

Climate Change

The Moral and Political Imperatives

David E. McClean



A MONOGRAPH ON CLIMATE CHANGE

So let us not talk falsely now,
the hour is getting late.

Bob Dylan

from

“All Along the Watchtower”

Can one propose a “conversion of attitude”
without the arrogance of proselytizing?

Steven E. Webb

from

“Presence, Memory, and Faith:
Passages from a Notebook on The Inward Morning”



About the Author

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Preface and Acknowledgements ►

This book is a meditation on the morality and politics of climate change, the most dangerous threat to humanity and thousands of other species that we have ever known. As a meditation, it is not a linear or systematic consideration of the scientific facts of climate change and what to do about them, but rather it is a series of explications, appeals, and recommendations, drawing from various branches of knowledge and from various academic disciplines – earth systems science, theology, politics, military science, risk management, game theory, conservationism, environmentalism, law, and philosophical ethics. In writing it, I did not work within any of the siloes of thought concerning climate change (including the silo of philosophy), but rather I attempted to shed light on the need for both esoteric and exoteric approaches in order to address the threat. By “esoteric” I refer to the need for personal examination with a view toward changing personal (and certain institutional) habits, including habits of thought and ways of seeing, for it is only by making such changes that our exoteric solutions will be sustainable – or, in some cases, even possible. By “exoteric” I refer to the ways that we engage climate change through technology, policy, and politics. This book is, as well, a plea for holistic thinking concerning mitigation and adaptation.

I recognize that this approach will prove unsatisfactory to some who are seeking a more linear treatment of this most serious of threats, perhaps along the lines of Stephen M. Gardiner’s very useful book, *A Perfect Moral Storm – The Ethical Tragedy of Climate Change* (to which I refer in these pages, and which I recommend). Likewise, this book does not review or discuss at any length the exceptional work of environmental ethicists or dwell upon certain extant philosophical controversies (“individualism” vs. “holism,” “ecology” vs. “deep ecology,” “eco-feminism” vs. “masculinism,” etc.). There are books and academic articles on all of these subjects, and so revisiting them here, given my purposes, would only have served to make the prose denser and less accessible. Therefore, I recommend that the reader give due attention to the referenced literature as well as to other works that address *specific* concerns, such as, *inter alia*, green energy technologies, legal issues in conservation, economic issues in ecology, and the science of climate change (from among the peer-reviewed journal articles). That said, it is my hope that this book will fill a gap and tie together these

more specific areas of inquiry, concerns, and approaches to solutions, placing them in conversation with one another.

There are those who believe that focusing on the *morality* of climate change, as this book does, is to forego or marginalize considerations that will bring about mitigation and/or adaptation in various specific and concrete forms. For example, the novelist and essayist Amitav Ghosh worries that focusing on morality, which he reduces to something he calls “the politics of sincerity” in his book *The Great Derangement – Climate Change and the Unthinkable*, will or may prove ineffectual. He writes: “Climate change is often described as a ‘wicked problem.’ One of its wickedest aspects is that it may require us to abandon some of our most treasured ideas about political virtue: for example, ‘be the change you want to see.’ What we need instead is to find a way out of the individualizing imaginary in which we are trapped.”¹ I understand his worry, but morality (ethics) is never really about individuals as *monads*, as isolated units. It is about individuals-in-relation to each other, and about what we owe to each other in recognition of our status as rational, autonomous, and sentient beings. It is also about that which each individual owes to communities, to states and, ultimately, to societies beyond his or her own (and I argue that the concerns are even more expansive than this; they extend to other species and the elemental environment). There is no doubt that focusing on morality (or politics) *alone* is insufficient, and that we must reject mere moral sloganeering and sentimentalism, but ignoring or discounting the moral implications and responsibilities of climate change is, in my view, totally untenable. We must reject either/or conclusions. Such either/or sensibilities – and attendant dualisms – have, in part, led us to the present crisis – something which Ghosh, elsewhere in his book, which brims with fascinating insights and reflections, seems to realize.

Consistent with what I have already said, I have attempted to avoid technical jargon whenever possible, whether of science, philosophy, or theology. But some technical language (or, sometimes, just terms of art) – such as the idea of “*metanoia*” (which is a constant refrain in these pages), of “Hadley Cells,” and of the global “albedo” – was necessary (or at least useful) in order to make various points and to foreground various issues, problems, and concerns. I also include one neologism/portmanteau, “ethicology,” for which I hope the reader will be forgiving, as it is, I believe, critical to the new perspectives our species must forge concerning our understanding of ethics and our relationship with the non-human natural environment. I do not think that most readers will find

negotiating the technical language overly burdensome, but to assist I have added a glossary of some of the “basic vocabulary” of, and associated with, climate change, saving the non-expert reader the time and trouble of having to consult other sources while moving through the book.

My thinking concerning climate change has been aided by many conversations with several colleagues and friends. My long-time friend Marc M. Groz and I have had many conversations about climate change and what it would take to properly address the various threats. Marc is a mathematician, capital markets expert, and inventor who holds the patents to what I consider to be some very significant intellectual property. Among his inventions is something he calls a “contingent commitment facility,” which is designed to help multiple parties in a complicated negotiation make binding but contingent commitments, i.e. commitments that bind a party to performance assuming certain conditions are met by various other parties in the negotiation. Such a facility could be very useful in ongoing climate change negotiations (regarding greenhouse gas reduction targets, timetables to bring new technologies on-line, etc.) among the world’s states. Beyond that, in many hours of far-ranging conversation, Marc and I have considered various moral, political, and theological concerns.

Dmitri Nikulin, a Professor at The New School, where I earned my doctorate and currently serve on the Board of Trustees, spent a day with me this past summer among Long Island’s vineyards, discussing some of the metaphysical and moral issues associated with climate change. He suggested that I review some of the work of philosopher Hans Jonas which I had not read. I refer to that work in these pages, although not as much as I would have liked. As well, Professor Nikulin offered some helpful and final comments.

Philosopher Judith M. Green (Fordham University) and her spouse, sociologist Dr. David Woods, have provided valuable suggestions during visits to their home in Port Jefferson, Long Island, especially concerning *Laudato Si’*, Pope Francis’s incredibly insightful papal encyclical on climate change (and related issues), to which I refer many times in these pages.

My son, Alexander J. McClean, was a great help as a research assistant for this project, spending his free time away from his job as City Planner for the New York City Department of Environmental Protection working on notes and reviewing some of the content.

