibition) to the extent that it strays from the pure scientific equivalence of carbon emissions. Look at the websites of any of the mainstream environmental organizations and you will see exhortations to take public transportation to work, buy more fuel efficient cars, and increase the efficiency of home heating and cooling, but none of them will tell you to avoid discretionary air travel,³³⁴ even though personal air

333. Many sociologists disagree that there are any truly grievance-oriented social movements, and see the twentieth century rise of social movements in Western democracies as a reflection of the increased leisure and resources available to a middle class that is not generally among the aggrieved members of society. See generally BUECHLER, *supra* note 245.

334. See Kristin Eberhard, *What You Can Do to Reduce Your Carbon Footprint*, SWITCHBOARD (Apr. 29, 2013), http://switchboard.nrdc.org/blogs/kgrenfell/what_you_can_do_to_reduce_your.html [https://perma.cc/F6EL-LFSM]; Bob Schildgen, *Hey Mr. Green, What Should My Carbon-Footprint Goal Be?*, SIERRA MAG. (June 10, 2015), <http://www.sierraclub.org/sierra/2015-4-july-august/green-life/hey-mr-green-what-should-my-carbon-footprint-goal-be> [https://perma.cc/5C9J-GBA5] (suggesting that we offset air travel rather than reduce air travel, and not suggesting offsets instead of other reductions); Komal Singh, *10 Simple Things to Reduce Your Carbon Footprint This 2014*, GREENPEACE COMMUNITY BLOGS (Dec. 22, 2013), http://www.greenpeace.org/india/en/Blog/Community_blogs/10-simple-things-to-do-to-reduce-your-carbon-/blog/47775/ [https://perma.cc/Q8QA-K28Y].

travel is likely by far the largest single component of the individual carbon footprint of most upper middle-class Americans who form the basic constituency of the environmental movement.³³⁵

To the extent that this particular framing of the climate issue reflects underlying cultural values—large cars are bad and unnecessary, while air travel is a form of personal and cultural enrichment and is a good thing, despite equal carbon impacts—the climate movement runs some risk, ultimately, of suffering the same fate as prohibition.

These factors, unfortunately, seem to place the climate movement, at least in its current form, closer to the temperance movement in terms of its tactics, framing, and socio-political basis. This leads to the question whether there are other legal reform social movements that might provide a more positive example for the climate movement. A relatively hopeful analogy may be present in the abolitionist movement originating in the United Kingdom in the eighteenth century, and ultimately spreading to the United States and the rest of the globe.

3. Abolition

If the scientific determination that 565 gigatons of carbon dioxide emissions between now and 2050 is an absolute limit to keep climate change to tolerable levels, then something like an effective, absolute, and fully enforced prohibition on burning fossil fuels would be necessary. Prohibition was neither effective in eliminating alcohol consumption in the United States nor was it effective in maintaining sufficient political support to persist. As noted, the civil rights movement has fallen far short of achieving full integration and racial equality in the United States, despite its great legislative and litigation achievements. As the health of the global ecosystem depends on a completely successful political and legal implementation of controls on fossil fuels, we must search for an example of law-driven social change that was completely successful in achieving its goal. The only U.S. example that comes to mind is abolition. Unlike the temporary and partial success of

335. See, e.g., Elisabeth Rosenthal, *Your Biggest Carbon Sin May Be Air Travel*, N.Y. TIMES (Jan. 26, 2013), <http://www.nytimes.com/2013/01/27/sunday-review/the-biggest-carbon-sin-air-travel.html> [<https://perma.cc/X23S-3SCU>].

prohibition and the unfinished successes of the civil rights movement, slavery has been (all but) completely and permanently abolished in the United States. And, as the response to climate change must be, the abolition of slavery—more properly termed emancipation—was an international effort. Indeed, examination of abolition as a social movement must necessarily focus on the British abolition efforts of the eighteenth and nineteenth centuries. Great Britain was the leader in abolition, both socially and legally.³³⁶

There is growing recognition in the public press of the parallels to be drawn between ending our reliance on fossil fuels and ending the world's economic reliance on slave labor until the mid-nineteenth century. Commentators such as George Monbiot³³⁷ and Christopher Hayes³³⁸ have noted the fact that the Industrial Revolution directly substituted fossil fuels for the work done largely by human slave labor prior to the invention of the steam engine. By comparing climate activism to the abolition of slavery, I by no means wish to draw a moral equivalence between slavery and the burning of fossil fuels. They are simply not moral equivalents. But there may be some moral parallels between enjoying the fruits of slave labor (without being a slaveholder) and enjoying the benefits of a fossil fueled economy without regard to the human consequences of that energy economy. And a slave economy's reliance on practically costless human labor (with abject disregard for its human consequences) has obvious parallels to the Industrial Revolution and the substitution of fossil fuel powered machinery for human labor, with a similar disregard for the ultimate consequences to the global ecosystem. Climate scientist and activist James Hansen has himself called the climate crisis a moral issue on a par with slavery.³³⁹

