

The Social Axiom Framework: Towards a Renaissance of Sustainability

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Global and national institutions urge us to change our social, economic, and industrial systems (together “our fundamental systems”). They urge this change because to remain as we are is to commit the Earth to the full consequences of climate change, biodiversity loss, and ecosystem collapse (together “the climate crisis”).

But why would the change be valuable? What would it mean to change? How would we do it? These three questions are difficult to understand and even more difficult to answer. Too often, they have been left to the side of the discussion, mystified and intractable.

This Note proposes a social axiom framework that embodies one way to view these questions. In doing so, it also suggests one way to answer them: to change our fundamental systems, we should change the ideas on which they are based. The framework therefore becomes a valuable interpretive tool for anyone who agrees that striving to make these changes is imperative.

In Part I, the Note begins with the assumption that success requires achieving not only a decarbonized environment, but the maintenance of sustainable and biodiverse ecosystems. It suggests that biodiversity loss and ecosystem collapse are uniquely unamenable to purely technological solutions, thereby highlighting why changing our fundamental systems is important.

In Part II, the Note proposes that we understand the task of changing our fundamental systems as changing a key set of important ideas called social axioms. The concept of a social axiom means something like “a culturally pervasive idea whose truth is widely regarded as self-evident and taken for granted.” Social axioms are the bedrock of our fundamental systems. While we take these ideas for granted, a careful reflection, from an environmental perspective, shows some are no longer viable and should be replaced.

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In Part III, the Note uses three ideas to illustrate the value of the framework: (1) opportunity cost, or “when I forego an opportunity, there is a loss,” (2) small-scale causation, or “what I do doesn’t affect others,” and (3) time value of money, or “money now is worth more than money later.” By tracing environmental harm to these ideas, the Note reinterprets what we are striving towards when we suggest changing our fundamental systems. The Note then develops the insight that follows when we conduct this reinterpretation. By identifying social axioms with a disproportionately negative environmental impact, we can make ground on understanding how we can change our fundamental systems. Rather than changing giant, abstract systems, we can focus on changing a key set of important ideas that ground them. As a result, the task becomes more manageable.

In Part IV, the Note illustrates five existing sustainability movements within legal, economic, political, cultural, and psychiatric contexts. By doing so, the Note illuminates the role the social axiom framework can play in highlighting connections between existing movements which may initially appear distinct from one another. Viewed within this light, the framework offers a way to view these movements as sharing something essential in common: the objective of identifying harmful social axioms and imagining their more sustainable replacements.

The social axiom framework therefore demystifies the three questions with which we began, helping to answer why we should change, what that change involves, and how we can do it. Even better, it encourages a path forward. We should leverage every available and imaginable mechanism of cultural change to replace problematic ideas with more sustainable ones. To change our systems, we must change their axioms. The call to action, then, is also a call to think, believe, and hope.

The call to action is a call towards a renaissance of sustainability. If we succeed, we can change our fundamental systems, reduce our demand on the environment, and live more sustainably on Earth.

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Introduction

Humanity has been called to action. Success requires not only achieving a decarbonized environment, but also the maintenance of sustainable and biodiverse ecosystems. A brief review shows the challenge ahead.

In the context of the recent global pandemic, the International Federation of Red Cross and Red Crescent Societies stated concisely: “Climate change is an even more significant challenge to humanity than the novel coronavirus”¹ It recommended “[t]he world should react with the same urgency to climate change” as to the global coronavirus crisis.² Yet we should hope the world can do better than that. For many, much more is at stake.³

Approximately 1.7 billion people have been affected by climate-and weather-related disasters in the last decade.⁴ Many of the people who will

1. ALISON FREEBAIRN, KIRSTEN HAGON, VINCENT TURMINE, GUIDO PIZZINI, ROOP SINGH, TESSA KELLY, CATALINA JAIME, NIKOLAS SCHERER, KARA SIAHAAN, JULIA HARTELIUS, TOMMASO NATOLI, DONNA MITZI LAGDAMEO, CARINA BACHOFEN, GABRIELLE EMERY, SOPHIA SWITHERN & DAVID FISHER, INTERNATIONAL FED’N OF RED CROSS AND RED CRESCENT SOC’YS, WORLD DISASTERS REPORT 2020: COME HEAT OR HIGH WATER 15 (2020).

2. *Global Warming Bigger Threat than Coronavirus: Red Cross*, AL JAZEERA (Nov. 17, 2020), <https://www.aljazeera.com/news/2020/11/17/climate-change-bigger-threat-than-covid-red-cross> [<https://perma.cc/QDT2-WG2W>].

3. See Jariel Arvin, *The World Is Worried About the Coronavirus. It’s Equally Concerned About Climate Change.*, VOX (Oct. 20, 2020, 3:00 PM), <https://www.vox.com/world/21523547/global-climate-change-views-polling-covid-19-coronavirus-pandemic-pew> [<https://perma.cc/TJM4-W9WS>] (“A recent poll from the Pew Research Center found that a median of 70 percent of respondents in 14 countries identified climate change as a major threat to their countries, while 69 percent expressed the same level of worry about the spread of infectious disease.”).

4. FREEBAIRN, *supra* note 1, at 2; *see also* Colin N. Waters, Jan Zalasiewicz, Colin Summerhayes, Anthony D. Barnosky, Clément Poirier, Agnieszka Gałuszka, Alejandro Cearreta, Matt Edgeworth, Erle C. Ellis, Michael Ellis, Catherine Jeandel, Reinhold Leinfelder, J. R. McNeill, Daniel deB. Richter, Will Steffen, James Syvitski, Davor Vidas, Michael Wagemich, Mark Williams, An Zhisheng, Jacques Grinevald, Eric Odada, Naomi Oreskes & Alexander P. Wolfe, *The Anthropocene Is Functionally and Stratigraphically Distinct from the Holocene*, SCI., Jan. 8, 2016, at 137, <https://www.science.org/doi/10.1126/science.aad2622> [<https://perma.cc/33TB-B5XS>] (discussing increased rates of sea-level rise, worldwide species invasions, and accelerating rates of extinction).

face the most severe repercussions of the climate crisis have not even been born yet.⁵ Growing research continues to paint a foreboding picture. A team at Georgetown University recently projected that the United States is underestimating the cost of climate change by a factor of ten to fifty trillion dollars.⁶

Climate change, biodiversity loss, and ecosystem collapse are three related and interdependent phenomena. These human-caused impairments are almost certain to cause incredible impacts on civilization and the ecological structures of life as we know it, forcing changes across areas of law, politics, and society.⁷ Despite their related origin, some components of the challenges they create are distinct. Nevertheless, taken together, these three distinct challenges point to a common call: We must reduce our demand on the environment.

The call to action to reduce our demand on the environment has taken many expressions.⁸ As it receives more and more attention, public awareness increases alongside.⁹ But the abstract nature of the call has mystified what is necessary. Increased awareness has brought climate dread.¹⁰ With angst

5. See Kate Kelland, *Climate Change Exposes Future Generations to Life-Long Health Harm*, REUTERS (Nov. 13, 2019, 5:39 PM), <https://www.reuters.com/article/us-climate-change-health/climate-change-exposes-future-generations-to-life-long-health-harm-idUSKBN1XN2WQ> [<https://perma.cc/PTU4-BAQU>] (surveying research that suggests the impact of climate change “could burden an entire generation with disease and illness throughout their lives”).

6. Peter Thorley, *Trillions of Extra Economic Damages Predicted in New Study of Climate Change Effects*, PHYS.ORG (Oct. 6, 2020), <https://phys.org/news/2020-10-trillions-extra-economic-climate-effects.html> [<https://perma.cc/TY6W-7EL8>] (explaining how projecting steady temperature increase rather than variable temperature change leads economic models to underestimate damages).

7. See Eric Biber, *Law in the Anthropocene Epoch*, 106 GEO. L.J. 1, 4 (2017) (“Thus, human-caused impairments of global systems will cause tremendous impacts on society. Political, social, and economic systems will need to dramatically change to adapt to or mitigate these impacts.”).

8. See, e.g., SECRETARIAT OF THE CONVENTION ON BIOLOGICAL DIVERSITY, GLOBAL BIODIVERSITY OUTLOOK 5, 8 (2020) [hereinafter GLOBAL BIODIVERSITY OUTLOOK] (“[P]athways to a sustainable future rely on recognizing that bold, interdependent actions are needed across a number of fronts”); U.N. Framework Convention on Climate Change, *Adoption of the Paris Agreement*, 21, U.N. Doc. FCCC/CP/2015/L.9/Rev.1 (Dec. 12, 2015) [hereinafter *Paris Agreement*] (acknowledging “the need for an effective and progressive response to the urgent threat of climate change” is a “common concern of humankind”).

9. See Alec Tyson & Brian Kennedy, *Two-Thirds of Americans Think Government Should Do More on Climate*, PEW RSCH. CTR. (June 23, 2020), <https://www.pewresearch.org/science/2020/06/23/two-thirds-of-americans-think-government-should-do-more-on-climate/> [<https://perma.cc/7TQF-W3VS>] (surveying data gathered about American public opinion regarding climate change and finding that a majority of Americans are not satisfied with the federal government’s climate change efforts).

10. See, e.g., Emily Green, *The Existential Dread of Climate Change*, PSYCH. TODAY (Oct. 13, 2017), <https://www.psychologytoday.com/us/blog/there-is-always-another-part/201710/the-existential-dread-climate-change> [<https://perma.cc/B62D-2H2L>] (observing that “mere awareness and contact with the seriousness of the issue [of climate change] can cause dissonance and anxiety”); Damian Carrington, *Climate ‘Apocalypse’ Fears Stopping People Having Children – Study*, THE

comes hesitation, while confusion robs clarity from what to do or how to help.¹¹ Time passes.¹² The challenge grows.¹³

Scholars are busy tracing these impacts.¹⁴ The environmental transition is anticipated to affect a wide range of legal subtopics, including, among others, administrative law, property law, and constitutional law.¹⁵ Substantial work remains to be done across the spectrum of available legal options—from theorizing developments to drafting policies and enacting laws.

Thus, this Note aspires to assist the campaign to formulate novel responses to the climate crisis. It does so by making inroads on a key component: the nature of our call to action. Just what exactly is humanity being asked to accomplish? How can we better explain our task to ourselves and each other? To resolve our challenge, we must demystify it. When we name our challenge and view it carefully, it helps our policy strategy become clear in its goal and tractable in its progress.

The *social axiom framework* offers a solution because of the way it views the problem. It demystifies the call to action by remembering that ideas are the base of a system. To change our systems, we should change the ideas

GUARDIAN (Nov. 27, 2020, 6:00 PM), <https://www.theguardian.com/environment/2020/nov/27/climate-apocalypse-fears-stopping-people-having-children-study> [<https://perma.cc/Q3BA-RE29>] (“The research also found that some people who were already parents expressed regret over having their children. . . . [B]ut only 60% of those surveyed were very concerned about [their children’s] carbon footprint.”); Jessica G. Fritze, Grant A. Blashki, Susie Burke & John Wiseman, *Hope, Despair and Transformation: Climate Change and the Promotion of Mental Health and Wellbeing*, 2 INT’L J. MENTAL HEALTH SYS. 13 (2008) (“At the deepest level, the debate about the consequences of climate change gives rise to profound questions about the long-term sustainability of human life and the Earth’s environment.”).

11. See Jillian Ambrose, *‘Hijacked by Anxiety’: How Climate Dread Is Hindering Climate Action*, THE GUARDIAN (Oct. 8, 2020, 2:00 PM), <https://www.theguardian.com/environment/2020/oct/08/anxiety-climate-crisis-trauma-paralysing-effect-psychologists> [<https://perma.cc/TWM4-LJ37>] (acknowledging the paralysis that can result from climate anxiety).

12. See Maxine Joselow, *Exclusive: GM, Ford Knew About Climate Change 50 Years Ago*, E&E NEWS (Oct. 26, 2020, 5:51 AM), <https://www.eenews.net/stories/1063717035#> [<https://perma.cc/C5RG-YJNK>] [hereinafter *GM, Ford Knew*] (“Scientists at two of America’s biggest automakers knew as early as the 1960s that car emissions caused climate change . . .”).

13. See Gregor Aisch, *The Only Chart We Should Be Looking At*, DATAWRAPPER (July 4, 2019), <https://blog.datawrapper.de/weekly-chart-greenhouse-gas-emissions-climate-crisis/> [<https://perma.cc/H7EA-2AEZ>] (arguing that, without showing what is necessary to achieve a net-zero emissions pathway, “even a slight reduction in emissions may look like a big achievement, while the truth is that it’s not”).

14. See generally JEDEDIAH PURDY, *AFTER NATURE: A POLITICS FOR THE ANTHROPOCENE* (2015) (arguing that, as human dominance expands, environmental law will need to respond to many global issues, including agricultural production, animal rights, and changes in cultural conceptions of nature); DOUGLAS A. KYSAR, *REGULATING FROM NOWHERE: ENVIRONMENTAL LAW AND THE SEARCH FOR OBJECTIVITY* (2010) (articulating a reinvigorated argument in favor of the precautionary principle—a principle advocating for cautious approaches to environmental management in the face of scientific uncertainty—as a prudential administrative mechanism in an era of climate change, uncertainty, and high risks).

15. Biber, *supra* note 7, at 7.

on which they are based. The framework calls these ideas *social axioms*, and it uses them to suggest a novel insight: if we want to remediate the environmental consequences of our fundamental systems, we should use all available mechanisms of cultural change to replace environmentally detrimental ideas with sustainable ones.

Part I describes climate change, biodiversity loss, and ecosystem collapse (together “the climate crisis”). First, it provides a basic account of the science involved in each of these issues and describes why the scientific underpinnings of the climate crisis shed light on its unique origins in human behavior. It builds upon the tradition of scientists and others who believe in a mirror-like strategy, where we look closely at the causes of our current crisis in order to find the solutions. Second, it explains how the climate crisis ultimately points to the need to reduce our demand on the environment. Finally, Part I makes it clear: our need to reduce our environmental demand is *why* we are called to action. While this is not a scientific Note per se, it is a Note that utilizes key scientific insights into the climate crisis to help develop strategies to mitigate its consequences. It thus provides an interpretive tool kit, valuable to anyone who agrees that change is necessary.

Part II begins with the acceptance that change is necessary. First, it reinterprets the call to action through a new lens: the social axiom framework. The Note introduces the idea of a social axiom, which this Note defines as “a culturally pervasive idea whose truth is widely regarded as self-evident and taken for granted.”

Social axioms are the bedrock of our fundamental systems. Understanding the relationship between social axioms and fundamental systems reveals their interdependence. Social axioms are the ideas on which our fundamental systems are based. To change one is to change the other. The framework suggests that when one of our fundamental systems contributes to the climate crisis, perhaps the contribution is traceable to a specific bedrock idea, or social axiom. In turn, changing that idea may prove more manageable than attempting to change the system.