Finally, I wish to thank Michael Boylan, the General Editor of the Springer series on public administration and public policy, for inviting me to write a book on climate change. In line with the goals of the series, after discussing various ethical issues that pertain to how we address climate change, Chapter 3 contains suggestions for specific actions among the world's governments, including suggestions concerning the nature of sovereignty, and how the notion of sovereignty must be re-conceived so that our species can adapt to a new set of environmental realities. That said, we must not forget that "government" and "public administration" have non-institutional dimensions. These are the dimensions of the citizen-in-action and of civics. Never before has citizen action been more urgent, for it is the citizen, working in solidarity with other citizens at home and abroad, who will create the conditions that will provide government institutions the mandate and maneuvering room needed to address the challenges ahead. (Note: For a variety of reasons I decided to withdraw my decision to publish with Springer and to, instead, self-publish the book in the form of this monograph. A key reason was and is my strong desire to get some of the ideas contained herein into the hands of policy makers as quickly as possible. The normal delays of publishing with an academic press, as well as the typical unit cost of each volume (which is high), would have worked against the widest possible distribution.)

Of course, any errors, omissions, or inadequacies are solely my own. On that point, I have published a web page that will allow me to address them as they come to light. The URL is:

<https://www.davidemcclean.us/ccmonograph.html>.

David E. McClean
Long Island, New York
22 December 2017

Version 4.17.18a

For our children and children's children, and for the many species,
now threatened, with which (with whom) we share this amazing and fragile planet.

Chapter 1 ►

CLIMATE CHANGE FROM A COSMOPOLITAN AND ENLIGHTENED ANTHROPOCENTRIC POINT OF VIEW

[I]f we take the steps necessary to fend off specific, imminent, and potentially cataclysmic threats, we will be giving ourselves time and useful experience for lifting global governance in general to a higher level. By solving problems that are truly urgent, we can increase the chances that eventually . . . the world will be able to ameliorate or even solve other problems that are merely very important. Whether future generations make the most of such a world, and whether they think of it as a global nation or just a well-governed community of nations, is up to them. Whether they have the choice is up to us. – Strobe Talbot ²

Do not conform to the pattern of this world, but be transformed by the renewing of your mind. – St. Paul ³

The dominant discourses about the nature of the climate threat are scientific and economic. But the deepest challenge is ethical. What matters most is what we do to protect those vulnerable to our actions and unable to hold us accountable, especially the global poor, future generations, and nonhuman nature. – Stephen M. Gardiner ⁴

Abstract: In the United States there has been lots of talk over the past several years concerning climate change, and the subject has, extraordinarily dangerously, become both a political and ideological football. While the science of climate change has been accepted by most people with some acquaintance with the subject (that is, most such people have little or no reason to harbor real doubt concerning the overwhelming scientific consensus), it has, nevertheless, been held in suspicion by many on the political right. There is no time for the arguments of deniers. The world's peoples and governments must commence personal and institutional changes that will allow humanity to mitigate the worst damage that climate change may cause, while avoiding the dangers of environmental romanticism that will only serve to delay progress toward that end.

1:1 Beyond the Roiling Waters

In the United States, there has been lots of talk, over the past several years, concerning climate change, and the subject has, extraordinarily dangerously, become both a political and ideological football. While the science of climate change has been accepted by most people with some acquaintance with the subject (that is, most such people have little or no reason to doubt the overwhelming scientific consensus), it has been held in suspicion by many on the political right. Those who have denied and still deny the science have called into question the data supporting the thesis that the Earth's climate is changing, or the methods used to measure global temperatures, or point to mini-scandals and doubts

among a very small minority within the scientific community. Some suggest that God would not allow human beings to have such a significant impact on natural systems, while others argue that the issue is fueled by environmental fanatics or “environmental leftists” who are simply opposed to the petroleum industry and are more concerned about the fates of owls and fish than the ability of human beings to earn a living and take care of their families. In no other place in the world is climate change denial so prominent a part of the public discourse.

Republican Congressman Daryll Issa said that "One of the difficulties in examining the issue of the [sic] climate change and greenhouse gases is that there is a wide range of scientific opinion on this issue and the science community does not agree to the extent of the problem or the critical threshold of when this problem is truly catastrophic."⁵ Republican Senator James Inhofe, perhaps the leader in climate change denial, wrote: "I have offered compelling evidence that catastrophic global warming is a hoax. That conclusion is supported by the painstaking work of the nation's top climate scientists."⁶ Republican Senator Ted Cruz said that "There remains considerable uncertainty about the effect of the many factors that influence climate: the sun, the oceans, clouds, the behavior of water vapor (the main greenhouse gas), volcanic activity, and human activity. Nonetheless, climate-change proponents based their models on assumptions about those factors, and now we know that many of those assumptions were wrong."⁷ Congressman Bill Johnson of Ohio tells us that he is not “an alarmist that believes that greenhouse gas emissions coming from the coal industry are causing major problems.”⁸ There are dozens more statements of denial and doubt that could be offered here, but they, as these, are all substantively *wrong*, as has been pointed out repeatedly by hundreds of serious climate and earth systems scientists.⁹

This book will not address the roiling waters that have been generated on the political right in the United States and by self-serving peddlers of manufactured doubt about the reality of Anthropogenic Climate Change (hereafter “ACC,” sometimes referred to as “Global Warming”). Despite the work already done to address skeptics and deniers, some are still attempting to convince the skeptics and deniers with new work.ⁱ I am not – at least not in this book. Regarding climate change, the scientific