There are several important structural, organizational, and rhetorical parallels between the historical international abolition project and the fossil fuel elimination project that

336. See John Oldfield, *British Anti-Slavery*, BBC, http://www.bbc.co.uk/history/british/empire_seapower/antislavery_01.shtml [<https://perma.cc/SDY6-JFUH>] (last updated Feb. 17, 2011).

337. MONBIOT, *supra* note 12, at 61.

338. Hayes, *supra* note 150.

339. Severin Carrell, *Nasa Scientist: Climate Change Is a Moral Issue on a Par with Slavery*, GUARDIAN (Apr. 6, 2012), <http://www.theguardian.com/environment/2012/apr/06/nasa-scientist-climate-change> [<https://perma.cc/69Z5-7K34>].

make emancipation an instructive analogy for successful law-mediated social change. These include the widespread cultural acceptance of the practice challenged, the economic nature of the practice challenged, the relation of abolition to international mercantilism, the global nature of the abolition effort, the evolution of the abolitionism from abolition to emancipation, rhetorical similarities in challengers and defenders of the institution challenged, and the parallel legal and social organizing efforts that may be the true antecedents of the 1960s civil rights movement.

a. Cultural Acceptance of Slavery and Fossil Fuels

Until the abolition movements of the seventeenth and eighteenth centuries, slavery was an accepted cultural norm throughout the world, across nations and cultures. It was not until the colonial era that Northern Europe became a small enclave of non-slavery, even while slavery was tolerated in European colonies.³⁴⁰ Similarly, fossil fuel consumption has been a culturally accepted basis for economic activity since the burning of coal commenced in the 1700s.³⁴¹

As Christopher Hayes and others have noted, fossil fuels literally power the global economy, as slaves did in pre-industrial times.³⁴² Like slaves, fossil fuel reserves have been capitalized and form a significant portion of global wealth.³⁴³

b. Relation to Mercantilism and Need for International Solution

Eighteenth century slavery became the workforce for tropical sugar plantations, and the institution came to be justified on the asserted grounds that only coerced (and African) labor was capable of production in the harsh tropical climates suitable for sugar cane production.³⁴⁴ Although free labor advocates—including Adam Smith—argued that free labor must

340. *Slavery in History*, FREE SLAVES, <http://www.freetheslaves.net/about-slavery/slavery-in-history/> [<https://perma.cc/FC9C-S7UT>] (last visited May 29, 2016).

341. *A Brief History of Coal Use*, U.S. DEPT OF ENERGY, http://www.fossil.energy.gov/education/energylessons/coal/coal_history.html [<https://perma.cc/S5QT-JPT4>] (last updated Feb. 12, 2013).

342. Hayes, *supra* note 150.

343. *See id.*

344. SEYMOUR DRESCHER, *ABOLITION: A HISTORY OF SLAVERY AND ANTISLAVERY* 80–81 (2009).

necessarily be more efficient than slaves, the U.K. found that its free colonies could not compete with slave colonies.³⁴⁵ Thus, emancipation—like reliance on renewable energy today—is seen as putting mercantilist economies at a competitive disadvantage in world markets. The elimination of slavery thus became an international project, and as the U.K. moved towards emancipation, first by banning the slave trade, internationalization of the ban became a key part of British foreign policy. Indeed, the British treaty with Spain in 1817 included provisions allowing the U.K. to board Spanish flagged vessels to ensure they were not slave trading and established the first supranational claims tribunals to address claims of improper seizures.³⁴⁶

A response to climate change will similarly demand an international response, obviously not just for the mercantilist reasons that drove the internationalization of abolition, but for the global nature of the ecological challenge. No mitigation of climate change is possible without cooperation of all of the world's developed, industrialized nations.

c. Evolution from Abolition to Emancipation

Just as the temperance movement evolved from seeking moderation to seeking prohibition in alcohol consumption, and just as the climate movement must evolve from seeking moderation in fossil fuel consumption to an absolute ban, the abolition movement evolved from seeking a ban on the slave trade to seeking emancipation and termination of the institution of slavery. The British abolition movement started as a movement for the abolition of the African slave trade. Wilberforce's entreaties to Parliament were careful to distinguish "abolition"—which was limited to abolition of the slave trade—from emancipation.³⁴⁷ The latter was considered too radical, and too threatening to Britain's colonial planter class, who feared retribution by freed slaves.³⁴⁸ The climate movement has similarly started with relatively modest goals—

345. Spencer J. Pack, *Slavery, Adam Smith's Economic Hand and the Invisible Hand*, 4 HIST. ECON. IDEAS 253, 255 (1996).

346. HERBERT S. KLEIN, *THE ATLANTIC SLAVE TRADE* 193 (2d ed. 2010).

347. WILLIAM WILBERFORCE, *AN APPEAL TO THE RELIGION, JUSTICE, AND HUMANITY OF THE INHABITANTS OF THE BRITISH EMPIRE* 35 (1823).