Indeed, thinking about the call to action as a challenge to replace specific ideas with others allows us to view it with a variety of more concrete humanistic and scientific tools at our disposal. The social axiom framework integrates these tools into an interdisciplinary framework that clarifies our task and envisions diverse avenues to success. It encourages us to recognize that we can leverage the full force of cultural change mechanisms to alter these ideas. For example, changing an economic system can mean changing a few economic premises and, as a result, the culture that accepts and acts on them.

One advantage of this approach is that it recognizes that much of human behavior is influenced by ideas whose prominence in our mind goes mostly unnoticed. A campaign to change these ideas can thus operate overtly or

covertly. On the one hand, overt political and cultural messaging campaigns work to change the axiom because they focus on explicitly replacing problematic ideas with more sustainable ones. On the other hand, covert “nudges” and social tipping dynamics work to change the culture because they influence the beliefs people subconsciously accept and the behaviors they habitually pursue. Thus, Part II outlines a framework that permits a range of strategic combinations between mechanisms and the possibility of surpassing one of the most difficult psychological barriers to encouraging human change: conscious reluctance.

Part III provides “proof of concept” and demonstrates the value and utility of the social axiom framework. It uses the framework to closely analyze three social axioms, demonstrating of each that (1) it encourages behaviors that negatively exacerbate the climate crisis and, therefore, (2) environmental harm is directly traceable to it.

First, Part III discusses the idea of opportunity cost, that “when I forego an opportunity, there is a loss.” It argues that the idea of opportunity cost encourages overconsumption, a behavior with deep environmental harm. Second, it discusses the idea that causation is small-scale, that “what I do doesn’t affect others.” Commonly held but incorrect views on the nature of causation encourage an ignorance of what (and who) is responsible for the climate crisis. Third, it discusses the financial concept of time value of money, that “money now is worth more than money later.” It argues that time value of money encourages detrimental issuance of debt, externalized resource degradation, and an inaccurate valuation of future peoples and ecosystems. It further suggests that total global debt can be reconceptualized as a part of humanity’s debt to the environment.

Thus, Part III uses the example of three social axioms to demonstrate that the question of *why* our fundamental systems have such a profound negative environmental impact is partially traceable to discernible and specific ideas with cascading environmental consequences. Demonstrating the impact and role of these ideas encourages us to think more clearly about the call to action. It reframes the challenge and presents a helpful path forward. The challenge becomes demystified, and solutions come into focus.

Finally, Part IV captures the takeaway of the social axiom framework for climate crisis thinking. It urges us to begin a systematic campaign to identify social axioms with negative environmental impacts—like the three previously discussed. First, it encourages us to theorize replacements in the form of sustainable ideas. Second, it highlights that viewing the issue in this way provides us a great deal of hope for what is possible. Third, it encourages us to leverage the full force of psychology, politics, education, art, human biology, and all other available and imaginable mechanisms to replace problematic ideas with more sustainable ones.

To better describe the framework's value, Part IV of this Note provides an illustrative examination of existing critical efforts to replace environmentally harmful ideas with more sustainable ones. It examines these "sustainability movements" in legal, economic, political, cultural, and psychiatric contexts.¹⁶

In illuminating such connections, the framework offers one way to explain the shared force of apparently disparate sustainability movements. In particular, the framework illuminates that many existing sustainability movements share a focus on the identification of environmentally harmful ideas, the imagination of their replacements, and the creation of the possibilities necessary to enact their replacement. A wider examination of sustainability movements makes the Note's point even stronger: harmful ideas are prolific and deeply embedded within institutions affecting a diverse array of actors and communities. In turn, those affected have responded in unique ways.

I. Climate Change, Biodiversity Loss, and Ecosystem Collapse: Understanding the Connections, Differences, and Why They All Lead to a Call to Action

It is useful to outline a basic scientific account of the three issues that, together, form the climate crisis—and why they all lead to a call to action.

"Climate change" describes the complex phenomena associated with the human-exacerbated "greenhouse effect" on the Earth.¹⁷ Certain gases—particularly water vapor, carbon dioxide, methane, and nitrous oxide—warm the planet by preventing heat from escaping the atmosphere; indeed, gases released from the burning of fossil fuels and the clearing of land have fundamentally increased the concentration of greenhouse gases in Earth's atmosphere.¹⁸

Increased emissions of greenhouse gases, most prominently carbon dioxide (CO₂), augment the warming effects of Earth's atmosphere because greenhouse gases possess specific molecular configurations that act to trap

16. The term "sustainability movements" is an emerging concept intended to capture the commonality amongst cultural movements aimed at making a difference in the transition to a sustainable future. *See, e.g.*, Joe Thomas, *10 Sustainability Movements Driving Us Into the Future and the New Regenerative Economy*, MEDIUM (Dec. 10, 2019), <https://medium.com/environmental-intelligence/10-sustainability-movements-driving-us-into-the-future-and-the-new-regenerative-economy-c673731081d7> [<https://perma.cc/S83K-EQG5>] (describing ten movements focused on "making a big difference in the transition to a sustainable future," including architectural biomimicry and conscious consumerism).

17. Earth Science Communications Team, *The Causes of Climate Change*, NASA, <https://climate.nasa.gov/causes/> [<https://perma.cc/RW79-2BRB>] (last updated Feb. 8, 2022).

18. *Id.*

infrared heat radiated by the Earth's surface within the atmosphere.¹⁹ This process occurs organically and, indeed, is a central supporting feature of Earth's climate for life on Earth.²⁰ For throughout the most recent geologic period, greenhouse gas levels remained relatively stable, between 270 and 285 parts per million (ppm) before the Industrial Revolution.²¹ But in the past forty years, for instance, emissions of greenhouse gases have increased; accordingly, concentrations of CO₂ have increased to approximately 410 ppm today.²² If greenhouse gas emissions continue growing at current trends, the Earth is likely rise to temperatures beyond those typically viewed as "safe" for human life systems.²³

An increased atmospheric concentration of greenhouse gases has drastic direct and indirect effects. Directly, greenhouse gases have the definitional effect of increasing Earth's overall average temperature; estimates of that increase have ranged from 1.5 to over 7 degrees Celsius by the year 2100, though 2 degrees of warming is increasingly seen as almost certain.²⁴ This temperature increase has the potential to initiate a diverse and surprising array of triggered consequences, which together comprise the indirect effects of increased concentrations of greenhouse gases in the atmosphere. Scientists are in widespread agreement that the most catastrophic and unpredictable

19. For an accessible introduction to carbon dioxide's molecular structure, see generally *Carbon Dioxide Absorbs and Re-emits Infrared Radiation*, UNIV. CORP. FOR ATMOSPHERIC RSCH., <https://scied.ucar.edu/carbon-dioxide-absorbs-and-re-emits-infrared-radiation> [<https://perma.cc/UW6L-7SW8>].

20. *What Is the Greenhouse Effect?*, AM. CHEM. SOC'Y <https://www.acs.org/content/acs/en/climate-science/climate-science-narratives/what-is-the-greenhouse-effect.html> [<https://perma.cc/LE5F-PEZC>] ("The greenhouse effect has kept the Earth's average temperature a good deal higher for billions of years, making it possible for life as we know it to evolve.").

21. Hannah Ritchie & Max Roser, *Atmospheric Concentrations*, OUR WORLD IN DATA, <https://ourworldindata.org/atmospheric-concentrations> [<https://perma.cc/ESY9-PHB9>] (last updated Apr. 15, 2022).

22. *Id.*; Alan Buis, *The Atmosphere: Getting a Handle on Carbon Dioxide*, NASA (Oct. 9, 2019), <https://climate.nasa.gov/news/2915/the-atmosphere-getting-a-handle-on-carbon-dioxide> [<https://perma.cc/87NV-284M>].

23. See generally Intergovernmental Panel on Climate Change [IPCC], *Global Warming of 1.5°C. An IPCC Special Report on the Impacts of Global Warming of 1.5°C Above Pre-Industrial Levels and Related Global Greenhouse Gas Emission Pathways, in the Context of Strengthening the Global Response to the Threat of Climate Change, Sustainable Development, and Efforts to Eradicate Poverty* (2018) [hereinafter *IPCC, 2018: Global Warming of 1.5°C*].

24. Compare *IPCC, 2018: Global Warming of 1.5°C*, *supra* note 23 (indicating that global warming is likely to increase by 1.5 degrees Celsius by 2052), with Zeke Hausfather & Glen P. Peters, *Emissions—The 'Business as Usual' Story Is Misleading*, NATURE (Jan. 29, 2020), <https://www.nature.com/articles/d41586-020-00177-3> [<https://perma.cc/7RAX-RGNP>] (arguing that estimates above 3 degrees Celsius by 2100 underestimate policy impact potential), and Glenn Scherer, *IPCC Predictions: Then Versus Now*, CLIMATE CENT. (Dec. 11, 2012), <https://www.climatecentral.org/news/ipcc-predictions-then-versus-now-15340> [<https://perma.cc/N2QY-VCVM>] (contending in an earlier assessment that "[w]e are currently on track for a rise of between 6.3° and 13.3°F" by the year 2100. An increase in 13.3 degrees Fahrenheit is approximately equivalent to an increase in 7.38 degrees Celsius).

changes to Earth's climate systems become increasingly likely the further temperatures increase beyond 2 degrees Celsius of warming.²⁵ This range of indirect consequences includes, among others: rising sea levels from the melting of over-land ice and the thermal expansion of the ocean as it warms; impacts on the global hydrological cycle as fluctuations in ambient temperature and humidity affect evapotranspiration and precipitation; and collapse of ecological networks of plant and animal species unaccustomed to a drastically changing climate, some of whose loss may be irreversible.²⁶

"Biodiversity loss" describes "the decline in the number, genetic variability, and variety of species, and the biological communities in a given area."²⁷

"Ecosystem collapse" describes the rapid deterioration of an ecosystem, exemplified by rapid and widespread biodiversity loss.²⁸ When a key component of an ecosystem destabilizes, such as an important species or regional characteristic, it undermines the entire area's capacity to support a complex network of life.²⁹ The concept thus captures phenomena at a variety of scales (e.g., local, regional, global). Ecosystem collapse at its largest scale is the current "sixth extinction," a term representing the drastic ecological consequences of "fundamental changes on a planetary system scale," marked by global biodiversity loss, widespread invasion of non-native species, and the domination of a single species (ours) across Earth.³⁰

Naturally, biodiversity loss and ecosystem collapse are deeply interrelated with one another. Ecosystem collapse is, in essence, a more rapid and widespread type of biodiversity loss. They are each sensitive to the effects of climate change on regional temperature, precipitation, soil quality,

25. See IPCC, 2018: *Global Warming of 1.5°C*, *supra* note 23, at 178–81 (reporting that "[r]isks to natural and human systems are expected to be lower at 1.5°C than at 2°C of global warming").

26. *Id.*; see also Colin D. Butler, *Climate Change, Health and Existential Risks to Civilization: A Comprehensive Review (1989–2013)*, 15 INT'L J. ENV'T RSCH. & PUB. HEALTH 2266 (2018) (analyzing the increase in literature on climate change risks but noting that the literature continues to lack recognition of the most severe and indirect existential threats).

27. John P. Rafferty, *Biodiversity Loss*, ENCYCLOPEDIA BRITANNICA (June 14, 2019), <https://www.britannica.com/science/biodiversity-loss> [<https://perma.cc/D96C-4P6V>].

28. See Philip Osano, *Ecological Collapse*, GLOB. CHALLENGES FOUND. (2020), <https://globalchallenges.org/global-risks/ecological-collapse/> [<https://perma.cc/NF8W-QZ47>] (characterizing ecosystems as providing "a range of functions, generally referred to as environmental services, without which human societies and economies would not operate at their current level").

29. *Id.*

30. Jeremy Hance, *How Humans Are Driving the Sixth Mass Extinction*, THE GUARDIAN (Oct. 20, 2015, 4:12 PM), <https://www.theguardian.com/environment/radical-conservation/2015/oct/20/the-four-horsemen-of-the-sixth-mass-extinction> [<https://perma.cc/94DH-RCX5>] (quoting Peter Haff, a geologist and engineer with Duke University).

and water acidification.³¹ These three phenomena together comprise the “climate crisis.” The phrase captures the daunting nature of a problem that ultimately arises from the complex interaction of diverse components.³²

In the face of this daunting challenge, scientists and others working to design solutions to the climate crisis have sought their starting point in a common place: a careful reflection on its causes. Solutions tend to mirror their causes. Because climate change is primarily caused by the clearing of land and the burning of fossil fuels, many proposals recommend better land management and the use of energies that emit less greenhouse gases.³³ Indeed, transitioning major portions of energy production to renewable sources is viewed by many as imperative.³⁴ Additionally, because of the

31. See, e.g., Ary Hoffman, *Climate Change and Biodiversity*, AUSTRALIAN ACAD. OF SCI. (May 15, 2015), <https://www.science.org.au/curious/earth-environment/climate-change-and-biodiversity> [<https://perma.cc/XRM8-AGMU>] (describing a number of climate-change-related threats to biodiversity, including temperature spikes, coral bleaching, increases in extreme events, changes in rainfall, photosynthesis disruption, and sea level rise); Jeremy Hobson, *U.N. Report Links Soil Degradation to Climate Change*, WBUR (Sept. 20, 2019), <https://www.wbur.org/hereandnow/2019/09/20/soil-degradation-climate-change> [<https://perma.cc/8T2V-FD8A>] (discussing the conclusion by the IPCC that “the Earth’s soil is being lost 10 to 100 times faster than it is forming”); *Ocean Acidification*, NAT’L OCEANIC & ATMOSPHERIC ADMIN., <https://www.noaa.gov/education/resource-collections/ocean-coasts/ocean-acidification> [<https://perma.cc/UW3U-P9R3>] (last updated Apr. 1, 2020) (“In the 200-plus years since the industrial revolution began, . . . the pH of surface ocean waters has fallen by 0.1 pH units. . . . [T]his change represents approximately a 30 percent increase in acidity.”).

32. But see Dimitrinka Atanasova & Kjersti Fløttum, *Climate Change or Climate Crisis? To Really Engage People, the Media Should Talk About Solutions*, THE CONVERSATION (May 30, 2019, 8:33 AM), <https://theconversation.com/climate-change-or-climate-crisis-to-really-engage-people-the-media-should-talk-about-solutions-118004> [<https://perma.cc/55SS-KU9G>] (noting the importance of using strong language but also the danger that “[f]ear appeals might also have the opposite effect to what is intended, causing indifference, apathy and feelings of powerlessness”).