ⁱ The web site skepticalscience.com addresses just about all of the doubts concerning ACC. That aside, I have noted that there are some skeptics who believe that climate change is in fact happening, but hold that it is the result of non-human factors. Their response to their professed acceptance is quite curious, for even were that true one would think

consensus is strong, just as the scientific consensus concerning the effects of lead on the nervous system is strong – and not worth debating. Scientists always leave open the possibility that their conclusions may be wrong. Science is a self-correcting and self-doubting enterprise. But when a very strong scientific consensus is formed, the public and policy makers have no *reasonable* choice but to act and plan based upon that scientific consensus, rather than substitute their untrained “wisdom” for that consensus. That others are busy trying to convince the skeptics and deniers is something that may have its marginal utility, of course. That’s what Philip Kitcher and Evelyn Fox Keller are attempting in their recent book *The Seasons Alter: How to Save Our Planet in Six Acts*. In that book, organized as a series of fictional dialogues between a climate change “believer” and a skeptic, the science is discussed, as are many other variables, including political, ethical, and psychological ones. Theirs is an interesting book and I commend the effort, but the book you are now holding in your hands is not one that will indulge skeptics or deniers in any way. Climate change is an urgent and unsettling *fact* that must be addressed head-on so that this present generation may do or further the work necessary to save the lives of millions of people – perhaps *billions* of people – in the not-too-distant future, and save future generations from climate-driven upheavals. Such an uncompromising approach does not mean, simply, insisting on acceptance of the scientific consensus. It means much more. It means, as well, that each of us who accepts the science has an obligation to help insure that the proper steps will be taken by policy makers. That said, I leave others to their differing approaches for handling skeptics and deniers. (For the most part, the “skeptics” to which I refer are actually *deniers*, people for whom it seems that no amount of evidence is convincing. True skeptics, as pointed out by Haydn Washington and John Cook in their book *Climate Change Denial – Heads in the Sand*, actually *seek* the truth, while deniers (for various reasons) reject it.)ⁱⁱ

Serious people, charged with charting a course for the future of their countries, have ignored the deniers and peddlers of manufactured doubt since the urgency requires action rather than indulgence of such deniers and peddlers. Among such serious people are those in the United States Department of Defense (“DoD”), who wrote in a report published in July 2015 (and which is contained, in an abridged form, in the Appendix):

that they would, therefore, be seeking ways to address *unforced* (or natural) climate change, since the repercussions would still be quite significant. Yet, they remain silent.

ⁱⁱ Haydn Washington and John Cook, *Climate Change Denial – Heads in the Sand* (New York: Earthscan, 2011).

DoD recognizes the reality of climate change and the significant risk it poses to U.S. interests globally. The National Security Strategy, issued in February 2015, is clear that climate change is an urgent and growing threat to our national security, contributing to increased natural disasters, refugee flows, and conflicts over basic resources such as food and water. These impacts are already occurring, and the scope, scale, and intensity of these impacts are projected to increase over time.¹⁰

The deniers and skeptics can take their doubts up with the DoD, the organization charged with the defense of the United States. The DoD has no time for political theater or for indulging outlier or uninformed voices (although there is one outlier voice (so to speak) that, perhaps, it should listen to, as I will discuss shortly). If anything, its job is to err on the side of caution. And as we will see in the pages that follow, the rapidity of the changes in earth systems that are expected to occur due to increasing levels of Greenhouse Gases (“GHGs”) may be understated. This book operates from the assumption that it *is* understated. In any event, I will let the DoD report make the arguments about the validity of the science, although I will reference the science separately from time to time. I will also reference recent weather events that are consistent with scientific models regarding climate change, but only to set the stage for or frame discussions of the moral and political imperatives.

UCLA geographer Mia Bennet wrote, in the Foreign Policy Association blog:

The National Academy of Sciences (NAS) and National Research Council (NRC) have released a report commissioned by the CIA and various other American intelligence agencies on the security threats posed by climate change . . . The report committee’s chair, John Steinbruner, writes, “There is compelling reason to presume that specific failures of adaptation will occur with consequences more severe than any yet experienced, severe enough to compel more extensive international engagement than has yet been anticipated or organized” . . .

The NAS/NRC quotes a 2007 report from the Center for Naval Analysis, which stated, “Climate change acts as a threat multiplier for instability in some of the most volatile regions of the world” . . . In contrast to the Arctic, Egypt is a place where climate change could cause already-high social and political tensions to erupt. Demand on the Nile River will increase as populations in Egypt, Ethiopia, and Sudan grow. Countries

like South Korea and Saudi Arabia have purchased land along the river to provide food for their own populations. Foreign land ownership could fall under pressure if a local famine were to occur, for instance. One connection that can be drawn here is that similar to the Arctic, countries are quite protective of their resources, whether oil or land, and wary of foreign interference. South Korea is a country with ample financial resources of its own, but few natural resources. Hence, it is extending its reach into multiple contentious areas, including both the Arctic and the Middle East, in search of oil, gas, and food. This is all fine in times of relative peace and prosperity, but when push comes to shove, conflict could erupt . . .

The 2010 NRC report on the Arctic notes that people fleeing climate-related disasters in North Africa could migrate en masse to countries in southern Europe, stressing social infrastructure there. This is in the near term, though; in the long term, it is plausible that people could move even farther north, perhaps to countries in the circumpolar north, as Dr. Laurence Smith's book, "The New North: The World in 2050," hypothesizes. I am currently reading J.G. Ballard's novel, "The Drowned World," published in 1962. Though heavy on the sci-fi, it conceives of a world where the ice caps have melted and the only inhabitable places are at the world's high latitudes. Fantastical when written half a century ago, the scenario depicted could now be plausible in the next century.¹¹

In 2012, Harvard University's Center for the Environment released a report that discussed the national security threats of climate change. The report, funded by the United States Central Intelligence Agency ("CIA") and titled "Climate Extremes: Recent Trends with Implications for National Security," runs 138 pages. The report's principal authors are noted and well-respected scientists Dr. Michael McElroy of Harvard University and Dr. D. James Baker, Former Administrator of the National Oceanic and Atmospheric Administration ("NOAA"), with contributions from Dr. Mark Cane of the Lamont-Doherty Earth Observatory, Dr. David R. Easterling, also of NOAA, and other scientists. Among the report's observations and conclusions are the following (which are excerpts with only minor stylistic changes for inclusion herein):

- The extent and pace of climate changes will lead to potential impacts on food, water, energy and economic security. Observed change in the climate system is an issue of

ongoing concern for the US. Recent unusual extreme weather phenomena worldwide, such as droughts, floods, severe storms, and heat waves raise the specter of significant impacts of changing climate in the near term. The authors sought to consider what one could expect in the period of the next decade – would these anomalous climate extremes persist? To what extent are the extreme conditions a result of natural variability or greenhouse warming, and what are plausible impacts on U.S. national security interests? The authors conclude that the early ramifications of climate extremes resulting from climate change are already upon us and will likely continue to be felt over the next decade – affecting human security and impacting U.S. national security interests.