348. *Id.* at 24–29.

disinvestment or carbon pricing—but must eventually adopt complete cessation of fossil fuel consumption.

d. Rhetorical Parallels in the Climate and Slavery Debates

The public debates about abolition of slavery and abolition of fossil fuels are carried out in remarkably similar terms. For the abolitionist's part, both slavery abolitionists and fossil fuel abolitionists argue that the challenged institution is in fact economically inefficient. As noted, free labor advocates argued that free labor must necessarily be more efficient than coerced labor.³⁴⁹ This argument is echoed by modern day climate advocates who argue that renewable energy would be cheaper than fossil fuels if fossil fuels were denied the government subsidies implicit in national defense, extraction leases, tax subsidies, and exemption from compensating for externalities.³⁵⁰ Both are making free market claims, with an implicit argument that only a market failure allows the existing, destructive economic practices to continue.

The rhetorical parallels among defenders of the status quo are even starker: both slavery and fossil fuels have been defended as nationally and globally necessary to support a minimum standard of living. Consider this statement by Exxon Mobil CEO Rex Tillerson:

We do not have a readily available replacement for the energy that provides the means of living that the world has today—our standard of living, but equally and perhaps more important, the 2 billion people on the planet that live below anything that we would find acceptable We do not see a viable pathway, any known technology today, to achieve the 350 outcome that is not devastating to economies, societies, and people's health and welfare around the world.³⁵¹

349. *Supra* note 345 and accompanying text.

350. See generally CAROLYN FISCHER & LOUIS PREONAS, RESOURCES FOR THE FUTURE, DP 10-19, COMBINING POLICIES FOR RENEWABLE ENERGY: IS THE WHOLE LESS THAN THE SUM OF ITS PARTS? (2010), <http://www.rff.org/files/sharepoint/WorkImages/Download/RFF-DP-10-19.pdf> [<https://perma.cc/E273-KEXG>].

351. Robert Bradley Jr., *Rex Tillerson (Exxon Mobil) on Climate Change (Energy/Climate Realism Trumps Alarmism)*, MASTERRESOURCE (June 4, 2013), <https://www.masterresource.org/exxon-mobil/exxon-mobil-trumps-alarmists/> [<https://perma.cc/MP27-RF9T>].

This defense of fossil fuels echoes nineteenth century defense of slavery by Edmund Ruffin:

The introduction and establishment of domestic slavery is necessarily an improvement of the condition and wealth and well-being of the community in general, and also of the comfort of the enslaved class . . . and is beneficial in every such case to the master class, and to the community in general.³⁵²

There may also be some parallels between the epistemic closure of Southern intellectuals in the nineteenth century and the epistemic closure of modern-day U.S. conservatives and some Southern States on the issue of climate change. Kenneth Stampf's history of slavery in the American South, *The Peculiar Institution*, notes that in antebellum Southern States, there was a social more that precluded intellectual discussion critical of the institution of slavery, and these same States adopted laws banning the advocacy of abolition.³⁵³ This epistemic closure has been echoed in recent years on the issue of climate change, as rejection of climate science became an essential credential of conservative intellectual discussion,³⁵⁴ and some States have adopted laws banning the teaching of climate science³⁵⁵ as well as the consideration of climate science in public policy making.³⁵⁶

e. Social Movement Parallels

Each generation seems to think that it invented the modern social movement, and social movement history starts with nineteenth century political economists such as Marx and Weber.³⁵⁷ Late twentieth century social movements are all

352. EDMUND RUFFIN, THE POLITICAL ECONOMY OF SLAVERY 3–4 (1853).

353. KENNETH M. STAMPP, THE PECULIAR INSTITUTION: SLAVERY IN THE ANTEBELLUM SOUTH 211 (1956).

354. Jim Manzi & Peter Wehner, *Conservatives and Climate Change*, 24 NAT'L AFF. 115 (2015).

355. Tanya Lewis, *Florida Isn't the Only State to 'Ban' Climate Change*, LIVE SCI. (Mar. 9, 2015), <http://www.livescience.com/50085-states-outlaw-climate-change.html> [<https://perma.cc/32DM-YQZA>].