33. See, e.g., Brianna Baker, *The Cheapest Climate Solution? Return Half of the Planet to Nature, This Scientist Says*, GRIST (Oct. 21, 2020), <https://grist.org/fix/the-cheapest-climate-solution-return-half-of-the-planet-to-nature-this-scientist-says/> [<https://perma.cc/4QZJ-LLUR>] (discussing with Eric Dinerstein the “Global Safety Net” plan to conserve half the world, including “the exact land areas that need to be protected to prevent climate collapse”); Carly Cassella, *Daycares in Finland Built a ‘Forest Floor’, and It Changed Children’s Immune Systems*, SCI. ALERT (Oct. 22, 2020), <https://www.sciencealert.com/daycares-in-finland-built-a-backyard-forest-and-it-changed-children-s-immune-systems> [<https://perma.cc/RV3J-EM46>] (“When daycare workers in Finland rolled out a lawn, planted forest undergrowth . . . and allowed children to care for crops in planter boxes, the diversity of microbes in the guts and on the skin of young kids appeared healthier in a very short space of time.”); Tim Foxon, *To Have Net Zero Emissions We Must Lower Our Energy Needs*, SUSTAINABILITY TIMES (July 21, 2019), <https://www.sustainability-times.com/expert/to-have-net-zero-emissions-we-must-lower-our-energy-needs/> [<https://perma.cc/56G9-KLGJ>] (“Reaching net zero carbon emissions will require a new energy-industrial revolution, but this needs to focus on reducing energy demands alongside a rapid expansion of low-carbon energy supplies.”).

34. See, e.g., *Importance of Renewable Energy in the Fight Against Climate Change*, WORLD WILDLIFE FUND (2015), <https://www.worldwildlife.org/magazine/issues/summer-2015/articles/importance-of-renewable-energy-in-the-fight-against-climate-change—3> [<https://perma.cc/6VSR-YF7V>] (arguing that there “is no path to protecting the climate without dramatically changing how we produce and use electricity”).

chemical and physical nature of the greenhouse effect, many proposals leverage scientific insights to propel technological innovations in important sectors like energy storage, carbon capture, agriculture, and transportation.³⁵

Similarly, proposed solutions to biodiversity loss and ecosystem collapse tend to mirror their causes. Because both biodiversity loss and ecosystem collapse are primarily caused by changes in habitat resilience, many proposals recommend reducing habitat degradation and increasing ecosystem restoration.³⁶ Climate change accelerates changes in habitat resilience,³⁷ so many climate change mitigation strategies will have a co-benefit of reducing stress on habitats and mitigating biodiversity loss.³⁸ Just as the problems are intertwined, so too are the solutions.

Yet mirrors can be deceptive. Identifying what needs to occur is not the same as doing it, and sometimes problems do not reveal their solutions in intuitive ways. Nevertheless, this Note argues that a close examination of key problems influencing the climate crisis reveals insights that can help in developing climate policy strategies. For example, burning fossil fuels and clearing land have enormous momentum behind them, and they are deeply related to things we find essential: transportation, construction, and agriculture. But the ways we accomplish these essential tasks have fundamental flaws.

35. See, e.g., David Roberts, *Pulling CO2 out of the Air and Using It Could Be a Trillion-Dollar Business*, VOX (Nov. 22, 2019, 2:45 PM), <https://www.vox.com/energy-and-environment/2019/9/4/20829431/climate-change-carbon-capture-utilization-sequestration-ccu-ccs> [https://perma.cc/SA3N-B2LA] (“[B]y 2030 humanity needs to be compressing, transporting, and burying an amount of CO₂, by volume, that is two to four times the amount of fluids that the global oil and gas industry deals with today.”); Rebecca Hersher & Allison Aubrey, *To Slow Global Warming, U.N. Warns Agriculture Must Change*, NPR (Aug. 8, 2019, 4:00 AM), <https://www.npr.org/sections/thesalt/2019/08/08/748416223/to-slow-global-warming-u-n-warns-agriculture-must-change> [https://perma.cc/YR8C-CJCS] (“Scientists say the only way to achieve that reduction is to significantly increase the amount of land that’s covered in trees and other vegetation and significantly reduce the amount of methane and other greenhouse gases that come from raising livestock such as cows, sheep and goats.”); Taryn Brickner, *Engineering Net-Zero Carbon in a Climate Emergency*, RACONTEUR (Mar. 17, 2020), <https://www.raconteur.net/sponsored/engineering-net-zero-carbon-in-a-climate-emergency/> [https://perma.cc/NM73-3ENK] (“The aim with infrastructure is to get a net-zero development plan for every city and every company, every asset and every project.”).

36. See, e.g., Baker, *supra* note 33 (discussing with Eric Dinerstein environmental restoration, recreating damaged ecosystems, and stopping deforestation).

37. See, e.g., Hoffman, *supra* note 31 (explaining how the effects of climate change on habitats can harm species who cannot migrate or adapt, thus threatening biodiversity).

38. *But see* Conference of the Parties to the Convention on Biological Diversity, *Decision Adopted by the Conference of the Parties to the Convention on Biological Diversity at Its Tenth Meeting*, ¶ 8, U.N. Doc. UNEP/CBD/COP/DEC/X/33 (Oct. 29, 2010) (articulating a moratorium on geoengineering techniques which “may affect biodiversity”); Conference of the Parties to the Convention on Biological Diversity, *Decision Adopted by the Conference of the Parties to the Convention on Biological Diversity*, ¶ 1, U.N. Doc. CBD/COP/DEC/XIII/14 (Dec. 8, 2016) (reaffirming the moratorium).

These flaws must be addressed. The climate crisis has widespread national security implications.³⁹ Issues of the climate crisis already have a substantial impact on U.S. legislatures,⁴⁰ courts,⁴¹ and administrative agencies.⁴² We must change *something*. This Note develops a framework wherein the systematic behaviors whose impacts have led to major climate change, biodiversity loss, and ecosystem collapse point to one common imperative: humanity should reduce its demand on the environment.

The need to reduce our environmental demand can be seen in an alternative, positive way: we must develop “sustainable lifestyles and sustainable patterns of consumption and production.”⁴³ Again, a mirror encourages us. It shows us that what is necessary can be viewed in terms of ambition and achievement, not only in terms of reduction and sacrifice.

Still, even with this hopeful perspective, reducing our demand on the environment is a complicated task. Burning fossil fuels and clearing land, for example, are not easy to stop. But our vision has become somewhat clearer. The initially mysterious call to change our fundamental systems now has a clear basis in our need to reduce our environmental demand. The *reason* for the call thus becomes clearer.

Part I has provided a brief scientific account of the three issues that together form the climate crisis: climate change, biodiversity loss, and ecosystem collapse. In doing so, it highlights that these issues have interrelated causes. It also highlights that any attempt to reduce those causes has something absolutely essential in common: the need to reduce our demand on the environment. Our fundamental systems encourage the

39. See, e.g., Emily Holden, *Climate Change Is Having Widespread Health Impacts*, SCI. AM. (Sept. 16, 2019), <https://www.scientificamerican.com/article/climate-change-is-having-widespread-health-impacts/> [<https://perma.cc/P4Z7-PTR9>] (“the impact of the climate crisis . . . is already being felt across every specialty of medicine”); Sébastien Roblin, *The U.S. Military Is Terrified of Climate Change. It’s Done More Damage than Iranian Missiles*, NBC NEWS (Sept. 20, 2020, 3:30 AM), <https://www.nbcnews.com/think/opinion/u-s-military-terrified-climate-change-it-s-done-more-ncna1240484> [<https://perma.cc/G62V-U3DK>] (citing a 2019 report by the Pentagon that concluded “79 military bases will be affected by rising sea levels and frequent flooding”); CTR. FOR CLIMATE & SEC., MILITARY EXPERT PANEL REPORT: SEA LEVEL RISE AND THE U.S. MILITARY’S MISSION 10 (Francesco Femia ed., 2d ed. Feb. 2018) (noting that “[t]he U.S. Department of Defense (DoD) has recognized the security implications of a changing climate as far back as 2003”).

40. See, e.g., H.R. Res. 109, 116th Cong. (2019) (advocating for “a new national, social, industrial, and economic mobilization on a scale not seen since World War II and the New Deal”).

41. See, e.g., Complaint for Declaratory and Injunctive Relief at 3, *Juliana v. United States*, 217 F. Supp. 3d 1224 (D. Or. 2016) (No. 6:15-cv-01517) (alleging that “global warming and dangerous climate change . . . would destabilize the climate system on which present and future generations of our nation depend for their wellbeing and survival”), *rev’d*, 947 F.3d 1159 (9th Cir. 2020).

42. See, e.g., *Massachusetts v. EPA*, 549 U.S. 497, 504–05 (2007) (alleging that the EPA failed to adequately regulate greenhouse gas emissions despite the role that these gasses play as a cause of climate change).

43. *Paris Agreement*, *supra* note 8, at 21.

patterns of human behavior whose impacts have caused the climate crisis.⁴⁴ Recognizing this common thread provides perspective on *why* institutions have called for us to change our fundamental systems and forms the initial insight necessary to develop the social axiom framework.

Nevertheless, it remains for us to better understand the call to action—what it involves (Part II) and how would we do it (Parts III and IV).

Part II offers one way to view *what* it involves. It highlights that the recommendation to change our fundamental systems is most importantly a recommendation to change our behaviors. It offers one way to view this imperative: changing our systems should involve changing the ideas on which they are based. Systems partially derive their influence on behavior from the influence of particular ideas. Changing those ideas could have a valuable role to play in changing behavior. This view helps demystify the call to change our systems because it helps us see that this call involves something manageable: changing our ideas.

Part III provides three examples to demonstrate the progress we can achieve by viewing things this way. It demonstrates *how* we could respond to the call by replacing certain ideas with more sustainable ones.

Part IV details the takeaway: we should leverage the full force of cultural change mechanisms, available and imaginable, to achieve changes in behavior. We should cultivate a *renaissance of sustainability*.

II. The Call to Action: Change Our Fundamental Systems

Part I tied together something important: the basis of the call to action is our need to reduce our demand on the environment. But that call has taken many forms, often difficult to interpret. Occasionally, the grand, abstract nature of its phrasing makes it difficult to know exactly what we are being asked to do.

For example, the United Nations' Global Biodiversity Outlook urges that "pathways to a sustainable future rely on recognizing that bold, interdependent actions are needed across a number of fronts," employing "still greater efforts" and "increased ambition."⁴⁵ The Paris Agreement recognizes "the need for an effective and progressive response to the urgent threat of climate change" as a "common concern of humankind."⁴⁶ It also recognizes the "importance of ensuring the integrity of all ecosystems, including the oceans, and the protection of biodiversity," along with the need

44. See Francesca Baker, *How Does Society Influence One's Behavior?*, THE DECISION LAB, <https://thedecisionlab.com/insights/consumer-insights/impact-social-components-human-behaviour> [<https://perma.cc/9D9V-4UVD>] ("[T]hough we like to think of our choices as our own, in fact, they are often profoundly impacted by the choices and views of our peers.").

45. GLOBAL BIODIVERSITY OUTLOOK, *supra* note 8, at 8, 11.

46. *Paris Agreement*, *supra* note 8, at 21.

to develop “sustainable lifestyles and sustainable patterns of consumption and production.”⁴⁷ The controversial Green New Deal demands a “new national, social, industrial, and economic mobilization.”⁴⁸

Demystifying these encouragements should be an important part of any strategy to reduce our demand on the environment.⁴⁹ Indeed, many organizations are involved in strategic climate policy design, including the ones quoted above.⁵⁰ Because working together is an integral component of our shared endeavor, this Note situates itself as a contribution to those efforts.

Thus, this Note develops an analysis wherein one way to contribute is to introduce a framework that can help integrate the way we think about proposed solutions to climate change, biodiversity loss, and ecosystem collapse. The social axiom framework offers a way to view these issues in their rich interconnectedness: at the level of ideas. It recognizes that to change our behaviors, we must change our systems. But it encourages us to view that endeavor in a particular way: to change our systems, we should change the ideas we believe in.

The social axiom framework is built on a particular concept: systems have ideas at their roots.⁵¹ Specific ideas can be integral to a system’s development. Sometimes a system’s advancement is tied to the generalized acceptance of the ideas at its base.⁵² In other words, key components of a system are exemplified in certain ideas, and when we come to believe in those

47. *Id.*

48. H.R. Res. 109, 116th Cong. (2019).

49. The social axiom framework embodies a strategic approach that views a political movement as necessary. See Bruce Ackerman & Neal Katyal, *Our Unconventional Founding*, 62 U. CHI. L. REV. 475, 571 (1995) (arguing that the United States has, at its roots, a history of “revolutionary appeals to an inclusionary form of nationalism [that] gained credibility because they built upon years of political mobilization”). The climate crisis requires such an appeal.

50. See also *How We Work*, NAT. RES. DEF. COUNCIL, <https://www.nrdc.org/how-we-work> [<https://perma.cc/DT8T-A7SB>] (“NRDC’s advocates work at every level, from mayors’ offices to the halls of Congress to international negotiating tables.”); Richard Jackson & Howard Frumkin, *We Need a National Institute of Climate Change and Health*, SCI. AM. (Nov. 22, 2020), <https://www.scientificamerican.com/article/we-need-a-national-institute-of-climate-change-and-health/> [<https://perma.cc/TGW6-JS83>] (“2020 reinforced another lesson: If we don’t prepare for health disasters and manage them skillfully, informed by the best evidence, then people suffer and die needlessly.”).

51. See generally Barry Gibson, *Systems Theory*, ENCYCLOPEDIA BRITANNICA (Jan. 4, 2019), <https://www.britannica.com/topic/systems-theory> [<https://perma.cc/Y9XN-NZSJ>] (“Systems theory reveals the complexity of social evolution and, on this basis, stresses the limited possibility of steering society. On the other hand, because society is vastly complex, the social scientist can nonetheless have an appreciation of the large range of adaptive possibilities for social systems.”).

52. For a characterization of social change theory, see Roxane de la Sablonnière, *Toward a Psychology of Social Change: A Typology of Social Change*, FRONTIERS (Mar. 28, 2017), <https://www.frontiersin.org/articles/10.3389/fpsyg.2017.00397/full> [<https://perma.cc/L9T6-J6NZ>] (noting that “[m]illions of people worldwide are affected by dramatic social change” and that four characteristics play a role: “the pace of social change, rupture to the social structure, rupture to the normative structure, and the level of threat to one’s cultural identity”).

ideas, it helps the system become a dominant one. A few definitions and examples will help illustrate.

This Note defines the term *social axiom* as “a culturally pervasive idea whose truth is widely regarded as self-evident and taken for granted.” In general, the term “axiom” means a “statement or proposition which is regarded as being established, accepted, or self-evidently true,” or a “statement or proposition on which an abstractly defined structure is based.”⁵³

Social axioms are therefore those ideas that are widely believed in and serve as the bedrock of our fundamental systems. For example, the idea that individuals are inherently valuable as political units is an idea at the bedrock of democratic government. The idea that observation can provide insight into reality is at the bedrock of scientific inquiry. The idea that the free exchange of goods and services creates efficient markets is at the bedrock of capitalist economics. The idea that musical notes can be in harmony or dissonance is at the bedrock of music theory. The idea that life, liberty, and the pursuit of happiness are inherent components of freedom is at the bedrock of American constitutional law and politics. These are all ideas that are widely accepted and serve as the bedrock of a system of beliefs and behaviors.