- There has been a significant increase in weather extremes over the last decade. Droughts, storms, tornadoes, the attendant floods and wildfires, highly-variable weather around the world, and other extremes are affecting society globally. All of this is consistent with a warmer and wetter atmosphere driven by radiative imbalance from greenhouse gas warming. Although the temperature changes due to greenhouse warming will be relatively small in the coming decade, the positive shift of mean temperature will magnify the extremes to a point where they are beyond what has been seen before. The analysis finds that, absent unknown or unpredictable natural forces, *the upswing of extreme events observed in the past decade is likely to continue in the near term as warming and natural variability will combine to produce changing weather conditions around the world. We can no longer assume that the extremes of tomorrow will resemble the extremes of yesterday [emphasis in original].*
- Climate-induced stress will affect water and food availability, energy security, and the stability of critical infrastructure, use of the global common such as the Oceans and the Arctic region, and critical ecosystems resources. These are U.S. national security interests that have been, and will continue to be, affected by climate and weather extremes patterns. Humanitarian, economic, and political interests are all affected as nations attempt to deal with the potential impacts of changing extremes.

- The harsh influences of climate extremes necessitate their careful consideration in threat analysis, mitigation, and response. It is in the best interest of the U.S. to maintain vigilance regarding climate and weather extremes, the behavior of nations in their attempts to mitigate or adapt to the effects of changing extremes, and impacts on social, economic, and political well-being.
- Observations show that sea level is going up *at least twice as fast as projected by the latest IPCC assessment* [emphasis added]. The rise will be felt differentially around the world. Detailed predictions are hampered by a lack of knowledge of the processes that could contribute to acceleration in the melting of the ice sheets on Greenland and Antarctica. To determine the near-term impacts, more accurate measurements of the changing shape of the ice sheets and the melting processes are urgently required.
- There is observational evidence for expansion of the Hadley cell by as much as two degrees of latitude between 1979 and 2005. The major desert regions of the world are generally co-located with the descending branches of the Hadley circulation system. A poleward expansion of these descending branches of the Hadley cell is expected with greenhouse warming, but the observed expansion is actually greater than predicted by models. In any case, the expansion is likely to continue to cause arid regions to extend to higher latitudes: think of the Sahara Desert extending across the Mediterranean into southern Europe or the southwestern desert of the U.S. moving north into the grain-producing region of the country.
- Climate change has entered the mainstream as a potential threat to U.S. national security. The 2010 Quadrennial Defense Review and the 2010 National Security Strategy identify climate change as likely to trigger outcomes that will threaten U.S. security. These assessments have had to rely on projections of climate change tuned to identify impacts over roughly a one-century time frame. This time frame is driven by the nature of the questions that dominated the initial literature (e.g., what impacts can be expected from a doubling of pre-industrial carbon dioxide) and the fact that global climate models are generally able to resolve expected impacts only over large scales and the long term.

- Having arrived at a condition where climate change has been identified as a likely threat to U.S. national security interests, but with little ability to clarify the nature of expected climate impacts over a timeframe that is relevant to security decision-makers, the authors focused on the near-term impacts from climate change (over the next decade). In short, the analysis finds that, absent unknown or unpredictable forces, the increase in extreme events observed in the past decade is likely to continue in the near term as accelerated warming and natural variability combine to produce changing weather conditions around the world. This will impact Water Security, Energy Security, Food Security, and Critical Infrastructure, and brings into focus the need to consider the accelerating nature of climate stress, in concert with the more traditional political, economic, and social indicators that inform our analyses.¹²

The report concludes with a list of unusual weather events believed to be linked to ACC. This list was as of October 2012, but since then there have been other events thought to be related to climate change, including the wildfire in Fort McMurry, Canada, and powerful hurricanes that leveled or caused severe damage to Caribbean islands and parts of Florida, Texas, and Puerto Rico.¹³ Wildfires in California, in 2017, were the worst ever recorded, leaving dozens of people dead and billions of dollars of property damage in their wake.¹⁴ I have added several updates to each of the phenomena referenced in the report, although more could have been included:

- **Colorado Wildfires:** Colorado has been hit with a series of wildfires, the worst since the drought-stricken year of 2002. The High Park Fire, west of Fort Collins, has consumed 83,205 acres. (International Business Times, 2012) [*Update: In February 2017, local news outlets in Denver reported “Another day of record-breaking heat and strong winds combined with bone-dry conditions will put fire crews on high alert up and down the Front Range on Tuesday. The high temperature is expected to reach 77 degrees at Denver International Airport, the official reporting station for the National Weather Service. The temperature hit 73 degrees just before 2 p.m., breaking the record high for Tuesday of 71, set in 1995 and 1982. It's the fourth record high set this month, including an all-time February mark of 80 degrees on Feb. 10.”*¹⁵]

- **Midwest Corn Belt Heat and Lack of Rain:** Corn is facing the worst crop conditions in two decades. Unusual heat and lack of rain threaten this year's crop yield and has put a fire under futures prices. There had been expectations of a bumper crop, needed to replenish U.S. stocks. Last year's corn stocks were just 850 million bushels, the lowest level since 1995. (CNBC, 2012). *[Update: Corn yields recovered in subsequent years, but yields remain under threat of record heat and rain deficits. It should be pointed out, as well, that as much as 40 percent of corn yields wind up as biofuels (Ethanol), which indirectly contribute to global warming in that the deforestation needed to produce more corn crops for fuel also destroys valuable carbon sinks, yielding a net increase in atmospheric carbon.^{16]}*
- **Weak Start to the Indian Monsoon:** The worst start to the monsoon season in India in three years is threatening crops from rice to sugar cane, stoking concern that the nation may limit exports to preserve supplies. Soybean futures in India climbed to the highest level since 2003 and corn rose to a five-month high. Rainfall from June 1st on is estimated at 23% below average. (Bloomberg, 2012). *[Update: Weaker Monsoon seasons persist, with the referenced pressure on crop yields, as per this 2015 assessment in India Climate Science: "The South Asian summer monsoon is weakening 'significantly' due to increasing temperatures in the Indian Ocean and relatively subdued warming over land in the central Indian sub-continent, according to a new study published in Nature Communications, a peer-reviewed journal from the group that also publishes Nature magazine."^{17]}*
- **Flooding in Assam, India:** Assam's rainfall at the start of the monsoon has been 31% greater than normal. Large swathes of three 'food bowls' in the province are under water. A government spokesperson indicated the flood is the biggest since 1998. (Hindustan Times, 2012). *[Update: There is variability in monsoonal rainfall across the region. In some areas, the shortening of the season leads to less rainfall and less crop yield; in other regions, because of topography, there is more flooding. Both are linked to climate change.^{18]}*