356. N.C. GEN. STAT. § 113A-107.1 (2015); H.B. 819, 2011 Gen. Assemb. (N.C. 2012); see also Bruce Sicheloff, *While the Seas Rise in the Outer Banks and Elsewhere in NC, Scientists Tread Water*, NEWS & OBSERVER (Mar. 15, 2014), <http://www.newsobserver.com/news/politics-government/state-politics/article10298660.html> [<https://perma.cc/DET7-ZYKK>].

357. BUECHLER, *supra* note 245, at 4.

seen as following from the mid-twentieth century civil rights movement, ignoring precedents in the nineteenth century women's suffrage movement and temperance movements, and in the abolition movement itself. Indeed, British abolitionism may be the true antecedent for the modern social movement, for it was in late seventeenth century Britain that the domestic population found the economic and political space, combined with the nascent public media, to organize and advocate around an issue. As historian Seymour Drescher notes in his history of abolition, abolitionist Granville Sharp's organizing tactics found fertile soil in emerging British traditions of petition, voluntary associations, and press freedom:

In forming this innovative plan, Sharp was tapping into an old repertoire of collective action within civil societies on both sides of the Atlantic. British subjects regarded the right to petition as a fundamental right along with representative assemblies, strong local government, a plurality of religious communities, abundant voluntary associations, and newspapers. Petitioning constituted a weapon in the public sphere that Anglo-American abolitionism would use intensively during the century to follow.³⁵⁸

Thus, the abolitionists' collective public advocacy tactics would seem familiar even to twenty-first century movement organizers.

i. Mass Petition Drives and Gatherings

Abolitionists mobilized existing social organizations such as churches to conduct petition drives, regularly delivering petitions signed by thousands of people in both Great Britain and the United States. Interestingly, abolitionists are among the first social movements to mobilize women as a political force (despite their lack of suffrage), and it was a point of contention in Parliament whether Parliament need consider petitions signed by women given their lack of franchise.³⁵⁹ On this side of the Atlantic, petitions for Congressional action to abolish slavery were so numerous that Congress abandoned its

358. DRESCHER, *supra* note 344, at 105.

359. *See id.* at 249–50.

practice of considering every petition addressed to Congress individually.³⁶⁰

Given the transportation and communications challenges of the eighteenth and early nineteenth century, mass gatherings of abolitionists were less common. However, a Baltimore gathering of 4,000 African Americans in 1864 was the largest mass gathering of the time.³⁶¹ Eighteenth century petition drives have their parallel in twentieth and twenty-first century marches on Washington, D.C., as Congress and the media have come to ignore constituent petitions and the media gives coverage to (at least some) mass gatherings.

ii. Lawsuits

Centuries before the school desegregation litigation efforts of the NAACP, eighteenth century British abolitionists turned to the courts to establish Britain as “free soil.” Granville Sharp brought a writ of habeas corpus on behalf of James Somerset, the slave of a Virginia planter who had been brought to Great Britain by his master, escaped, and was seized on British soil by his master.³⁶² The case came before Lord Mansfield, England’s Chief Justice, who ruled that since the condition of slavery was odious and unknown at common law, it could exist in Britain only through positive law (act of Parliament), in the absence of which a putative master had no rights to his slave on domestic British soil.³⁶³ Somerset was freed, and Somerset’s case established Great Britain as “free soil” so that once a slave had set foot there he could not be re-enslaved by his master—at least as long as he remained on British soil.³⁶⁴ The disastrous *Dred Scott* decision in the United States was an attempt by abolitionists to establish for the Northern states the same “free soil” principle adopted the previous century in Great Britain.³⁶⁵ And Somerset’s case may be the original paradigm for impact litigation seeking to obtain through judicial remedies social progress that was politically unavailable in the legislative

360. *Id.* at 302, 307–08.

361. CHRISTOPHER PHILLIPS, FREEDOM’S PORT: THE AFRICAN AMERICAN COMMUNITY OF BALTIMORE, 1790–1860, at 240–41 (1997).

362. *Somerset v. Stewart* (1772) 98 Eng. Rep. 499 (K.B.).