Social axioms have origins and histories. Like most ideas, they don't come from nowhere. But despite their histories, we too often forget their incremental development. Instead, some ideas have come to take a place of such broad acceptance that they are *regarded* or *believed* to be “established, accepted, or self-evidently true.”⁵⁴ In this regard, they have come to have such a prominent position as to be the premise of a culture or a *social axiom*.

The social axiom framework situates itself within a view of history expressed eloquently by Israeli historian Yuval Harari:

[T]he most important thing about history is not to learn from the past, but to be liberated from the past. In a way, we are all living inside the dreams of dead people[—]our institutions, our beliefs, our thoughts. . . . [V]ery often they are the dreams of people who died centuries and thousands of years ago. And they created these stories and mythologies and institutions that we take for granted.⁵⁵

53. *Axiom*, LEXICO, <https://www.lexico.com/en/definition/axiom> [<https://perma.cc/6NVG-TVHX>].

54. *Id.*

55. Yuval Harari, *Yuval Harari Returns*, ARMCHAIR EXPERT, at 22:38 (Nov. 5, 2020), <https://armchairexpertpod.com/pods/yuval-harari-returns> [<https://perma.cc/67GS-C5UE>].

In this way, it is possible to view social axioms as being both axiomatic (taken for granted) and historical (having a substantive origin and being subject to cultural change). On one hand, the *historicity* of social axioms is essential to connecting them with the *causes* of the climate crisis, as Part III demonstrates. On the other hand, the *axiomatcity* of social axioms is essential to connecting them with the *changes* that are possible when we recognize axioms are changeable, as Part IV demonstrates. This way of looking at things is incredibly valuable for our efforts to mitigate the climate crisis. In this sense, we must liberate ourselves from the past to change our behavior from what it was to what it needs to be.

Finally, the social axiom framework situates itself alongside well-developed work in psychology and social science around systems theory, “nudges,” social tipping dynamics, and behavioral economics.⁵⁶ The term *system* means a “set of things working together as parts of a mechanism or an interconnecting network” or a “set of principles or procedures according to which something is done; an organized framework or method.”⁵⁷ Using systems to describe phenomena permits a variety of interdisciplinary approaches because systems are robust interdisciplinary concepts.⁵⁸ For example, “nudges,” which are covert and minimal behavioral interventions, have found success by decreasing opportunities for problematic behavior through changes in the subtle elements that influence how people make

56. See generally RICHARD H. THALER & CASS R. SUNSTEIN, *NUDGE: IMPROVING DECISIONS ABOUT HEALTH, WEALTH, AND HAPPINESS* (2009) (explaining that private and public choice architects attempt to “alter[] people’s behavior in a predictable way without forbidding any options or significantly changing their economic incentives” by using “nudge[s]”); Cass R. Sunstein & Lisa Reisch, *Automatically Green: Behavioral Economics and Environmental Protection*, 38 HARV. ENV’T L. REV. 127 (2014) (discussing how consumer choices, with respect to the environment, are affected by “the prevailing choice architecture, including social norms, salience and accessibility, and the applicable default rule”).

57. *System*, LEXICO, <https://www.lexico.com/en/definition/system> [<https://perma.cc/5NCK-K7F9>].

58. See Paul Loubere, *The Global Climate System*, NATURE EDUC. (2012), <https://www.nature.com/scitable/knowledge/library/the-global-climate-system-74649049/> [<https://perma.cc/29CK-YPWH>] (“The Earth’s climate system is made up of regions which respond differently to changes in the planetary energy balance.”); Wesley W. Ingwersen, Ahjond S. Garmestani, Michael A. Gonzalez & Joshua J. Templeton, *A Systems Perspective on Responses to Climate Change*, 16 CLEAN TECH. & ENV’T POL’Y 719, 720 (2014) (“Understanding anthropogenically driven global climate change is complex because it involves integrating many traditionally independent sciences using tools from systems theory.”).

choices.⁵⁹ As a result, nudges subtly direct positive changes in behavior and belief.⁶⁰

Further, because systems theory analyzes networks by retaining essential components despite changes in scale, it helps make patterns easily identifiable and describable.⁶¹ Important work in social tipping dynamics aptly describes the context in which the social axiom framework is useful.⁶² That work describes “social tipping points” as points within a social-ecological system (SES) “at which a small quantitative change inevitably triggers a non-linear change in the social component of the SES, driven by self-reinforcing positive-feedback mechanisms, that inevitably and often irreversibly lead to a qualitatively different state of the social system.”⁶³ The social axiom framework attempts to leverage this scalability by reminding us that a change in a global system can result from a change in individuals, driven by a change in the ideas they accept.

59. See, e.g., Hersh Shefrin, *Nudges to Improve Earth's Climate Gain Traction*, FORBES (Apr. 14, 2019, 11:59 PM), <https://www.forbes.com/sites/hershshefrin/2019/04/14/nudges-to-improve-earths-climate-gain-traction/?sh=6f1c83ff1afd> [<https://perma.cc/79JG-G224>] (describing “[c]limate change nudges” as “behavioral interventions for mitigating global warming”); *Smart Cities Cycle: Building Bike Culture with Behavioral Economics*, ARTEFACT, <https://www.artefactgroup.com/ideas/smart-cities-cycle/> [<https://perma.cc/RT34-VUSB>] (describing how “cities can apply behavioral economics to their existing infrastructure today in order to nudge citizens towards cycling” by “adding secure bike parking at key destinations,” placing “bike footrest[s]” at intersections, or subsidizing free bike share rental programs).

60. Sarah DeWeerd, *Here Are a Half-Dozen Nudges that Could Bring About Rapid Decarbonization*, ANTHROPOCENE (Jan. 21, 2020), <https://www.anthropocenemagazine.org/2020/01/here-are-half-dozen-nudges-rapid-decarbonization/> [<https://perma.cc/VSL3-YCEG>] (describing six “nudges that could be activated within 15 years and bring about systemic changes within 30,” such as novel energy subsidies, investment in carbon-neutral cities, divestment from fossil fuels, a campaign to emphasize the moral implications of climate change, increased climate and scientific literacy, and additional awareness around consumer choices).

61. See generally Iona M. Otto, Jonathan F. Donges, Roger Cremades, Avit Bhowmik, Richard J. Hewitt, Wolfgang Lucht, Johan Rockström, Franziska Allerberger, Mark McCaffrey, Sylvanus S.P. Doe, Alex Lenferna, Nerea Morán, Detlef P. van Vuuren & Hans Joachim Schellnhuber, *Social Tipping Dynamics for Stabilizing Earth's Climate by 2050*, 117 PROC. NAT'L ACAD. SCI. 2354, 2354 (2020), <https://doi.org/10.1073/pnas.1900577117> [<https://perma.cc/MF74-ACGM>] [hereinafter *Social Tipping Dynamics*] (“Achieving a rapid global decarbonization to stabilize the climate critically depends on activating contagious and fast-spreading processes of social and technological change within the next few years . . . [W]e propose concrete interventions to induce positive social tipping dynamics and a rapid global transformation to carbon-neutral societies.”).

62. See David Roberts, *Social Tipping Points Are the Only Hope for the Climate*, VOX (Jan. 29, 2020, 10:10 AM), <https://www.vox.com/energy-and-environment/2020/1/29/21083250/climate-change-social-tipping-points> [<https://perma.cc/U8ZQ-TFBA>] (characterizing *Social Tipping Dynamics* as constructing “a framework for understanding social tipping points, the systems where they might do the most good on climate, and the kinds of interventions that might trigger them”).

63. *Social Tipping Dynamics*, *supra* note 61, at 2355 (“An example in the field of climate policy is the introduction of tariffs, subsidies, and mandates to incentivize the growth of renewable energy production. This had led to a substantial system response in the form of mutually reinforcing market growth and exponential technology cost improvement.”).

In summary, the social axiom framework uses this way of looking at systems to develop an insightful line of reasoning. At their base, systems have ideas. The widespread acceptance of these ideas is often taken for granted. Yet a careful review, from an environmental perspective, shows us that some of the ideas we take for granted contribute to behaviors whose impacts cause the climate crisis. Some of these ideas must therefore be replaced with more sustainable ones. We can do this by, in a sense, designing nudges decades in advance, aspiring towards tipping points with a long-term strategy, and closely analyzing the ideas we accept.⁶⁴

Acceptance of new, sustainable ideas at an individual level could influence people in their daily lives, compounding to create more sustainable patterns of human behavior. If we could do this, we could change the behaviors that constitute the systems. We can thus view the need to change our systems as the need to change the ideas we believe in. The social axiom framework therefore views the call to act as also a call to think, believe, and hope.

III. To Change our Fundamental Systems, We Should Change the Ideas We Believe In

Some ideas produce behavior that exacerbates the climate crisis. Part III focuses on three ideas that work in this way. They are widely accepted, yet upon reflection lead directly to negative environmental impacts. First, the idea of opportunity cost, or that “when I forego an opportunity, there is a loss.” Second, the idea that causation is small-scale, that “what I do doesn’t affect others.” Third, the idea of time value of money, or “money now is worth more than money later.” An analysis of these three ideas demonstrates the power of the social axiom framework to help us mitigate the harmful behaviors these ideas encourage by replacing harmful ideas with more sustainable ones.

A. *Opportunity Cost*

The first example is the idea of *opportunity cost*, or “when I forego an opportunity, there is a cost.” Any recent college graduate knows the idea well, especially when they are paralyzed by having to make a choice relating to

64. See, e.g., Int’l Inst. for Applied Sys. Analysis, *Increasing Opportunities for Sustainable Behavior*, PHYS.ORG (Jan. 24, 2020), <https://phys.org/news/2020-01-opportunities-sustainable-behavior.html> [<https://perma.cc/LQP2-FHB9>] (describing that “collective behavior patterns emerge systemically as a product of personal, social, and environmental factors” and “increases in opportunities for pro-environmental behaviors . . . can have much larger effects on the adoption of sustainable behaviors than often assumed”).

their career.⁶⁵ Making a choice “closes doors,” and so the best choice becomes the one where you retain the greatest set of opportunities.⁶⁶ The thought goes that opportunities can lead us to the best things in life—therefore, opportunities are among the best things, too.

But not all opportunities lead to good outcomes. A close analysis reveals that a pervasive focus on opportunity cost can have unexpectedly negative consequences. The “fear of missing out” pervades.⁶⁷ The accumulation of opportunity becomes the objective, so consumption becomes the achievement.⁶⁸ Production becomes adored.⁶⁹ When you forego an opportunity, the attitude goes, you may never get it back, so you’d better take it now—just to be safe. You had better take it all, just to be safe. But consumption as a route to personal safety takes a psychological root in scarcity. The attitude tells us that we need to take opportunities to be secure, to be productive, and to achieve the most.

But we now understand consumption to be directly related to environmental harm.⁷⁰ Industrial production accounts for a fifth of greenhouse gas emissions.⁷¹ Commercial development is a driving force in

65. See, e.g., Sarah Vermunt, *Career Paralysis: Millennial Meltdown*, FORBES (Nov. 15, 2013, 3:49 PM), <https://www.forbes.com/sites/85broads/2013/11/15/career-paralysis-millennial-meltdown/?sh=1a4e176d4287> [<https://perma.cc/2WS7-R3MQ>] (describing *career paralysis* as “the inability to make *any* career decision for the fear of making the *wrong* career decision”).

66. See David R. Henderson, *Opportunity Cost*, THE LIBR. OF ECON. & LIBERTY, <https://www.econlib.org/library/Enc/OpportunityCost.html> [<https://perma.cc/P6SZ-AXG6>] (“[T]he cost of using a resource arises from the value of what it could be used for instead.”).

67. See Alina Tugend, *Too Many Choices: A Problem That Can Paralyze*, N.Y. TIMES (Feb. 26, 2010), <https://www.nytimes.com/2010/02/27/your-money/27shortcuts.html> [<https://perma.cc/V3HJ-LQ8A>] (“Research also shows that an excess of choices often leads us to be less, not more, satisfied once we actually decide. There’s often that nagging feeling we could have done better.”).

68. See Frank Newport, *Americans Like Having a Rich Class, as They Did 22 Years Ago*, GALLUP (May 11, 2012), <https://news.gallup.com/poll/154619/americans-having-rich-class-years-ago.aspx> [<https://perma.cc/NNG5-PE2Z>] (noting that, despite growing emphasis on wealth inequality, “more than six in 10 Americans think the United States benefits from having a class of rich people”).

69. See David Graeber, *Why Capitalism Creates Pointless Jobs*, EVONOMICS (Sept. 27, 2016), <https://evonomics.com/why-capitalism-creates-pointless-jobs-david-graeber/> [<https://perma.cc/745D-9BJD>] (“Huge swathes of people, in Europe and North America in particular, spend their entire working lives performing tasks they secretly believe do not really need to be performed. The moral and spiritual damage that comes from this situation is profound.”).

70. See Max Ajl, *To Reduce Climate Change, Reduce Consumption*, INSIDE CLIMATE NEWS (Aug. 30, 2009), <https://insideclimatenews.org/news/30082009/reduce-climate-change-reduce-consumption/> [<https://perma.cc/3KJ6-HP8D>] (“At its core, climate change is a problem of production and consumption. . . . [O]ur current consumption pattern of running to the store and having available whatever we want whenever we want it, courtesy of a limited supply of CO₂-producing fuel, is not sustainable.”).

71. *Sources of Greenhouse Gas Emissions*, U.S. ENV’T PROT. AGENCY (July 27, 2021), <https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions> [<https://perma.cc/FZX6-8RMR>] (noting that industrial production accounts for twenty-three percent of greenhouse gas emissions, primarily from burning fossil fuels for energy).

habitat destruction.⁷² The dread of opportunity cost, therefore, directly contributes to the climate crisis. Because of that contribution, the social axiom framework suggests that replacing the idea's widespread acceptance should be a goal. We should replace the idea of opportunity cost with its sustainable counterpart: abundance.⁷³ Those of us with a lot should live with less. Some things are better left for posterity or a more equitable distribution.

Crucially, however, it remains difficult in everyday life to trace the deep connections between a belief in opportunity cost and the far-reaching environmental consequences that result from it. On this front, conceptions of causation that are based in small-scale narratives hinder true attributions of responsibility, enticing us to believe that "my consumption is just fine." As a result, this first example brings us to our second.

B. *Small-Scale Causation*

The second example is the idea that *causation is small-scale*—that "what I do doesn't affect others." A belief in local causation is deeply natural for humans, in part because of the evolutionary history of our perception.⁷⁴ A baseball flies through a window, breaking it. The baseball is clearly the cause. Yet when, at the same moment, a tree falls over across the yard, we know that the baseball isn't the cause of *that*, something else is. Causation, in this sense, is *local* when it comes to things like baseballs and windows. For most of our species' history, this way of viewing things has worked quite well.