- **Tropical Storm Flooding in Florida:** Tropical Storm Debby stalled for 2 days in the Gulf and dumped two feet of rain on areas of Florida. The Anclote River rose more than 27 feet, well above major flood level, and may remain above flood level for a week. (Reuters, 2012). *[Update: There is no abatement in the intensity of storms. According to the National Audubon Society, the coastal destruction caused by tropical storms should not be discounted. It isn't merely sea level rise that will cause serious coastal destruction, including the destruction of habitat for many species of birds and other wildlife.^{19]}*
- **China Flooding:** Torrential rain since June 20 across central and southeastern China has affected more than 10.4 million people. Crops in 738,000 hectares were lost in the deluge, resulting in direct economic losses worth \$1.62 billion. (RTT News, 2012). *[Update: Flooding problems have not abated since 2012, and there are fears that climate change will worsen floods over the coming decades.^{20]}*
- **Russia Wildfires:** Russia has declared a state of emergency in several eastern regions due to hundreds of wildfires. Fires raged for months during the summer, destroying thousands of hectares – more area than the deadly fires of 2010. (Earth Snapshot, 2012, NASA, 2012). *[Update: The wildfires in Russia are getting no better: “Portions of central Russia, where the fires are located, are coming off a June [2016] that had temperatures much above average, according to NOAA's State of the Climate report. In addition, precipitation was below average in this region during June [2016], giving the fires dry fuel to burn.”^{21 22]}*
- **Loss of Arctic Sea Ice:** Sea ice in the Arctic has melted faster this year than ever recorded before, according to the U.S. government's National Snow and Ice Data Centre (NSIDC). Arctic temperatures have risen more than twice as fast as the global average over the past half century. Last year saw the second greatest sea ice melt on record, 36% below the average minimum from 1979-2000. (The Guardian, 2012). *[Update: NASA reported in March of 2017 that sea ice is at record lows at both poles: “Arctic sea ice appears to have reached on March 7 a record low wintertime maximum extent, according to scientists at NASA and the NASA-supported National Snow and Ice Data Center (NSIDC) in Boulder,*

Colorado. And on the opposite side of the planet, on March 3 sea ice around Antarctica hit its lowest extent ever recorded by satellites at the end of summer in the Southern Hemisphere, a surprising turn of events after decades of moderate sea ice expansion.”^{23]}

- **Mid-Atlantic Derecho Storm and Heat Wave:** An unusually strong, long-lived, and large straight-line wind storm called a derecho blew through Chicago to Washington at the end of June, 2012. The storm left millions without electricity in the midst of the record heat wave. The storm had energy readings five times that of normal thunderstorms. Fueled by the record high heat, this was one of the most powerful of this type of storm in the region in recent history. (Huffington Post, 2012). *[Update: It is uncertain whether derechos (wind storms that blow horizontally over long distances, rather than tornadoes which are highly localized and blow vertically) will be more frequent due to climate change, but as increased heat leads to more powerful storms, the number of derechos may increase, though shifting toward the poles. If so, the damage could be considerable.^{24]}*
- **Superstorm Sandy:** Hurricane Sandy made landfall on October 29, 2012, affecting more than 50 million on the east coast, from North Carolina to New England. A storm surge of nearly 14 feet hit the New York Harbor, causing widespread flooding, including subways. Sandy knocked out electricity for more homes and businesses than any other storm in history, according to the Department of Energy. Egecat estimates the economic damage could reach \$50 billion. (National Geographic, Huffington Post, 2012). *[Update: Scientists that study super storms tell us that rising ocean surface temperatures will lead to more – and more powerful – super storms: “A warmer Atlantic Ocean could substantially boost the destructive power of a future superstorm like Hurricane Sandy, new research suggests. The researchers used a numerical model to simulate the weather patterns that created Sandy, with one key difference: a warmer sea surface temperature, as would be expected in a world with twice as much carbon dioxide in the atmosphere. This simulated warmer ocean generated storms 50 to 160 percent more destructive than Sandy.^{25]} ⁱⁱⁱ*

ⁱⁱⁱ The Center for Climate and Security (www.climateandsecurity.org), which describes itself as a non-partisan policy institute, publishes regularly on the relationship between climate change and national security, broadly construed. The

Beyond the events listed in the report, and as just mentioned, the United States has recently seen the impacts of Hurricane Harvey (August 2017) and, soon thereafter, Hurricanes Irma and Maria (September 2017). With almost 52 inches of rainfall, Harvey was the wettest tropical cyclone to hit the contiguous United States. The dislocations and damage caused by Harvey, especially in Houston, Texas, are estimated to cost as much as \$180 billion to address.²⁶ Irma, a Category 5 hurricane, broke the record for sustained maximum wind speeds of 185 per hour (295 km/h). Irma hit the Leeward Islands hard. It devastated the island of Barbuda, part of the Leewards, destroying or seriously damaging most structures (causing its entire population to abandon the island), and caused major damage along its path into the contiguous United States. Damage to structures in the US Virgin Islands was widespread and severe. Southern Florida sustained heavy damage from Irma, but because of the power and size of the hurricane, extensive damage was caused across the Florida panhandle and Irma's power was felt as far north and west as Gainesville, as it weakened and moved into Georgia. The damage caused by Irma was, as well, expected to be into the tens of billions of dollars, with one estimate of \$125 billion.²⁷ Hurricane Maria, another monster storm, laid waste to many buildings in Puerto Rico and destroyed Puerto Rico's electric grid. The devastation in Puerto Rico is even more significant when considering Puerto Rico's extremely weak economic condition. It will take a great deal of financial and other assistance from Washington, D.C. to address the damage (and it remains to be seen whether that assistance will be on offer). Such costs are considerable for any country, even a rich county like the United States. In October 2017, Hurricane Ophelia, which hit Ireland hard, was the easternmost major Atlantic hurricane on record.²⁸ One damage estimate for Ophelia is \$1.8 billion.²⁹ Should storms with the energy and precipitation of Harvey, Irma, Maria, and Ophelia – and before them Katrina and Sandy – become the norm and *multiply* (which is what climate change models tell us to expect), the threat to the economy and social stability of the countries affected will be substantial. They could, and likely would, lead to massive shifts in population, with all the attendant disruptions such shifts would cause.