363. *Id.*

364. *Id.*

365. *Dred Scott v. Sandford*, 60 U.S. 393 (1857).

branches, inspiring the school desegregation efforts of the civil rights movement, and the climate movement's litigation initiatives seeking a judicially-ordered response to climate change under the public trust doctrine.

iii. Lobbying and Legislative Efforts

William Wilberforce's abolitionist speeches to parliament are legendary, and have their modern analogues in the Washington, D.C. presence and lobbying efforts by U.S. environmental organizations seeking a legislative response to climate change.³⁶⁶

iv. Direct Action and Civil Disobedience

In the United States, abolitionists engaged in one of the most organized and extensive civil disobedience actions in history. Thousands of Northerners defied the Fugitive Slave Act by aiding escaped slaves to freedom in Canada on the Underground Railroad.³⁶⁷ John Brown's disastrous assault on Harpers Ferry is an example of violent direct action that, although spectacular in its failure, helped to galvanize the abolitionist movement.³⁶⁸

v. Values-Oriented Social Justice Issues Framing

This may be the most significant parallel between abolitionism and climate activism. The underlying issue framing is one of social justice and altruism—there are aggrieved parties (slaves for abolitionists, future generations for climate activists), but those aggrieved are completely excluded from the social and political system being organized into action. Both movements appeal to the altruism of their adherents—concern for the well-being of others who are remote in time and place. To be sure, abolitionists in both the U.K. and the United States gained some support from a nascent labor movement fearing competition from coerced labor.³⁶⁹ But most adherents acted out of altruistic concern for others

366. WILBERFORCE, *supra* note 347.

367. TOM CALARCO, *PEOPLE OF THE UNDERGROUND RAILROAD: A BIOGRAPHICAL DICTIONARY*, at xxii (Greenwood Press, 2008).

368. *See id.* at 50.

369. MICHAEL GERMANA, *STANDARDS OF VALUE: MONEY, RACE, AND LITERATURE IN AMERICA* 20 (Univ. of Iowa Press, 2009).

suffering injustice.³⁷⁰ This factor distinguishes the climate movement from both the civil rights movement (organized, at least initially, by the aggrieved group) and the temperance movement (though perhaps not directly aggrieved by alcohol consumption, but socially threatened by it).

The success of abolitionists in organizing on behalf of a remote, politically powerless group of victims may be the most hopeful sign for the possible success of a climate activism movement.

vi. Group Identification and Product Boycotts

Sociologists note that markers of group identification are an important aspect of social movement success. A social movement must create an “in-group” of shared characteristics, and if Professor Stoddard’s culture shifting marker for successful legal change is to be met, that “in-group” must become dominant in society.³⁷¹ Like the teetotaling temperance advocates, abolitionists made significant lifestyle changes to internalize their commitment to their cause; significantly, many abolitionists refused to consume sugar, since most sugar was produced by slave labor.³⁷² The climate activists’ movement has not, to date, achieved a unifying lifestyle marker for group identity. 350.org’s “fossil free” campaign is not a campaign to have members live free of fossil fuels, but simply to divest themselves (and their organizations) of ownership of fossil fuel industry stock.³⁷³ Since the vast majority of Americans don’t own stocks, this would be the equivalent of abolitionist society’s expecting no more lifestyle change than divestment from slave ownership, something no domestic abolitionist could have been doing anyway.

In contrast to the current climate movement, for the most part, many eighteenth century American abolitionists would not eat sugar or purchase cotton products produced by slave

370. DAVID BRION DAVIS, *INHUMAN BONDAGE: THE RISE AND FALL OF SLAVERY IN THE NEW WORLD* 266 (Oxford Univ. Press, 2006).

371. See Jennifer A. Peeples, *Aggressive Mimicry: The Rhetoric of Wise Use and the Environmental Movement*, in *THE ENVIRONMENTAL COMMUNICATION YEARBOOK* 10 (Susan L. Senecah ed., 2005); see also *supra* note 245.

372. See generally Mimi Sheller, *Bleeding Humanity and Gendered Embodiments: From Antislavery Sugar Boycotts to Ethical Consumers*, 2 *HUMANITY* 171 (2011).

373. *About Fossil Free*, *supra* note 274.

labor.³⁷⁴ They substituted honey and maple syrup for sugar, and linen and broadcloth for cotton fabrics.³⁷⁵ Regional abolitionist society meetings included resolutions requiring abstention from the produce of slavery, such as this February 17, 1836 resolution of the Vermont Anti-Slavery Society: “Resolved, That by consuming the produce of the labor of slaves, we are directly sustaining the iniquitous system of slavery; and that therefore, as abolitionists, we are called upon to abstain from using such articles as are believed to come to us through a polluted channel.”³⁷⁶ The pages of radical abolitionist William Lloyd Garrison’s newspaper, *The Liberator*, are full of notices for stores carrying “free goods.”³⁷⁷

No similar resolutions for abstention from fossil fuels have appeared in the climate movement literature as of yet. It is as if the climate movement agrees with ExxonMobil that, “We do not have a readily available replacement for the energy that provides the means of living that the world has today.”³⁷⁸

This is not to say that abolitionists were unanimous in their abstemiousness. The pages of *The Liberator* also carry on a debate about whether it was hypocritical for an abolitionist to consume the products of slave labor.³⁷⁹ Those favoring

374. Mike Kaye, *The Tools of Abolition*, BBC (Feb. 17, 2011), http://www.bbc.co.uk/history/british/abolition/abolition_tools_gallery_07.shtml [https://perma.cc/G6YZ-A3HN].