But the causes of our climate crisis do not work like this. The climate crisis isn't like a window with a baseball thrown through it. It's more like a window that breaks because of a million different things at once. Such a window would need more than sport mechanics to describe it; it would need complex physics and chemistry. As it happens, we have these fields at our disposal. Science shows us that individual acts and the Earth's environment

72. See, e.g., *Threats to Habitat*, NAT'L OCEANIC & ATMOSPHERIC ADMIN. FISHERIES, <https://www.fisheries.noaa.gov/insight/threats-habitat> [<https://perma.cc/G2XL-CMHE>] (noting that in the past century, "habitat loss has been the most common cause of extinction for freshwater fish in the United States" and that "[s]ince the early 1600s, the United States has lost more than half of its wetlands").

73. See, e.g., Eric Holt-Gimenez, *We Already Grow Enough Food for 10 Billion People—and Still Can't End Hunger*, HUFFINGTON POST (Dec. 8, 2014), https://www.huffpost.com/entry/world-hunger_b_1463429 [<https://perma.cc/E97L-YY3Y>] ("Hunger is caused by poverty and inequality, not scarcity. For the past two decades, the rate of global food production has increased faster than the rate of global population growth. The world already produces more than 1½ times enough food to feed everyone on the planet.")

74. See, e.g., Michael Shermer, *Did Humans Evolve to See Things as They Really Are?*, SCI. AM. (Nov. 1, 2015), <https://www.scientificamerican.com/article/did-humans-evolve-to-see-things-as-they-really-are/> [<https://perma.cc/F9NM-BHH6>] ("Grounded in evolutionary psychology . . . the interface theory of perception (ITP) . . . argues that percepts act as a species-specific user interface that directs behavior toward survival and reproduction, not truth.")

are in fact deeply related.⁷⁵ Science shows us that the relationship between the window and its million causes is describable and has been for years.⁷⁶

When we use fossil fuels to light our homes, drive to the office, have a package shipped by air, or to operate industrial agriculture, the environmental effects of our individual actions accumulate.⁷⁷ Activities that emit greenhouse gases ultimately share a destiny as accelerators of climate change. What we do has a widespread impact because not all of our behaviors act like baseballs. A small-scale view of causation is not the whole picture.

Yet a belief that causation is small-scale is widely accepted and taken for granted. We consistently act like our behavior does not affect others far away from us or into the future. But it does.⁷⁸ The consequences only compound when we view them in total—when we discuss these issues in their large-scale terms—like we do when we talk of systems and patterns of behavior. The point is to remember those abstract descriptions are based on concrete acts—acts by me and you.⁷⁹ The belief that causation is small-scale is not the whole picture, so it should be no surprise that it has led us astray. It has permitted us to neglect the consequences of our actions.

Indeed, a belief that causation is small-scale—that “what I do doesn’t affect others”—makes responsibility more difficult to attribute. It encourages a circumstance where we do not believe in the true consequences of our

75. See Jason Mark, *Yes, Actually, Individual Responsibility Is Essential to Solving the Climate Crisis*, SIERRA (Nov. 26, 2019), <https://www.sierraclub.org/sierra/yes-actually-individual-responsibility-essential-solving-climate-crisis> [<https://perma.cc/4NS5-T49C>] (“Ultimately, a personal action versus political action binary is unhelpful. The environmental movement needs to sustain a way to do both: agitate and organize for systemic change while also still encouraging individual behavior changes.”).

76. See *GM, Ford Knew*, *supra* note 12 (asserting that scientists at American automakers “knew as early as the 1960s that car emissions caused climate change”).

77. See, e.g., *What Is the Number 1 Source of Habitat Loss in the Eastern Half of the U.S.?*, INDIGENOUS LANDSCAPES (Jan. 8, 2019), <https://indigesapes.com/blog/2019/1/7/the-number-1-source-of-ecosystem-displacement-in-the-eastern-us> [<https://perma.cc/D6V8-S5QM>] (noting “the majority of Ecosystem Displacement/Habitat Loss in the Eastern U.S. and Canada is due to the production of annual crops for livestock feed and ethanol production”).

78. See Kelland, *supra* note 5 (“Climate change is already harming people’s health by increasing the number of extreme weather events and exacerbating air pollution . . .”).

79. Importantly, however, an emphasis on individual culpability does not convey the whole picture, especially when large shares of historical greenhouse gas emissions are attributable to a relatively small set of corporations, countries, and communities. Nonetheless, individuals play a role as demanding consumers. Further, corporations are partially comprised of individuals, and their boards and officers remain human. To the extent that corporations, for example, are large-scale manifestations of human psychology, the social axiom framework has relevant implications for their governance. See Joshua Axelrod, *Corporate Honesty and Climate Change: Time to Own Up and Act*, NAT. RES. DEF. COUNCIL (Feb. 26, 2019), <https://www.nrdc.org/experts/josh-axelrod/corporate-honesty-and-climate-change-time-own-and-act> [<https://perma.cc/HEB7-68NZ>] (“Corporations produce just about everything we buy, use, and throw away and play an outsized role in driving global climate change.”); see generally PAUL GRIFFIN, CDP, *THE CARBON MAJORS DATABASE: CDP CARBON MAJORS REPORT 2017* (2017) (cataloguing corporate responsibility regarding greenhouse gas emissions).

actions—where we throw up our hands when the window breaks. It exacerbates the climate crisis as it tacitly permits continued degradation and consumption of nature. It fosters a society where individuals possess little knowledge of their complicity because the true interrelationship between components has not been made clear enough.⁸⁰ Worse still, it permeates institutions, making them incapable of properly adjudicating responsibility.

The legal system is not immune from this permeation.⁸¹ Indeed, legislatures and courts struggle greatly with global environmental issues.⁸² At the same time, legal institutions all over the world are trying to develop effective legal frameworks to synthesize climate disputes and proactively govern in the face of imminent environmental crises.⁸³ Indeed, if the world's legal systems do not integrate an updated conception of causation, they will be deeply limited in their capacity to adjudicate responsibility in the face of the climate crisis.⁸⁴

According to Professor Douglas Kysar, despite global warming being one of “the most carefully and fully studied scientific topic[s] in human history,” plaintiffs face conceptual and empirical difficulties in persuading

80. See Emily Guskin, Scott Clement & Joel Achenbach, *Americans Broadly Accept Climate Science, but Many Are Fuzzy on the Details*, WASH. POST (Dec. 9, 2019), https://www.washingtonpost.com/science/americans-broadly-accept-climate-science-but-many-are-fuzzy-on-the-details/2019/12/08/465a9d5e-0d6a-11ea-8397-a955cd542d00_story.html [https://perma.cc/Y4JT-288G] (reporting poll results that suggest that over “3 in 4 U.S. adults and teenagers alike agree that humans are influencing the climate” and noting that “[t]he overwhelming majority of them said it’s not too late for society to come up with solutions, but a third of adults . . . say humans are causing climate change don’t think they can personally make a difference”).

81. See generally Douglas A. Kysar, *What Climate Change Can Do About Tort Law*, 41 ENV'T L. 1 (2011) (providing a detailed analysis of a tort's elements—duty, breach, causation, and harm—and the manner in which climate change is likely to stress and alter each of those elements).

82. See generally *Kiobel v. Royal Dutch Petroleum Co.*, 569 U.S. 108 (2013) (analyzing the circumstances under which U.S. courts may recognize a cause of action under the Alien Tort Statute as it relates to the actions of a foreign corporation in a foreign nation); Paul G. Harris, *Climate Change and the Impotence of International Environmental Law: Seeking a Cosmopolitan Cure*, 16 PENN. STATE ENV'T L. REV. 323 (2008) (describing failures in the structure of international treaties to prevent dangerous changes to the Earth's climate).

83. See Michael Byers, Kelsey Franks & Andrew Gage, *The Internationalization of Climate Damages Litigation*, 7 WASH. J. ENV'T L. & POL'Y 264, 267 (2017) (“The question of who should pay for the costs and damages of climate change will only become more salient as public awareness of the costs increase, and the science connecting greenhouse gases with specific climate events improves.”).

84. See Cinnamon Carlarne, *Delinking International Environmental Law & Climate Change*, 4 MICH. J. ENV'T & ADMIN. L. 1, 4 (2014) (arguing that “climate change is an issue of such scale and complexity that it defies resolution through the constrained channels of an international environmental treaty” because it is “rooted in our models of development, capitalism, free trade, and state sovereignty,” and “the economic and socio-legal realities that shape the field” cannot be ignored); Jonathan Watts, *European States Ordered to Respond to Youth Activists' Climate Lawsuit*, THE GUARDIAN (Nov. 30, 2020, 3:54 PM), <https://www.theguardian.com/environment/2020/nov/30/european-states-ordered-respond-youth-activists-climate-lawsuit> [https://perma.cc/4764-ATE2] (discussing a recent suit alleging “governments are moving too slowly to reduce the greenhouse gas emissions that are destabilising the climate”).

courts to extend a defendant's responsibility to incorporate the distant effects of its greenhouse gas emissions on an individual's climate harm.⁸⁵ In that regard, Professor Kysar's argument rests squarely within the substantial criticisms that have proliferated amongst scholars focused on causation's role in the law.⁸⁶ Professor's Kysar's analysis of the pressure tort law faces in light of climate change also rests squarely within the social axiom framework's campaign to identify ideas with negative environmental impacts and theorize aspirational and positive replacements. For example, in Professor Kysar's view, the "jurisgenerative role of the judge and the institutional capacities of courts . . . must be seen as a part of a complex field of risk regulation in which we must be willing to grasp every available lever in the strive for sustainability."⁸⁷

Great environmental harm is thus directly traceable to the belief that causation is small-scale, that "what I do doesn't affect others." It is a false belief, no longer viable, and actively harmful. Its deep permeation affects individual behavior and institutions. It shrouds the true cost of opportunity.⁸⁸

It should be replaced with its more sustainable counterpart: the idea that causation is large-scale. Many of our actions are deeply interconnected: "What I do affects others and can impact the entire Earth." The idea that causation is small-scale is wrong; it is thus the second example of a social axiom that should be replaced.⁸⁹ Finally, and importantly, this second idea

85. Kysar, *supra* note 81, at 30 (citing *Questions Surrounding the 'Hockey Stick' Temperature Studies: Implication for Climate Change Assessments Hearings Before the Subcomm. on Oversight and Investigations of the H. Comm. on Energy and Commerce*, 109th Cong., 674, 743 (2006) (statement of Ralph Cicerone, President, National Academy of Sciences)).

86. See generally Troyen A. Brennan, *Causal Chains and Statistical Links: The Role of Scientific Uncertainty in Hazardous-Substance Litigation*, 73 CORNELL L. REV. 469 (1988) (articulating the law's delay in incorporating contemporary scientific approaches to causation); Bruno Deffains, Claude Fluet & Maiva Ropaul, *Causation and Standards of Proof from an Economic Perspective*, 91 CHI.-KENT L. REV. 527 (2016) (analyzing how effectively legal standards of causation incentivize the efficient behavior of economic actors subject to liability).

87. Joshua Ulan Galperin & Douglas A. Kysar, *Uncommon Law: Judging in the Anthropocene*, in CLIMATE CHANGE LITIGATION IN THE ASIA PACIFIC 15, 17–18 (Jolene Lin & Douglas A. Kysar eds., 2020).

88. A small percentage of the world's population contributes the most to climate change yet remains ignorant of that fact. See, e.g., Damian Carrington, *1% of People Cause Half of Global Aviation Emissions—Study*, THE GUARDIAN (Nov. 17, 2020, 6:50 PM), <https://www.theguardian.com/business/2020/nov/17/people-cause-global-aviation-emissions-study-covid-19#https://perma.cc/PY3M-X4H8> (noting that "[o]nly 11% of the world's population took a flight in 2018 and 4% flew abroad," and that "[t]he frequent flyers identified in the study travelled about 35,000 miles (56,000km) a year . . . equivalent to three long-haul flights a year, one short-haul flight per month, or some combination of the two").

89. A word about "sustainable ideas." Here, a sustainable idea is an idea that leads to behavior with a positive environmental impact and that contributes to the cultivation of biodiverse and sustainable ecosystems. In this view, an idea's meaning is partly based in the behavior it leads to, once accepted. The metric of an idea's "sustainability" becomes its tendency to create a sustainable

effectively demonstrates that scholars like Professor Kysar currently work on projects that correspond to the kinds of essential changes that the social axiom framework seeks to identify and proliferate, a topic returned to in Part IV. In this regard, the social axiom framework highlights its advantages as a centralizing perspective and as a strategy that helps elucidate topics requiring additional contributions.

C. *Time Value of Money*

The third example is the idea of *time value of money*, that “money now is worth more than money later.” This idea is central in finance. Its acceptance is easy to demonstrate. Would you rather have a \$1,000 now or later? By far, most people say now.⁹⁰ You can spend it on a year’s worth of opportunities, invest it and accrue dividends, or pay down debt, saving interest. Plus, you never know if you’ll get paid in a year, so you better accept it now, just to be safe.

The idea that money now is worth more than money later has deep connections to opportunity cost.⁹¹ Like opportunity cost, the idea enjoys widespread acceptance. Indeed, the idea that money now is worth more than money later is key to understanding many components of contemporary finance. Interest on a debt, for example, represents the cost of the transaction where a debtor accesses money now rather than later. The interest rate partially reflects *how much more* that money is worth now to that particular borrower.⁹²

This reflection of worth is called a borrower’s *discount rate*.⁹³ When someone values accessing and using money now *much* more than accessing it later (as when she has a urgent investment opportunity or an expensive debt obligation on which to spend it), then that person can be described as having

environment for life. The concept of “sustainable ideas” is intended to inversely mirror the negative environmental impacts associated with a concept of “environmentally harmful ideas.”

90. See Shauna Carther Heyford, *Understanding the Time Value of Money*, INVESTOPEDIA (Jan. 25, 2022), <https://www.investopedia.com/articles/03/082703.asp> [<https://perma.cc/9XZV-P7JT>] (“Why would any rational person defer payment into the future when they could have the same amount of money now?”).

91. See *id.* (proposing that “time literally is money” and that “the value of the money you have now is not the same as it will be in the future and vice versa”).

92. See Kenneth E. Boulding, Paul Lincoln Kleinsorge, Hans Otto Schmitt & Jan Pen, *Capital and Interest*, ENCYCLOPEDIA BRITANNICA, <https://www.britannica.com/topic/capital-economics> [<https://perma.cc/SVX7-B2EH>] (“Interest as a form of income may be defined as income that is received as a result of the possession of contractual obligations for payment on the part of another . . . or [from] some other instrument that represents a promise on the part of some other party to pay sums in the future.”).