Center's web site provides links to reports and assessments by the intelligence agencies and militaries of other countries, in addition to those published by US agencies and the US military. The information at the Center's site is updated regularly.

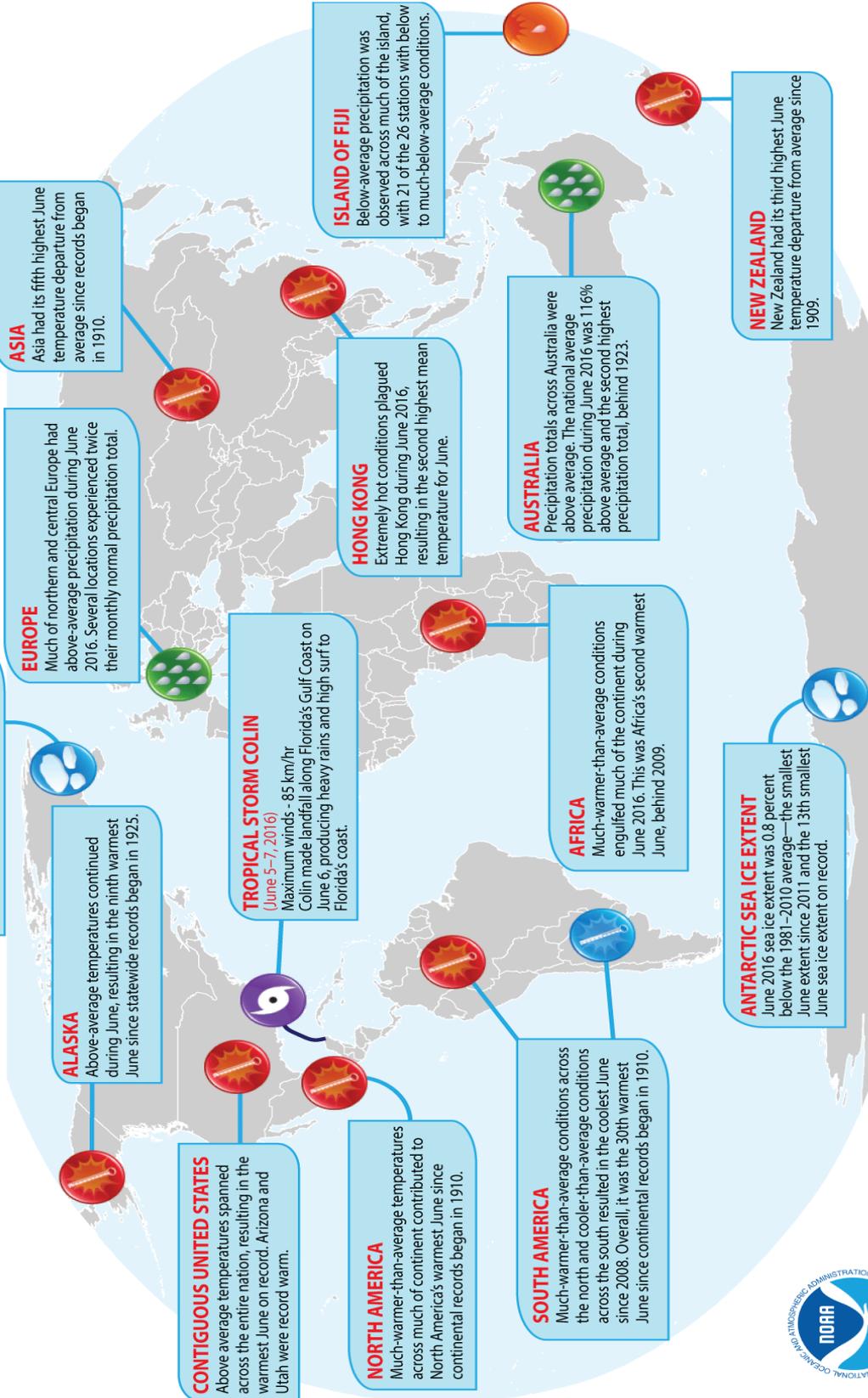
Selected Significant Climate Anomalies and Events June 2016

GLOBAL AVERAGE TEMPERATURE

June 2016 average global land and ocean temperature was the highest for June since records began in 1880.

ARCTIC SEA ICE EXTENT

June 2016 sea ice extent was 11.4 percent below the 1981–2010 average—the smallest June sea ice extent since satellite records began in 1979.



Please Note: Material provided in this map was compiled from NOAA's State of the Climate Reports. For more information please visit: <http://www.nclcr.noaa.gov/sotc>



Figure 1. Selected Significant Climate Anomalies and Events, June 2016 (National Oceanographic and Atmospheric Administration).

Framing ACC as, among other things, a national security emergency (for the United States as well as other countries) should grab the attention of political leaders. Yet, at least facially, the security assessments from military and intelligence agencies are being heard with tin ears by too many in the political class (in the United States) since the election of Donald J. Trump as President. A few people with such tin ears (or ears that were *turned* to tin by commercial special interests, especially the fossil fuel industry) were already referenced, but there are many more. This is largely because of the exigencies of immediate political priorities as well as a psychological disposition to construe ACC as a problem to be solved far down the proverbial road, when of course it is anything but that. Beyond this is the larger issue of state sovereignty, which holds national politicians in a headlock, for few of them wish to assume the political risks that accompany arguments that sovereignty should be weakened. I'll be addressing the "problem" of state sovereignty in Chapter 3. As for the science and the policy responses by leading security agencies, the summary I have provided *supra* is all that will be discussed in this book. As I indicated, it is only a fringe that challenges the science and so it serves no purpose to rehash those challenges (and direct responses to them) here.