375. *Abolition and Free Produce*, MID-HUDSON ANTISLAVERY HIST. PROJECT (citing Carol Faulkner, *The Root of the Evil: Free Produce and Radical Antislavery, 1820–1860*, 27 J. EARLY REPUBLIC 377–405 (2007)), <http://pages.vassar.edu/mhantislaveryhistoryproject/abolitionists-and-free-produce/> [https://perma.cc/S7MW-726U] (last visited Feb. 1, 2016).

376. VT. ANTI-SLAVERY SOC., SECOND ANNUAL REPORT OF THE VERMONT ANTI-SLAVERY SOCIETY: WITH AN ACCOUNT OF THE ANNUAL MEETING, HOLDEN IN MIDDLEBURY, FEBRUARY 16 & 17, 1836 (1836), https://archive.org/stream/ASPC0005073700/ASPC0005073700_djvu.txt [https://perma.cc/3T9E-G3MB] (last visited Feb. 2, 2016).

377. William Lloyd Garrison & Isaac Knapp, *Pierce’s Free Grocery Store*, LIBERATOR, June 11, 1831, at 95, <http://fair-use.org/the-liberator/1831/06/11/the-liberator-01-24.pdf> [https://perma.cc/QG62-BQSG]; Charles Wise, *Free Cotton Goods*, LIBERATOR, Oct. 2, 1840, at 160, <http://fair-use.org/the-liberator/1840/10/02/the-liberator-10-40.pdf> [https://perma.cc/TM8D-K7F2].

378. Conway Irwin, *Exxon CEO: Climate Change Poses Significant Risk, but Outcome Is Uncertain*, BREAKING ENERGY (May 29, 2013), <http://breakingenergy.com/2013/05/29/exxon-ceo-climate-change-poses-significant-risk-but-outcome-is-uncertain/> [https://perma.cc/655A-JVfy].

379. See, e.g., C.F., *The Products of Slave Labor*, LIBERATOR, Jan. 4, 1834, at 2, <http://fair-use.org/the-liberator/1834/01/04/the-liberator-04-01.pdf> [https://perma.cc/84UV-DG5C].

abstention argued that purchase of slave produce made the purchaser an accessory to the crime as surely as the receiver of stolen goods, and that the surest way to end slavery was to eliminate the market for its products.³⁸⁰ Others argued that there was no inherent vice in the goods themselves, that righteous abstention alienated the broader public, and that a boycott by abolitionists would not be significant enough to have any economic effect on the slave economy.³⁸¹ One correspondent, writing in *The Liberator*, explicitly adopts the inconsequentialist argument against abstentionism:

Is that course of conduct, probably adopted by a few only, and directly tending to deprive them of bread, and increase the distresses they already experience as a consequent of slavery; is that course, I say, the most proper—the most effectual toward the attainment of the end proposed—to wit—the abolition of slavery? And if there be not reason to believe that its practical bearing will be as a means of abolition, I think we cannot be called upon to adopt it.³⁸²

This nineteenth century argument against abstention based on the ineffectuality of individual action has been echoed in the climate change context in an essay in *Environmental Ethics* by Professor Joakim Sandberg entitled “*My Emissions Make No Difference*”: *Climate Change and the Argument from*

³⁸⁰ See, e.g., Lea W. Gause, *The Products of Slave Labor*, LIBERATOR, Apr. 9, 1847, at 59, <http://fair-use.org/the-liberator/1847/04/09/the-liberator-17-15.pdf> [<https://perma.cc/36RV-3EKQ>]; Eli Hambleton, *Union Free-Produce Society*, LIBERATOR, Aug. 4, 1848, at 124, <http://fair-use.org/the-liberator/1848/08/04/the-liberator-18-31.pdf> [<https://perma.cc/BRZ6-BC5B>]; *Use of Slave Productions*, LIBERATOR, Aug. 27, 1831, at 138, <http://fair-use.org/the-liberator/1831/08/27/the-liberator-01-35.pdf> [<https://perma.cc/ZWT8-G3PT>].