93. See Mark Henricks, *What Is the Discount Rate and Why Does It Matter?*, SMART ASSET (Jan. 12, 2021), <https://smartasset.com/investing/discount-rate> [<https://perma.cc/X43U-ENZH>] (“In investing and accounting, the discount rate is the rate of return used to figure what future cash flows are worth today.”).

a high discount rate. On the other hand, when someone does not place much value on the difference between money now or money later (because, for instance, they have enough for both now and later), then that person can be described as having a low discount rate. A discount rate is thus a metric used to describe how valuable a user of money finds that money to be at that moment, contrasted with that money's value to the user at some future time. The discount's magnitude captures the difference in a user's preferences.

Time value of money is also related to fiat currency.⁹⁴ A fiat currency greatly expedites an economy's capacity to transfer money from the future to the present.⁹⁵ It facilitates the accrual of capital in advance of earnings. Further, where the acceleration of capital becomes the goal, a debt economy becomes the means.

The issuance of debt stimulates an economy on the presumption that those with money now are likely to spend it. Because central banks can create fiat money without resource constraints (even gold), the amount of money available to more people now increases.⁹⁶ Simultaneously, the need to receive that capital from a party that already has it decreases. Debt can then issue more and more from future *expectations* rather than present *capacity*.

That apparent transcendence of capacity is directly related to the climate crisis. To be clear, this Note does not criticize the utility of time-value-of-money concepts in all economic analyses. Rather, it criticizes the implications of the concept when applied to determine humanity's discount rate as a whole species. For example, we accrue wealth whose existence is staked on the expectation that there will be later resources to justify it now. For certain individual cases, that expectation may be justified—but for humanity taken together, the expectation may be an illusion.⁹⁷ While we accrue wealth, we spend it excavating, producing, and consuming those very

94. See *Fiat Money*, CORP. FIN. INST., <https://corporatefinanceinstitute.com/resources/knowledge/economics/flat-money-currency/> [<https://perma.cc/H6SG-YBMD>] (noting that for “a fiat currency to be successful, the government must protect it against counterfeiting and manage the money supply responsibly,” which typically involves managerial attempts to control the total currency value circulating within an economy at one time).

95. See *id.* (“Fiat money is a currency that lacks intrinsic value and is established as a legal tender by government regulation.”).

96. See STUART I. GREENBAUM, ANJAN V. THAKOR & ARNOUD W.A. BOOT, *The What, How, and Why of Financial Intermediaries*, in CONTEMPORARY FINANCIAL INTERMEDIATION 55, 64 (4th ed. 2019) (noting that “modern banks produce fiat money on the basis of fractional reserves” and that “substitution of fiat for commodity money concentrates enormous economic power, for good or ill, in the hands of the monetary authority”).

97. See Univ. of Copenhagen, *Biodiversity Crisis Is Worse than Climate Change, Experts Say*, SCI. DAILY (Jan. 20, 2012), <https://www.sciencedaily.com/releases/2012/01/120120010357.htm> [<https://perma.cc/AUG7-E5FT>] (“The challenges of conserving the world's species are perhaps even larger than mitigating the negative effects of global climate change. Dealing with the biodiversity crisis requires political will and . . . a solid scientific knowledge if we are to ensure a safe future for the planet.”).

resources we expect to have later.⁹⁸ An environment with bountiful resources can support a bountiful debt. But a collapsing environment cannot. Future expectations must change alongside our insight into the climate crisis, especially where those expectations do not integrate predictions of ecosystem collapse, which would become a fundamental limiter on future capacity.⁹⁹ If that future limit did occur, but our expectations had not changed, the destiny of that debt would be default. A dire prediction.

But in some ways, this account is not a prediction. It may be a description. For example, Biodiversity and Ecosystem Services (BES), which are services based on natural ecosystems, include “water security, food provisions, regulation of air quality, and all necessities coming from nature.”¹⁰⁰ They are “vital to maintaining the stability and health of economies and communities.”¹⁰¹ Recent estimates suggest thirty-nine countries are at a high risk of ecosystem collapse.¹⁰² But in a globalized economy, the consequences are not limited to those countries directly at risk.¹⁰³ Indeed, the greater portion of global GDP, equal to \$41.7 trillion, is “dependent on high-functioning biodiversity and ecosystem services.”¹⁰⁴ Furthermore, total global debt reached more than \$250 trillion in January 2020 (pre-pandemic), representing a much greater total than typical global GDP.¹⁰⁵ If our economic systems do not integrate predictions involving the climate crisis, it may well already be that the destiny of much existing debt is default.

What happens when debt issues under unsustainable expectations? When this happens, to whom is our debt truly owed? What are the consequences of default when it turns out our debt is owed to the environment and all life on earth? On this way of viewing debt economics, global total

98. See generally Fernando P. Carvalho, *Mining Industry and Sustainable Development: Time for Change*, 6 FOOD & ENERGY SEC. 61 (2017), <https://doi.org/10.1002/fes3.109> [<https://perma.cc/SJ2T-QHE5>] (noting that mining industries represent both the provision of materials for daily use but also deep environmental degradation).

99. See *A Fifth of Countries Worldwide at Risk from Ecosystem Collapse as Biodiversity Declines, Reveals Pioneering Swiss Re Index*, SWISS RE (Sept. 23, 2020), <https://www.swissre.com/media/news-releases/nr-20200923-biodiversity-and-ecosystems-services.html> [<https://perma.cc/CQV5-4HGJ>] (“[B]oth developing and advanced economies are at risk.”).

100. Andrea D. Steffen, *39 Countries Are at High Risk of Ecosystem Collapse*, INTELLIGENT LIVING (Oct. 25, 2020), <https://www.intelligentliving.co/39-countries-risk-ecosystem-collapse> [<https://perma.cc/EVX4-Z64A>].

101. *Id.*

102. *Id.*

103. SWISS RE, *supra* note 99.

104. *Id.*

105. See Marc Jones, *Global Debt Shattering Records: IIF*, REUTERS (Jan. 13, 2020, 11:02 AM), <https://www.reuters.com/article/us-global-debt-iif-idUSKBN1ZC1VQ> [<https://perma.cc/4UCX-SK79>] (“Global debt is expected to climb to a new all-time high of more than \$257 trillion in the coming months, the Institute of International Finance estimated on Monday, adding there was no sign of it retreating either.”).

debt may indeed represent the degree to which we have accelerated capital from the future to the present. It appears we have done so in a way that caused the climate crisis. We are left to ask: what happens when believing that money now is worth more than money later, leaves later with nothing?

Environmental harm is thus directly traceable to the idea of time value of money. This pivotal and destructive axiom should therefore be replaced. Just like the first two examples—opportunity cost and small-scale causation—this belief is no longer viable. In the face of its actively harmful effect, it should be replaced with its sustainable counterpart: money later is worth more than money now. Resources for posterity are worth more than resources for us. In short, humanity’s collective discount rate may currently be negative. The acceleration of capital is in fact detrimental. A capacity-based economic foundation is more sustainable in the face of the climate crisis.

William Nordhaus, a prominent environmental economist, has accomplished major work developing the basis of a sustainable economic foundation in the face of the climate crisis.¹⁰⁶ His work accepts, and then reorients, the momentum of the climate crisis by suggesting that instead of stopping the climate crisis, we should let it continue, but at an optimal rate.¹⁰⁷ We should aim to slow the climate crisis at a rate that incorporates the time required to develop the technological innovations and policy frameworks necessary to change our society into a more sustainable one.¹⁰⁸ Nordhaus’s work employs the following insight: because we will not stop the climate crisis *right now*, we must therefore be planning to stop it over time *at some rate* (ideally, a rate that plans for that optimal moment when environmental damage is best balanced with our capacity to mitigate it).

Nordhaus’s work is important for its contributions but also because of how it deals with difficult choices surrounding the assumptions he uses in his

106. See Kenneth Gillingham, *William Nordhaus and the Costs of Climate Change*, VOX (Oct. 19, 2018), <https://voxeu.org/article/william-nordhaus-and-costs-climate-change> [<https://perma.cc/WWB5-Q57K>] (“[H]is research can be seen more generally as making a profound contribution towards broadening the scope of economic analysis to shed light on the causes and consequences of how unintended effects of human activity can influence the long-run trajectory of economic growth and wellbeing.”).

107. See Nader Sobhani, *William Nordhaus: An Advocate for Immediate and Forceful Climate Action, and Nothing Less*, NISKANEN CENTER (Oct. 24, 2018), <https://www.niskanencenter.org/william-nordhaus-an-advocate-for-immediate-and-forceful-climate-action-and-nothing-less/> [<https://perma.cc/AY3W-3F8V>] (“Nordhaus also clearly establishes an *optimal policy*, whereby a carbon tax of \$33.8 per ton of CO₂ in 2010 would avoid at least \$5 trillion in discounted damages, with costs less than half that.”).

108. But see Robert P. Murphy, *William Nordhaus Versus the United Nations on Climate Change Economics*, THE LIBR. OF ECON. & LIBERTY (Nov. 5, 2018), <https://www.econlib.org/library/Columns/y2018/MurphyNordhaus.html> [<https://perma.cc/73G7-XME4>] (discussing Nordhaus’s optimal rate, which involves a “relatively modest deviation from the *laissez-faire* baseline”).

models, knowing that assumptions ultimately inform the conclusions any model reaches.¹⁰⁹ While Nordhaus is famous for the care with which he formulates his assumptions, there has been some criticism of them.¹¹⁰ For example, he generally ascribes humanity a discount rate that reflects a high valuation of money now rather than later, a choice with controversial implications.¹¹¹ Yet without analyzing the merits of Nordhaus's work here, the tension raises an essential question: what happens if we miscalculate that optimization?

Perhaps the cost of our debt transactions is so high as to make their continual issuance an irrational habit. Rather than a low discount rate, perhaps humanity has an extraordinarily high one—so high as to make further borrowing from the future akin to an unthoughtful suicide. Our debt's true cost will ultimately be reflected in the consequences of default: a sixth mass extinction, induced by a climate crisis, an Earth where humans are rich and then lonely.

In any event, Nordhaus's work takes as an assumption that money now is worth more than money later.¹¹² It shouldn't surprise us. His receipt of the Nobel Prize represents the endorsement of the field of economics as a whole and highlights the idea's deep roots in the field and its prominent role in contemporary economic analysis of climate change. Yet, in the face of a close analysis of the behaviors whose impacts cause the climate crisis, the social axiom framework suggests that viewing growth as an optimization of degradation may be unacceptable. No matter what, it is worth closely analyzing our belief in the time value of money and recognizing that it may be a social axiom in need of replacement.

Thus, Part III uses three examples to highlight the power of the social axiom framework. Each example demonstrates how the framework leverages the scientific components of the climate crisis to systematically trace environmental harms to ideas that lead to harmful behavior. The examples

109. See Gillingham, *supra* note 106 (“Models are crucial for understanding the nature of climate change and how to address it because the issue involves physical, chemical and economic relationships that would simply not be possible to grasp fully without a clear framework.”).

110. See Jason Hickel, *The Nobel Prize for Climate Catastrophe*, FOREIGN POL'Y (Dec. 6, 2018, 1:42 PM), <https://foreignpolicy.com/2018/12/06/the-nobel-prize-for-climate-catastrophe/> [<https://perma.cc/HH5A-K2H8>] (“[M]any believe that the failure of the world's governments to pursue aggressive climate action over the past few decades is in large part due to arguments that Nordhaus has advanced.”).

111. *Id.* (“Discounting the future allows [Nordhaus] to argue that we shouldn't reduce emissions too quickly, because the economic cost to people today will be higher than the benefit of protecting . . . future generations [who will] be much richer than we are and therefore better able to manage the problem.”).

112. See Murphy, *supra* note 108 (explaining that Nordhaus's latest model “suggests that the ‘optimal’ amount of global warming is far higher than what the UN and many in the media are now recommending as necessary in order to avert catastrophe” and adopts a low but positive discount rate for its calculations).

demonstrate three components: (1) the interconnected and subconscious nature of social axioms, (2) the ways in which we take them for granted, and (3) how they contribute directly to environmental harm.

Part III's examples can be concisely summarized. First, a fear of foregone opportunity ties a need for security to habits of overconsumption. Second, a misunderstanding of causation leads to a deferral of responsibility. Finally, a commitment to consumption encourages our financial systems to value consumption in the present more than the bounty of the future, exacerbating global debt and threatening the health of those who come after us. As a result of these three ideas, we find ourselves living in economic and social systems designed to encourage insecure overconsumption in a world of false responsibility.

The need to reduce our demand on the environment is the basis for the call to action to change our fundamental systems. Indeed, in this way of viewing things, the climate crisis makes deep sense. It is a truly natural result. We could say, as W. Edwards Deming put it, “[e]very system is perfectly designed to get the results it gets.”¹¹³ We must change those systems. The social axiom framework suggests that, to achieve our goal, we should replace a key set of harmful ideas with sustainable ones. Part III has outlined a framework to do so.

IV. To Change the Ideas We Believe In, We Should Use Every Mechanism We Can

This Note has strived to contribute an interpretive framework through which to view the complex challenges presented by the climate crisis. The analysis of the three ideas discussed above are examples of what the social axiom framework has to offer, especially in terms of cataloguing ideas in need of replacement. The framework suggests that it is imperative to undertake a systematic identification of environmentally harmful ideas so that we can both theorize replacements and proliferate them.

The social axiom framework has made ground in clarifying what this replacement involves. A campaign to replace problematic ideas with sustainable ones is a campaign to change minds, consciously and subconsciously. One of the framework's strengths is that it views this campaign as involving both conscious and subconscious elements.¹¹⁴

113. Quotations attributed to W. Edwards Deming, W. EDWARDS DEMING INST., <https://deming.org/quotes/10141/> [<https://perma.cc/MFF8-2D5D>].

114. See Noriya Watanabe & Masahiko Haruno, *Effects of Subconscious and Conscious Emotions on Human Cue-Reward Association Learning*, SCI. REP. (Feb. 16, 2015), <https://doi.org/10.1038/srep08478> [<https://perma.cc/G592-4CDV>] (“[T]he subconscious and conscious processing of emotional signals enhances value-updating . . . [and] the computational processes underlying the subconscious enhancement is at least partially dissociable from its conscious counterpart.”).

Because conscious change can be difficult for many individuals to achieve, replacement strategies that utilize subconscious modes have a richer array of cultural change mechanisms at their disposal.¹¹⁵

The social axiom framework encourages us to be aspirational and interdisciplinary because mechanisms of cultural change include all the diverse ways in which ideas are influenced and changed in a complex society.¹¹⁶ Indeed, societies change through music, art, film, psychology, biology, politics, and policy, among other means. The framework invokes this natural interdisciplinarity and encourages us to employ it strategically. Insofar as it adopts this approach, the framework situates itself alongside important work regarding nudges and social tipping dynamics.¹¹⁷ Like those approaches, the framework encourages us to, in a sense, design all our stones to hit more than one bird.