That said, there is one final point that I wish to make regarding science and policy formation. I mentioned that there is one outlier voice to which the DoD and other government agencies might want to listen. It is the voice of James Hansen, who was among the first to sound the alarm regarding climate change, back in 1988, and so referring to him as an outlier may seem odd. But here's why: Hansen has recently argued that the Intergovernmental Panel on Climate Change ("IPCC") predictions regarding sea-level rise are optimistic, and significantly optimistic. According to the IPCC, sea levels will rise less than one meter (about 3.28 feet) by 2100. Since the IPCC is the primary source of information on climate change for the world's political leaders and policy makers, they are planning and/or legislating using that assumption. One meter is significant, but what if sea level rise turns out to be far worse – say 2 to 5 meters, as Hansen and a number of other scientists (who co-authored, with Hansen, a bombshell, peer-reviewed article that suggests such sea-level rise) now think?³⁰ In that article, titled "Ice melt, sea level rise and superstorms: evidence from paleoclimate data, climate modeling, and modern observations that 2 °C global warming could be dangerous," the authors indicated that they used numerical climate simulations to draw these conclusions (the following is from the Abstract):

We hypothesize that ice mass loss from the most vulnerable ice, sufficient to raise sea level several meters, is better approximated as exponential than by a more linear response. Doubling times of 10, 20 or 40 years yield multi-meter sea level rise in about 50, 100 or 200 years. Recent ice melt doubling times are near the lower end of the 10–40-year range, but the record is too short to confirm the nature of the response. The feedbacks, including subsurface ocean warming, help explain paleoclimate data and point to a dominant Southern Ocean role in controlling atmospheric CO₂, which in turn exercised tight control on global temperature and sea level. The millennial (500–2000-year) timescale of deep-ocean ventilation affects the timescale for natural CO₂ change and thus the timescale for paleo-global climate, ice sheet, and sea level changes, but this paleo-millennial timescale should not be misinterpreted as the timescale for ice sheet response to a rapid, large, human-made climate forcing. These climate feedbacks aid interpretation of events late in the prior interglacial, when sea level rose to +6–9 m with evidence of extreme storms while Earth was less than 1°C warmer than today. Ice melt cooling of the North Atlantic and Southern oceans increases atmospheric temperature gradients, eddy kinetic energy and baroclinicity, thus driving more powerful storms. The modeling, paleoclimate evidence, and ongoing observations together imply that 2°C global warming above the preindustrial level could be dangerous. Continued high fossil fuel emissions this century are predicted to yield (1) cooling of the Southern Ocean, especially in the Western Hemisphere; (2) slowing of the Southern Ocean overturning circulation, warming of the ice shelves, and growing ice sheet mass loss; (3) slowdown and eventual shutdown of the Atlantic overturning circulation with cooling of the North Atlantic region; (4) increasingly powerful storms; and (5) nonlinearly growing sea level rise, reaching several meters over a timescale of 50–150 years. These predictions, especially the cooling in the Southern Ocean and North Atlantic with markedly reduced warming or even cooling in Europe, differ fundamentally from existing climate change assessments.³¹

As reported in a recent book, *Warning: Finding Cassandras to Stop Catastrophes*, authored by Richard A. Clarke, a veteran national security expert, and R.P. Eddy, former Director at the White

House National Security Council, Hansen suggests to the authors that the IPCC's more optimistic conclusions on sea level rise were based upon some questionable assumptions, the principle one being that ice sheet collapse will follow *linearly* the increase in temperature:

. . . Hansen believes we already have a “strong indication that ice sheets will, and are already beginning to, respond in a *nonlinear* fashion to global warming.” Moreover, he warned, “In a case such as ice sheet instability and sea-level rise, there is a danger in excessive caution. We may rue reticence, if it serves to lock in future disasters.” In other words, if we wait until we have an irrefutable consensus, it will likely be too late to do anything about the problem.

Hansen believes his latest warning is the most important he has ever issued. Earth's current climate is beginning to look a lot like the way it did during the Eemian interglacial, a warm period from about 130,000 to 115,000 years ago. Then, when temperature was less than 1°C warmer than today, “there is evidence of ice melt, sea-level rise to 5-9 meters, and extreme storms.” It gets worse. Further evidence of rapid sea-level rise in the late Eemian, “[suggests] the possibility that a critical stability threshold was crossed that caused polar ice sheet collapse.” . . .

Hansen thinks we will likely see a meter of sea-level rise much faster than the IPCC predicts. And once we hit a meter, it's not as though we just stop there and adapt to that given level. It will only accelerate, and it will accelerate quickly. Hansen warns, “Humanity faces near certainty of eventual sea-level rise of at least Eemian proportions, 5-9 meters, if fossil fuel emissions continue on a business-as-usual course.”³²

Hansen, like myself, read the Paris Agreement as woefully inadequate to the imperative of substantially reducing GHGs (see Appendix). The time lines for “compliance” and reporting are too generous, and the Agreement had no teeth that would force countries to perform as promised. That is relevant to Hansen's worries, because his prediction that sea level rise would be worse than the IPCC indicated is based upon substantial inaction. It is the case that many of the worst GHG producers in

the world are taking at least some action to reduce emissions, and it would be wrong to say otherwise. Yet, “something” may not be sufficient to avoid the worst, if Hansen and his co-authors turn out to be right.

I am a philosopher, not an earth systems scientist, so I am not qualified to adjudicate the very technical dispute between Hansen and the IPCC regarding sea level rise. But I do know that Hansen has been ridiculed and ignored in the past, only to be proved right, and that is why he is included in Clarke’s and Eddy’s book, which deals with the various “Cassandras” that should be (or should have been) listened to. There is something else I know: The greater the potential harm, the more aggressive the action required to prevent and/or mitigate that harm (this is rooted in “The Precautionary Principle,” which is a general principle of risk management). I realize, of course, that the world’s coastal cities can’t take a farcical approach to the problem and build ten-meter-high sea walls. That would certainly be an aggressive way to address the potential threats, but there simply are not the resources to undertake such extreme, prophylactic projects (and doing so would, very likely, have other negative impacts). And yet, it is imperative that we consider the magnitude of the threat. Policy makers and planners can’t simply assume that the IPCC is right and undertake to protect coastal cities under the assumption of 1 meter of sea level rise by the end of the century. The IPCC has been facing very powerful political forces. Some of those forces include pressure from petroleum producing states and corporations. Pragmatism (and flight from naïveté) requires that some margin for error must be built into plans for mitigation and adaptation. To be fair, many policy makers and planners already know this. Yet, when someone like James Hansen (and his co-authors) starts to sound the alarm about a far too optimistic view of sea level rise, policy makers have a moral obligation to listen and, in their planning, to err *somewhere* on the side of caution. That is, to the extent feasible, they have an obligation to use *their own best judgment*. For once the money is spent on new sea walls, new coastal drainage systems, and other projects of mitigation and adaptation, there will be no second chance to get things right (given that financial and other resources are limited). Of course, this is maddening from the point of view of policy makers and political leaders who need to work from good data and reasonable assumptions. But we are where we are. What’s at stake may very well be civilization itself, and the future of all of our children – not to mention many, many other species. Even if Hansen and his colleagues are only half right, and we are looking at sea-level rise of 2.5 meters by the end of the century rather than the 5 to 9 meters suggested based on a look-back to the Eemian interglacial, we

are facing disasters that are orders of magnitude worse than the IPCC predicts with a high degree of confidence – and the IPCC predictions are bad enough. The moral and political urgency is raised substantially indeed.