³⁸¹ See, e.g., C.F., *The Products of Slave Labor*, LIBERATOR, Dec. 14, 1833, at 199, <http://fair-use.org/the-liberator/1833/12/14/the-liberator-03-50.pdf> [<https://perma.cc/2MRL-ARTH>]; *Cases of Conscience*, LIBERATOR, Dec. 1, 1848, at 190, <http://fair-use.org/the-liberator/1848/12/01/the-liberator-18-48.pdf> [<https://perma.cc/QYQ9-4P7C>]; J.H. Fowler, *The Products of Slave Labor*, LIBERATOR, Mar. 16, 1860, at 44, <http://fair-use.org/the-liberator/1860/03/16/the-liberator-30-11.pdf> [<https://perma.cc/Y2XJ-FR3M>].

³⁸² C.F., *supra* note 379.

Inconsequentialism.³⁸³ Sandberg argues that since each individual's contribution to climate change is so vanishingly small, there is no individual ethical duty to reduce carbon emissions in the absence of organized collective action.³⁸⁴

William Lloyd Garrison himself seems to have changed positions on the question, initially favoring abstention and then later accepting the impracticality of abstention and the need to carry on the battle for abolition on more favorable turf. Garrison wrote:

At an early period of the anti-slavery enterprise, we were led, for a time, to regard the use of slave productions as personally involving a direct support of the slave system; but we were soon satisfied that we erred in judgment on this subject, that it was wasting time upon what no man could strictly reduce to practice, and that nothing would be gained by pressing it upon public attention. There were a thousand strong and vital issues that could be made with the Slave Power, and we deemed it far more important to grapple with these, than to raise questions of conscience, which no casuistry could settle like a moral axiom.³⁸⁵

William Lloyd Garrison's 1847 apologia for non-abstention has also been echoed by 350.org's Bill McKibben. In a 2013 essay in *Orion Magazine*, McKibben justifies his use of fossil fuels to travel around the country arguing for an end to the fossil fuel economy with a similar consequentialist argument that it is important to carry on his advocacy, that "what needs to change are not individuals but precisely that system" of fossil fuel powered economy.³⁸⁶ To be fair, McKibben powers his campaign bus with carbon neutral biofuels, but his rallies count on fossil fueled travel by supporters.³⁸⁷ Like Garrison, McKibben sees more fertile ground to engage with the fossil fuel industry than advocating for a boycott of its products. He urges his followers to follow up modest decreases in their fossil

383. Sandberg, *supra* note 42.

384. *Id.*

385. William Lloyd Garrison, *Products of Slave Labor*, LIBERATOR, Mar. 5, 1847, at 38, <http://fair-use.org/the-liberator/1847/03/05/the-liberator-17-10.pdf> [<https://perma.cc/MH23-XZU9>].

386. McKibben, *supra* note 326.

387. See Bill McKibben, *The Case for Fossil-Fuel Divestment*, ROLLING STONE (Feb. 22, 2013), <http://www.rollingstone.com/politics/news/the-case-for-fossil-fuel-divestment-20130222> [<https://perma.cc/PSC4-QAX9>].

fuel use (as by driving a hybrid fossil fuel powered car) with dedicated advocacy to change the system.³⁸⁸

Nineteenth century non-abstentious abolitionists defended their position on the grounds that the evil of slavery was in the production of cotton and sugar, not in the use of the goods themselves. As a December 14, 1833 correspondent wrote: “[i]t is confessed and agreed by all, that the use of sugar, cotton, tobacco and other products of slave labor, is not in itself, morally wrong; but it is said to become so, because it is the product of a system of wickedness.”³⁸⁹ According to that writer, drawing the analogy to temperance: “[i]f the wheat raised by slave labor be contaminated, so is the wheat raised by the labor of the intemperate man, and to be consistent we must carry the effects of this doctrine as far in the one case as the other.”³⁹⁰ This writer’s point that the slave produced sugar and cotton was not physically contaminated and worthy of sanction was adopted one hundred years later by one of the Supreme Court’s more ignominious decisions, *Hammer v. Dagenhart*, which struck down Congress’s attempt to ban commerce in goods produced by child labor.³⁹¹ Similar reasoning was adopted by the World Trade Organization when, in the 1990s, it sanctioned the United States for enforcing laws banning the import of tuna caught using methods that asphyxiated dolphins—there was nothing inherently wrong with the goods themselves that would justify an import ban.³⁹²

But there is an important difference between fossil fuels and slave-produced cotton, child labor produced furniture, or canned tuna produced with insufficient care for marine mammals. In these other cases, the vice exists in the production of the goods, not their consumption. When it comes to fossil fuels, the global climate evil is due largely to their consumption, not their production. It is primarily the burning of fossil fuels that creates the greenhouse gases that warm the climate. So even though some abolitionists might in good

388. *See id.*

389. William Lloyd Garrison & Isaac Knapp, *Declaration of the National Anti-Slavery Convention*, *LIBERATOR*, Dec. 14, 1833, at 198, <http://fair-use.org/the-liberator/1833/12/14/the-liberator-03-50.pdf> [<https://perma.cc/2MRL-ARTH>].