However, this Note's primary contribution is not in the identification of the three ideas with which it has dealt, nor in arguing that environmental harm is traceable to them. Others have also articulated the problems with the ideas of opportunity cost, small-scale causation, and time value of money in environmental contexts.¹¹⁸ Instead, perhaps the most useful feature of the social axiom framework is that it helps to illuminate the importance of work that is already being done in furtherance of sustainability and to illuminate connections between that work. In doing so, the framework highlights the relationship between apparently disparate projects as instead contributing towards the replacement of harmful ideas with more sustainable ones.

To better describe the framework's role in illuminating such connections across movements, Part IV of this Note provides an illustrative examination of five types of movements currently envisioning mechanisms

115. See Michael P. Kelly & Mary Barker, *Why Is Changing Health-Related Behaviour So Difficult?*, 136 PUB. HEALTH 109, 112 (2016), <https://doi.org/10.1016/j.puhe.2016.03.030> [<https://perma.cc/97KR-QE4B>] (explaining that merely providing people with new information often does not change their individual behavior and that behavior is often driven by unconscious responses that can be influenced by small changes, or "nudges," in the environment).

116. See generally Michael E.W. Varnum & Igor Grossmann, *Cultural Change: The How and the Why*, 12 PERSPS. ON PSYCH. SCI. 956 (2017), <https://doi.org/10.1177/1745691617699971> [<https://perma.cc/M388-KUSW>] (describing theories regarding cultural evolution and social ecology that aim to describe how and why societies change).

117. See DeWeerd, *supra* note 60 (describing nudges relevant to the proliferation of economic decarbonization).

118. For example, Hans Christoph Binswanger pioneered the recognition that "endless growth is unsustainable, both in human and planetary terms." Hans Ulrich Obrist, *Unlimited and Eternal Growth*, in THIS IDEA MUST DIE 335, 335 (John Brockman ed., 2015); see generally HANS CHRISTOPH BINSWANGER, MONEY AND MAGIC: A CRITIQUE OF THE MODERN ECONOMY IN THE LIGHT OF GOETHE'S *FAUST* (J.E. Harrison trans., Univ. of Chi. Press 1994) (1985) (exploring, among other connections, the allegorical relationship in Goethe's *Faust* between notions of magic, alchemy, and the printing of paper money).

to replace environmentally harmful ideas with more sustainable ones, or *sustainability movements*.¹¹⁹

First, this Part describes the legal movement of environmental constitutionalism, which advocates for the constitutional enshrinement of values consistent with the maintenance of sustainable ecosystems. Second, it describes economic movements centered around reorienting economics away from growth and towards prosperity within ecological limits. Third, it describes youth political movements, such as those embodied in increasingly common youth–plaintiff climate lawsuits, and iconic activism efforts by those like Greta Thunberg. Fourth, it describes cultural movements focused on imagining and depicting sustainable living, including contemporary artistic efforts as well as the attempts of Indigenous peoples to reclaim historically sustainable traditions. Finally, it describes linguistic and psychological movements whose aim is to fashion new words (neologisms) and psychiatric diagnoses capable of characterizing the effects of planetary crisis on the subjectivity and lived experience of those who recognize Earth’s impending ecological disasters.

In illuminating such connections, the framework offers one way to explain the shared force of apparently disparate sustainability movements. In particular, the framework illuminates that many existing sustainability movements share a focus on the identification of environmentally harmful ideas, the imagination of their replacements, and the creation of the possibilities necessary to enact their replacement. In that regard, the framework suggests that the apparent disparity between movements is, in truth, something to be expected given the wide variety of social axioms that currently underlie our existing fundamental systems.

Indeed, the three ideas examined in Part III are intended to illustrate the diversity of ideas with environmentally harmful consequences that we take for granted today. Yet a wider examination of sustainability movements makes the point even stronger: such harmful ideas are prolific and deeply embedded within institutions affecting a diverse array of actors and communities. In turn, those affected have responded in unique ways. Let us examine five such movements.

A. *Environmental Constitutionalism*

Traditionally, environmental constitutionalism represents the attempt by scholars and activists to advocate for the “constitutionalization of environmental protection at the national level, whether via judicial interpretation of existing constitutional provisions or via formal

119. See *supra* note 16 (describing the meaning of “sustainability movements”).

amendment.”¹²⁰ Amid pessimism at the prospect of achieving such an objective, Professor Douglas A. Kysar has argued for an approach to environmental constitutionalism that is more “incremental and pragmatic in pitch.”¹²¹ He does so in the background of deep insights from Bruce Ackerman into the pervasive nature of constitutionalism within American political and legal movements, such that one may view the Constitution as “a conversation between generations” in which the Constitution is a medium for the generational priorities of both the inheritors and those passing down the laws of the nation.¹²²

It is in this more interdisciplinary constitutional connotation that Professor Kysar articulates a vision of environmental constitutionalism that takes its deepest objective as the replacement of two notions in liberal constitutional thinking that each have environmentally harmful consequences.¹²³ First, environmental constitutionalism offers a vehicle to enshrine the ecological assumption that resources are finite and nonsubstitutable, in contrast to the liberal intergenerational relationship ethic which assumes that “enough, and as good” resources exist for future generations,¹²⁴ a position which largely disregards contemporary environmental degradation and the corresponding loss of biological potential on Earth. Second, environmental constitutionalism aims to push liberal constitutional thinking to “become more self-conscious of its membership decisions,”¹²⁵ specifically with regards to the recognition of intergenerational and non-human interests in the national fate, guided as such by the Constitution.

While lofty in its ambitions, environmental constitutionalism embodies a legal movement that draws its power and potential from diverse mechanisms of constitutional change. Following the spirit of Ackerman’s insights, Professor Kysar notes that “[i]n some cases, foundational legal change occurs through more diverse and diffuse mediums, including through movement parties, media politics, dramatic shared social experiences, highly symbolized presidential elections, and the passage of landmark statutes such

120. KYSAR, *supra* note 14, at 229; *see also* Douglas A. Kysar, *The Consultants’ Republic*, 121 HARV. L. REV. 2041, 2059–62, 2060–62 nn.46–62 (2008) (book review) (cataloguing prominent sources in the environmental constitutionalism movement).

121. KYSAR, *supra* note 14, at 231.

122. *Id.* at 243; *see also* Bruce Ackerman, *The Living Constitution*, 120 HARV. L. REV. 1737, 1805 (2007) (arguing that judicial review should be seen as organizing a dialogue between generations). *See generally* BRUCE ACKERMAN, *WE THE PEOPLE: FOUNDATIONS* (1991) (envisioning a deeper understanding of the Constitution as moving beyond the bounds of traditional constitutional doctrine and institutions).

123. KYSAR, *supra* note 14, at 246.

124. *Id.*

125. *Id.* at 246–47.

as the Social Security Act or the Civil Rights Act.”¹²⁶ Indeed, Professor Kysar suggests that the 1970s-era federal environmental statutes had potential to achieve the constitutional force of landmark statutes.¹²⁷ Even further, he contributes such a statute himself in the form of the Environmental Possibilities Act, a draft legislative proposal that embodies a commitment to the precautionary principle, intergenerational equity, and the centrality of preserving the ecological possibilities inherent in Earth’s ecosystem services.¹²⁸

In this view, Professor Kysar’s environmental constitutionalism, embodied especially in the Environmental Possibilities Act, represents one such sustainability movement within an expressly legal context. Further, Professor Kysar’s endeavor is centered around the identification of harmful ideas and is also deeply concerned with their replacement by more sustainable ones. Indeed, Professor Kysar is centrally aware of his work’s role in the broader endeavor to avoid the climate crisis through the close examination of ideas. His articulation of this dynamic deserves full attention:

We are facing a global environmental crisis, but its root causes are epistemological, ethical, and political in nature: epistemological in the sense that, since the Enlightenment, our institutionalized search for knowledge has been largely reductionist and empirical in orientation, yet now we are confronted by challenges whose full magnitude is only perceptible—let alone resolvable—through integrative and imaginative thinking; ethical in the sense that our dominant models of human behavior at present fixate on interest maximization in an effort merely to describe and predict, yet our models and their expressions have begun endogenously to limit our understanding of ourselves and our relations; and political in the sense that, also since the Enlightenment, we have inhabited conceptions of organization that are primarily individualistic and insular in form, yet now we require conceptions that admit smoothly into their purview statistical victims, foreign citizens, future generations, nonhuman life-forms, and other seemingly absent interest holders. The global environmental crisis is therefore in no small measure a crisis of ideas.¹²⁹

In this regard, Professor Kysar’s seminal work, and environmental constitutionalism more broadly, may fairly be seen as consistent with the kind

126. *Id.* at 247.

127. *Id.* at 248–49.

128. *Id.* app. at 255 (detailing “[a]n Act to reaffirm . . . the principles espoused in the National Environmental Policy Act of 1969; to acknowledge and embrace the central meaning of the precautionary principle . . . and to declare a national commitment to hold open possibilities for the environment and for the lives that it supports”).

129. *Id.* at 253.

of movement that the social axiom framework regards as central and necessary.

In the endeavor to change humanity's fundamental systems, great thinkers are needed to theorize and articulate changes to each of those systems. In Professor Kysar's case, environmental constitutionalism represents a hopeful means to alter national legal systems. As such, environmental constitutionalism helps demonstrate that sustainability movements already exist in legal contexts. As a practical matter, Professor Kysar's scholarship and professional activism also serve as examples of the diverse mechanisms of cultural change with which this Note is concerned. Here, Professor Kysar's work can be seen as one iteration of the influence that prominent thinkers can have on the discourse about critical issues implicating powerful institutions.

B. Economic Movements: Prosperity Within Ecological Limits

The movement towards envisioning economic systems decoupled from a commitment to infinite growth has deep roots, with at least one prominent articulation of that vision arising in the 1970s.¹³⁰ More recently, the movement towards "prosperity without growth" has captured that spirit.¹³¹ The movement towards prosperity without growth is centered around articulating a structure of economics that strives for enhanced human prosperity within the ecological limits of a flourishing Earth.¹³² Indeed, economists are making strong claims on this front: that creating "the economics for such a vision is a precise, definable and meaningful task."¹³³

At least some of the actively involved economists view the movement as situated within broader contexts of social and political change.¹³⁴ For example, Tim Jackson views the endeavor as requiring "a willingness to question received wisdom and a determined effort to avoid familiar axioms,"

130. See DONELLA H. MEADOWS, DENNIS L. MEADOWS, JØRGEN RANDERS & WILLIAM W. BEHRENS III, *THE LIMITS TO GROWTH: A REPORT FOR THE CLUB OF ROME'S PROJECT ON THE PREDICAMENT OF MANKIND* 23 (1972) (noting that "[i]f the present growth trends in world population, industrialization, pollution, food production, and resource depletion continue unchanged, the limits to growth on this planet will be reached sometime within the next one hundred years," likely resulting in a "rather sudden and uncontrollable decline in both population and industrial capacity").

131. See TIM JACKSON, *PROSPERITY WITHOUT GROWTH* xxv–xxvi (Routledge 2d ed., 2017) (2010) ("But it's also clear that, on a finite planet, there must be some limits to material expansion. A rising population with insatiable material aspirations sits uneasily with the finite nature of our earthly home.")

132. *Id.* at xxxviii–xxxix ("Prosperity, in any meaningful sense of the term, is about the quality of our lives and relationships, about the resilience of our communities and about our sense of individual and collective meaning.")

133. *Id.* at xxxix.

134. See, e.g., *id.* at xxvi (arguing that a coherent economic model based on prosperity requires political and social considerations).

noting that the movement “relies on a degree of openness to the possibility of political and social change.”¹³⁵ In this regard, sustainability movements within economics readily grapple with the notion that existing axioms must be replaced. For economic systems to become more sustainable, suitable replacements for these axioms must be found.

One prominent manifestation of sustainability movements within economics comes from Oxford economist Kate Raworth, in the form of “doughnut economics.”¹³⁶ In this model, human prosperity can be seen as properly consisting between two concentric rings, or the “doughnut.”¹³⁷ The doughnut economic model provides a platform for social goals as well as a recognition of ecological boundaries. The two rings consist of a “social foundation, to ensure that no one is left falling short on life’s essentials, and an ecological ceiling, to ensure that humanity does not collectively overshoot the planetary boundaries that protect Earth’s life-supporting systems.”¹³⁸ Between the two concentric rings represents a “space that is both ecologically safe and socially just: a space in which humanity can thrive.”¹³⁹

In this regard, doughnut economics and movements towards prosperity without growth represent two manifestations of sustainability movements within economics, whose foundational goals square well with the vision of the social axiom framework. These two movements to re-envision sustainable foundations for our economic models share a central objective: that existing economic axioms with harmful environmental consequences be identified and examined, and their more sustainable replacements theorized and proliferated.

Indeed, as Jackson has noted, interest in these movements comes from what he describes as “a curious mixture of somewhat unusual suspects,” including “[p]overty campaigners, asset managers, faith groups, consumer organisations, theatre managers, engineers, archbishops, diplomats, museums, literary societies and the occasional member of royalty.”¹⁴⁰ While he initially experienced a sense of confusion at these surprisingly diverse audiences, he has come to view the widespread interest in alternative economic models as “an almost insatiable appetite from ordinary people across the world in almost [e]very walk of life to scrutinise the most

135. *Id.*

136. See generally KATE RAWORTH, DOUGHNUT ECONOMICS: SEVEN WAYS TO THINK LIKE A 21ST CENTURY ECONOMIST (Joni Praded ed., 2017) (articulating a vision for economics wherein desirable social objectives, like the eradication of poverty, are balanced alongside a recognition of substantial ecological limits within which economic aspirations must be circumscribed).

137. *About Doughnut Economics*, DOUGHNUT ECON. ACTION LAB, <https://doughnuteconomics.org/about-doughnut-economics> [<https://perma.cc/8YJU-LTFK>].

138. *Id.*

139. *Id.*

140. JACKSON, *supra* note 131, at xxx.

pernicious myth on which modern society rests: that it's possible for human activity on planet Earth to go on expanding indefinitely."¹⁴¹

In Jackson's own view, then, ordinary people across the world are reckoning with the falsehood of accepted economic principles in the face of an increasing awareness of the climate crisis facing humanity and life on Earth. While this Note has not gone so far as to describe the ideas with which it has grappled as "myths," the author is sympathetic to the word—it connotes, powerfully, the deep sense in which certain pernicious ideas have been so taken for granted and yet their assumptions revealed as deeply false.

Thus, sustainability movements within economics—such as the aspiration towards prosperity without growth and doughnut economics—fit well within the broader vision of the social axiom framework. Indeed, these movements demonstrate that critical work is already being undertaken by economists like Jackson and Raworth to identify economic axioms in need of replacement and to envision how to achieve a reorganization of existing economic models. One expects that more and more young economists will contribute their imaginative capacities as the movement grows further realized, thereby assisting sustainability movements within economics.

C. *Youth Climate Movements*

Throughout this Note, ideas have been discussed as being "taken for granted," or at least generally accepted, and yet in need of replacement. But there is an undeniable cohort of activists for whom many ideas have never been acceptable in the first place.

Youth climate movements often draw energy from the incredulity young people experience upon recognizing the Earth's ecological plight and learning of its origins. For Greta Thunberg, who first learned of the climate crisis when she was eight years old, disbelief and the inability to accept that so little was being done have been central to her motivation and activism.¹⁴² "[I]f the emissions have to stop, then we must stop the emissions—to me, that is black or white."¹⁴³

Increasingly, youth climate movements embody a portion of the population whose worldviews have never accepted certain ideas. For these movements, much less is required to eradicate previous acceptance, and instead youthful imagination is central to envisioning the future. For

141. *Id.* at xxxii.

142. See Greta Thunberg, *The Disarming Case to Act Right Now on Climate Change*, TEDxSTOCKHOLM, at 2:23 (Nov. 24, 2018), https://www.ted.com/talks/greta_thunberg_the_disarming_case_to_act_right_now_on_climate_change [<https://perma.cc/8K8T-E5G5>] ("I think in many ways that we autistic ones are the normal ones . . . especially when it comes to the sustainability crisis, where everyone keeps saying that climate change is an existential threat and the most important issue of all, and yet they just carry on like before.")

143. *Id.* at 2:46.

example, without evaluating the merits of the case, it is sufficient to suggest that a case like *Juliana v. U.S.*¹⁴⁴ embodies a lawsuit whose youth plaintiffs articulate a claim that it is difficult to envision would arise from an older generation more accustomed to the notion that the government has the authority and discretion to conduct its activities towards the betterment of the nation.¹⁴⁵

Insofar as the natural incredulity of youth is calibrated towards an unwillingness to accept certain ideas viewed as harmful, youth may be yet another source for the identification of social axioms in need of replacement. It is debatable to what extent sustainability movements may desire to rely on specific incarnations of youth climate movements. Nevertheless, it is reasonable to envision a continued role for children in identifying the features of our fundamental systems in need of changing. Indeed, concerns for youth and even generations unborn occupy a substantial component of many environmental movements.¹⁴⁶

Youth climate movements thus represent a unique window into the social negotiations involved in determining which ideas society will continue to believe in. Indeed, if Greta Thunberg's growing influence is any indication, youth climate leaders will continue to occupy an increasingly prominent role within sustainability movements, articulating a perspective from which certain ideas were never accepted in the first place.

D. Cultural Sustainability Movements

Notions of sustainability are being invoked with greater emphasis in contemporary artistic and cultural movements. They also find a historical counterpart in the traditionally sustainable cultural practices of many Indigenous peoples.

For example, the Center for Cultural Power, based in Oakland, California, is an organization focused on supporting and “inspiring artists and culture makers to imagine a world where power is distributed equitably and where we live in harmony with nature.”¹⁴⁷ In the words of the Center's President, Favianna Rodriguez, “we urgently need more compelling and

144. 947 F.3d 1159 (9th Cir. 2020).

145. *See generally id.* (adjudicating plaintiffs' claim that the United States infringed upon the plaintiffs' rights to life, liberty, and property by its continued activities involving fossil fuel emissions).

146. *See, e.g., Youth for Climate Action*, UNICEF (Sept. 19, 2019), <https://www.unicef.org/environment-and-climate-change/youth-action> [<https://perma.cc/58MV-SWXD>] (describing that “far from being passive victims, young people all over the world have begun to fight back on a scale never seen before”).

147. *Keep Powering the Culture Wave*, CTR. FOR CULTURAL POWER, <https://www.culturalpower.org/about> [<https://perma.cc/3MYH-GTD7>].

relatable stories that show us what a just, sustainable, and healthy world can look like.”¹⁴⁸ In the Center’s view:

The old myths will die when we can replace them with new ones. We need our storytellers—a mighty force—to help us shift our mythology and imagine a future where together we thrive *with* nature. That is a power we must harness, if we are to find our way out of the climate crisis. We must build a cultural strategy for the climate movement.¹⁴⁹

The Center for Cultural Power represents a growing contingency of artists and cultural reformers who share this belief and are focused on envisioning and depicting sustainable lifestyles in art and story. In this regard, such cultural movements align consistently with the social axiom framework’s central commitment to identifying areas in need of robust imaginative efforts. In the words of author bell hooks, “[t]he function of art is to do more than tell it like it is—it’s to imagine what is *possible*.”¹⁵⁰

Importantly, however, not all the necessary work is *prospectively* imaginative in nature—that is, not all imagination need be forward looking. A substantial portion of the wisdom within various sustainability movements arises from historical practices centered in the traditions of diverse Indigenous peoples.¹⁵¹ Indeed, a growing scientific awareness of the accuracy of long-held Indigenous beliefs about ecosystem health, biochemical nutritional cycles, and climatology contrasts sharply with the historical marginalization of Indigenous epistemologies.¹⁵²

Thus, Indigenous scholars are channeling traditional wisdom and practices towards the re-articulation of sustainable approaches long overlooked by colonial modes of knowledge endorsement.¹⁵³ Increasingly regarded as a masterpiece of ecological history and activism, Robin Wall

148. Favianna Rodriguez, *Harnessing Cultural Power*, in *ALL WE CAN SAVE: TRUTH, COURAGE, AND SOLUTIONS FOR THE CLIMATE CRISIS* 121, 121 (Ayana Elizabeth Johnson & Katharine K. Wilkinson eds., 2021).

149. *Id.*

150. bell hooks, in *ALL WE CAN SAVE: TRUTH, COURAGE, AND SOLUTIONS FOR THE CLIMATE CRISIS* 120, 120 (Ayana Elizabeth Johnson & Katharine K. Wilkinson eds., 2021).

151. See Sherri Mitchell, *Indigenous Prophecy and Mother Earth*, in *ALL WE CAN SAVE: TRUTH, COURAGE, AND SOLUTIONS FOR THE CLIMATE CRISIS* 16, 17 (Ayana Elizabeth Johnson & Katharine K. Wilkinson eds., 2021) (“Indigenous knowledge is based on millennia-long study of the complex relationships that exist among all systems within creation. It encompasses a broad array of scientific disciplines: ethnobotany, climatology, ecology, biology, archaeology, psychology, sociology, ethnomathematics, and religion.”).

152. See *id.* at 18 (asserting that “the purposeful degrading of Indigenous knowledge by mainstream governments, academics, and scientists has led to distorted ideas about our . . . ways of knowing and being” and explaining how “[i]n recent years, many scientists have realized that they are just now ‘discovering’ what Indigenous peoples have long known”).

153. See generally SHERRI MITCHELL, *SACRED INSTRUCTIONS: INDIGENOUS WISDOM FOR LIVING SPIRIT-BASED CHANGE* (2018) (synthesizing selected Indigenous wisdom and practices relevant to achieving cultural change in an ethical and aspirational way).

Kimmerer's *Braiding Sweetgrass* conveys a deeply knowledgeable portrait of traditional Indigenous practices and worldviews centered around sustainable relationships to nature.¹⁵⁴ Similarly, the Lummi peoples of the Puget Sound in the Pacific Northwest are actively recreating their historical fishing practice, called "reefnetting," as a way to connect once more with the practices that were stolen from them by colonial assimilation and also to undertake a more sustainable fishing practice.¹⁵⁵ Despite being less efficient, the approach is considered more sustainable, more socially integrative and inclusive, and more sensitive to the ecological health of the salmon runs, thus providing the community multiple benefits.¹⁵⁶ In that sense, much Indigenous wisdom expressly denounces ideas like opportunity cost and small-scale causation, in favor of practices embedded within a worldview that accepts ecological interconnectedness and the need to, for example, take less than one is able to take.

Thus, many cultural sustainability movements fall squarely within the kinds of movements viewed as necessary within the social axiom framework. Perhaps most importantly, such movements are another demonstration that critical work is already underway. It is therefore a mistake to envision sustainability movements as requiring prospective imagination as the only basis of their energy and fervor—history and Indigeneity, too, are due their prominent and critical place.

E. Linguistic and Psychiatric Movements

Finally, existing shifts within linguistics and psychiatry further demonstrate the interdisciplinary way that mechanisms of cultural change may be used within sustainability movements.

Within linguistics, movements are underway to develop neologisms capable of capturing the novel array of subjective experiences proliferating in tandem with a spreading awareness of the climate crisis.¹⁵⁷ For example,

154. See ROBIN WALL KIMMERER, *BRAIDING SWEETGRASS: INDIGENOUS WISDOM, SCIENTIFIC KNOWLEDGE, AND THE TEACHINGS OF PLANTS* 28 (2013) (remarking that "[m]any of our ancient teachings counsel that whatever we have been given is supposed to be given away again" and explaining that "[t]he currency of a gift economy is, at its root, reciprocity. In Western thinking, private land is understood to be a 'bundle of rights,' whereas in a gift economy property has a 'bundle of responsibilities' attached").

155. See MARK KURLANSKY, *SALMON: A FISH, THE EARTH, AND THE HISTORY OF THEIR COMMON FATE* 330 (2020) (describing an interaction with Larry Kinley, a Lummi whose family has fished salmon for "as far back as is known," wherein Kinley described reefnetting as less efficient but instead "about healing" and "about passing knowledge to younger people and about the social benefit").

156. See *id.* (discussing "reefnetting" as a sustainable way of fishing because it is "selective harvesting" where unwanted fish can be thrown back unharmed).

157. See Ash Sanders, *Under the Weather*, in *ALL WE CAN SAVE: TRUTH, COURAGE, AND SOLUTIONS FOR THE CLIMATE CRISIS* 231, 242 (Ayana Elizabeth Johnson & Katharine K.

the Bureau of Linguistical Reality is focused on “creating new language as an innovative way to better understand our rapidly changing world due to manmade climate change and other Anthropocenic events.”¹⁵⁸ Among the new words the Bureau has developed are “ennuipocalypse,” or “the idea that the end of the world might be not a Hollywood Armageddon but mundane and almost normal.”¹⁵⁹ Perhaps the most famous neologism so far is “solastalgia,” a word coined by environmental philosopher Glenn Albrecht.¹⁶⁰ The term intends to capture the deep sense of melancholia experienced by those surrounded with environmental degradation in their local environments.¹⁶¹

The emotional valence of many of these new words has its parallel in psychiatric movements to recognize and validate novel diagnoses of mental health problems in people experiencing negative emotions stemming from the climate crisis and environmental damage.¹⁶² Within the growing field of “ecopsychology,” there is a necessity to recognize that psychiatric diagnoses centered around individual malaise may not squarely capture the deep relationship between an individual’s trauma and ecological disaster.¹⁶³

The social axiom framework suggests that one way to view this shift within psychiatric movements is to see the shift as aiming to replace the belief that individual diagnosis is the centerpiece of psychiatric assistance. Instead, ecopsychology embodies a perspective in which it is entirely legitimate to suggest that an individual’s depression is not derived uniquely “from something wrong with them personally,” when instead “the depression may actually be induced by living in a society that is ill or broken.”¹⁶⁴ One psychiatrist has suggested a novel diagnosis, termed “pre-traumatic stress

Wilkinson eds., 2021) (“In the wake of environmental inaction, many activists have started to shift the emphasis towards emotions, not facts. A key strategy is to name those emotions and normalize them.”).

158. *About, THE BUREAU OF LINGUISTICAL REALITY*, <https://bureauoflinguisticalreality.com/about/> [<https://perma.cc/FK2C-VTGB>].

159. Sanders, *supra* note 157, at 242 (describing also “NonnaPaura,” or “the desire to have children or grandchildren, mixed with a fear about the world they’ll inherit”).

160. Glenn Albrecht, *Solastalgia: A New Concept in Health and Identity*, 15 AUSTRALASIAN PSYCHIATRY 44, 48 (“‘Solastalgia’ was created to describe the specific form of melancholia connected to lack of solace and intense desolation.”).

161. *Id.*

162. See Sanders, *supra* note 157, at 236 (“The emergent understanding of the psychological harm caused by climate change is at the root of a new field known as ecopsychology.”).

163. See Sanders, *supra* note 157, at 236–37 (referencing the foundational work of Theodore Roszak, and noting that “[w]ithin ecopsychology, the solution is not to pathologize patients but to help them restore their sense of control by reconnecting them with the natural world”).

164. *Id.* at 243.

disorder,” that captures the often vivid emotional pain experienced by those fixated on envisioning future environmental catastrophe.¹⁶⁵

In developing new terms and diagnoses, linguists and psychiatrists are challenging norms and beliefs at the root of their disciplines. In doing so, they create possibilities by which sustainability movements can gain traction and coherence in important realms like language and medicine. This work in linguistics and psychiatry further exemplifies the diversity within existing sustainability movements and the wide array of cultural mechanisms available for use in identifying harmful ideas and envisioning their more sustainable replacements.

Thus, the social axiom framework helps explain the shared force of apparently disparate sustainability movements. It illuminates that many existing sustainability movements share a focus on the identification of environmentally harmful ideas, the imagination of their replacements, and the creation of the possibilities necessary to enact their replacement. Indeed, a wider examination of sustainability movements makes this Note’s point stronger by demonstrating that such harmful ideas are prolific and deeply embedded within institutions affecting a diverse array of actors and communities. In turn, communities are challenging this embeddedness in unique and imaginative ways.

Conclusion

This Note strives to demystify the three questions with which we began: *why* we should change our fundamental systems, *what* that change involves, and *how* we can do it. It does so by proposing a *social axiom framework* that embodies one way to view these questions. In turn, the framework suggests one way to answer these questions: to change our fundamental systems, we should change the ideas at their roots. The framework therefore aspires to be a valuable interpretive tool for anyone who agrees that striving to make these changes is imperative.

The primary contribution that this Note makes may not be a special insightfulness, insofar as others have already identified central ideas in need of replacement and begun the important work of realizing their replacements. Rather, it may be that the primary contribution of this Note’s framework is that it helps to understand the force behind existing movements and to provide a strategic vision by which such movements may progress and new ones be created. The framework advocated for in this Note leverages the recognition that social axioms exist and are deeply embedded in our social circumstances, but they are not unchangeable. Instead, social axioms are

165. *Id.* at 236, 240 (referencing a seventeen-year-old boy in Australia, initially diagnosed with “climate change delusion,” who “refused to drink water because he was afraid that doing so would lead to the deaths of millions of people”).

highly amenable to change, especially when the imaginative force of parallel movements is directed upon them. Identifying prominent ideas as social axioms within the meaning of the framework assists in making the task of replacing them more manageable and likely.

It is therefore the hope of the author that, by shedding light on important connections, it has become clearer that sustainability movements already exist in great number and form; that they are imagining novel legal and economic institutions; that they are driven by diverse actors and communities; and that together these movements offer the means to fulfill what is being asked of humanity: to change our fundamental systems.

To change our systems, we must change their axioms. The call to action, then, is also a call to think, believe, and hope. It is a call towards a full reorientation of imagination's power within society—a *renaissance of sustainability*. If we succeed, we can change our fundamental systems, reduce our demand on the environment, and live more sustainably on Earth.