390. *Id.*

391. *Hammer v. Dagenhart*, 247 U.S. 251 (1918).

392. *See* Report of the Panel, *US—Restrictions on Imports of Tuna*, GATT Doc. DS21/R (Sept. 3, 1991), *reprinted in* 30 *I.L.M.* 1594 (1991).

conscious eat slave sugar and wear slave cotton while advocating for the end of slavery, climate advocates do not have the same excuse.

A conclusion that abolition is the most apt analog for a successful legal antidote to climate change may be troubling. Mere legal, social, and political activism was not sufficient to prompt adoption of the Thirteenth Amendment and cultural internalization of the new anti-slavery norm. Unlike Great Britain, abolitionism in the United States failed to achieve political success prior to the Civil War.³⁹³ It took a civil war with the greatest loss of life in American military history to accomplish the formal eradication of slavery.³⁹⁴ And while Northern abolitionist sentiment contributed to Southern secession and the start of the Civil War, it is impossible to say when (if ever) abolitionism might have achieved political success in the United States in the absence of the Civil War. Even after adoption of the Thirteenth Amendment, it arguably took nearly another century for cultural internalization of the anti-slavery norm in the Southern states, as Jim Crow laws and peonage practices kept African Americans in Southern states in a status of economic and political servitude even though not enforced in the form of chattel slavery.³⁹⁵ Nor does regional conflict over painful climate response measures seem out of the question, as belief in climate science breaks down on regional and urban-rural divides and the impacts of reducing fossil fuel use may fall most heavily on rural populations who currently drive longer distances than their urban counterparts.³⁹⁶

VI. CONCLUSION

The accepted science and ineluctable mathematics of greenhouse gas emissions and climate change, combined with the glacial pace of the national and international legal response to this global environmental challenge, virtually ensure that the ultimate response to mitigate global warming will have to

393. DRESCHER, *supra* note 344, at 329.

394. *Id.* at 331.

395. William Cohen, *Negro Involuntary Servitude in the South, 1865-1940: A Preliminary Analysis*, 42 J.S. HIST. 31 (1976); Jennifer Roback, *Southern Labor Law in the Jim Crow Era: Exploitative or Competitive?*, 51 U. CHI. L. REV. 1161, 1161 (1984).

396. U.S. DEPT OF TRANSP., 2009 NATIONAL HOUSEHOLD TRAVEL SURVEY 57 (2011).

be a ban on the use of greenhouse gas emitting fossil fuels. Such a ban is defensible based on the utilitarian, consequentialist ethics of avoiding grievous harm to other people. Existing statutory authorities might well support imposition of such a ban, and congressional commerce and treaty powers also appear sufficient to support new legislation implementing such a ban. Takings or fundamental rights challenges to such a ban seem likely to fail, at least under current law.

A statutory, administrative, or even constitutional ban on the use of fossil fuels is thus possible. Not all normative legal change is successful in its implementation, however. Law change can mediate culture change only when the law reform efforts are paired with an effective social movement. Ultimately, climate change mitigation will require complete abandonment of fossil fuel consumption, a social and economic change of an order of magnitude equal to other law-mediated (or attempted) social changes such as civil rights, prohibition, and abolition.

While the civil rights movement has been the model for most subsequent social change activism, at least in the United States, climate activism has an important structural difference from the civil rights movement—the civil rights movement was a grievance-prompted identity movement. Climate activism, which lacks true climate change victims among its members, more resembles a values-oriented resource-mobilizing movement. In this way, it may resemble the temperance movement more than the civil rights movement. This is an unfortunate analogy, as the temperance movement is a spectacular example of a movement that enjoyed complete success politically and in changing the normative laws, but it was a spectacular failure in its implementation and failed to change the culture.

Not all values-oriented legal-social reform movements are doomed to failure. Abolitionism, which had its genesis in an active and open domestic political culture in eighteenth century Great Britain, is an example of a values-oriented, altruistic law and social reform movement that enjoyed ultimate and global success on the order that will be required for even a partial response to the coming climate catastrophe. The climate movement has more maturing to do if it is to move beyond

mere resource-mobilization and become a true movement for social change. For one thing, the movement may have to create a better definition of group membership through lifestyle choices—such as the emergence of leadership that has foresworn not just investment in fossil fuels, but also their consumption as well.