1:2 Then as Farce – Donald J. Trump and Climate Change Denial

How can I express the emotions of those of us deeply concerned about climate change when we heard of the election of Donald J. Trump as President of the United States? I suppose it might be put this way, at least in my case (although I am reasonably certain that I speak for many others): It felt like one of those horror movies in which just at the moment the bleeding and beleaguered hero raises the just-found rifle to shoot the monster that has spent hours trying to kill him, some ninny calls the police to report a man with a gun – and our hero is, himself, shot dead by a lone, hapless, and clueless “Barney Fife.” With the hero dead, the monster slinks back through the tree line, turning toward the town, as our “Barney Fife” gloats over his pyrrhic victory. The credits role. The ominous music commences. The audience is left to surmise that things will not be going well for the town.

The US presidential election of 2016 impacted me greatly. The deep immorality of outright denial of ACC, by Donald Trump and many Republicans, and the slow pace of the processes of the IPCC, shaped my approach to this book. There have been many criticisms of the Trump Administration’s position on climate change, with many arguing, very energetically, that we don’t have time for any delays, especially delays based upon falsehoods, ignorance, and short-term commercial interests. The “Sunday Review” section of *The New York Times* (23 April 2017) declaimed “The Planet Doesn’t Have Time For This.”³³ “We don’t have time for this” became my constant refrain and complaint: I repeated those words to friends, family, students, and colleagues in both academia and business, and still do. One need not be a climate or earth systems scientist to grasp the general scientific conclusion that something needs to be done to assure that the world will not pass through the 2°C limit, which has been indicated as the exigent upper limit as regards global mean temperature increase (over pre-industrial levels). Passing through that limit (or a temperature increase approximating it) would set off a cascade of climate-related events that would wreak havoc on hundreds, if not thousands, of species, including our own.

As I was writing this book and mulling over how I might come to terms with the possible repercussions of a Trump presidency, I had just finished reading E.O. Wilson's powerful plea for environmental sanity, *Half Earth: Our Planet's Fight for Life*. In that book, as in many of his writings, Wilson tells us about the threats we humans pose to the biosphere:

Having risen above all the biosphere, set to alter everything everywhere, the wrathful demon of climate change is our child that we left unrestrained for too long. By using the atmosphere as the carbon dump of the Industrial Revolution, and pressing on without caution, humanity has raised the concentration of greenhouse gases, primarily carbon dioxide and methane, to a dangerous level. Most experts agree on the following dire prediction. The rise in the annual mean surface temperature caused by the pollution should not be allowed to exceed 2°C, or 3.6°F, above that prior to the birth of the Industrial Revolution — roughly, the mid-eighteenth century. The rise has already reached nearly half of the “2C” threshold. When global atmospheric warming pushes past the 2C-increase level, Earth's weather will be destabilized. Heat records now considered historic will become routine. Severe storms and weather anomalies will be the new normal. The melting of the Greenland and Antarctic ice shields now under way will accelerate, bringing landmasses a new climate and a new geography. The sea level, as measured by both satellite and tidal gauge data, is already rising three millimeters a year. Pushed up both by the addition of meltwater and by expansion of the ocean volume due to heating of the whole of marine water itself, the sea level [rise] will eventually exceed nine meters. Can such catastrophic change really come to pass? It has already begun. The average annual surface temperature of the planet has increased steadily since 1980, with no sign of moderating.³⁴

On election night, November 8, 2016, at around ten o'clock, I turned to my wife, who was as stunned by the result as I was, and took from her hand a glass of rum or bourbon – I can't remember which; it didn't matter – that she poured for me after the result was announced. I said to her, “We can't afford this – not now; not when the world needs decisive action from our country if there is any hope that the worst will be avoided.” Yes, my first thought was how Trump's election to the presidency would impact the progress made on climate change during the Obama administration. As a Democrat, I had

many reasons to abjure a Trump presidency, but the principal reason was, and still is, climate change, for there is no more urgent issue facing humanity – not terrorism (as awful as that is), not the threat of a nuclear exchange with North Korea (as horrific as that would be), and not the spread of a new contagion (as it turns out, climate change itself threatens new contagions).³⁵

Of course, the inauguration followed the election. I knew that I could not watch it and, like many, I did not. I would always have time, I thought, to read the transcript and see videos of it, and so I spent the day writing and then disseminating via social media an essay titled “Contra Inaugura,” which was a call for Americans to reject Trump and his various policies. All the while, my primary concern had to do with what the new administration would do regarding climate change. As each day went by, my spirit sank a little more, and always for good reason. On February 17, 2017, the Senate confirmed Scott Pruitt to be Administrator of the Environmental Protection Agency (“EPA”), an agency that Pruitt loathed prior to his selection by Trump to run it. Pruitt was also a known climate denier, as were many in the administration and in the Republican ranks in general. At the same time, Steve Bannon, a radical anti-establishment activist and ultra-ethno-nationalist (somewhat in the mold of Carl Schmitt, but less intellectually gifted) who quotes fascists and thrives off of the support of white supremacist groups, began his crusade to “deconstruct the administrative state” at just the time when *more* funding and *more* government involvement would be needed for scientific research. The Bannon-inspired “skinny budget” proposed to slash spending to the EPA, the Department of State (committed to peaceful international engagement rather than war), and other federal agencies. It was to be the first concrete step toward demolishing “the administrative state” and toward ending the “evil” of “globalism.” It is as though neither Bannon, nor anyone else in the new administration, had ever read the CIA and DoD assessments of the threat to the country’s security posed by climate change (or that they had, but cared more for some sort of kooky jingoist reshaping of the American political scene than the survival of the country as such). As already proffered, these are not agencies of the federal government given to flights of fancy. At the risk of being redundant, here is some informed reportage concerning the 2015 DoD assessment:

Global climate change will aggravate problems such as poverty, social tensions, environmental degradation, ineffectual leadership and weak political institutions that

threaten stability in a number of countries, according to a report the Defense Department sent to Congress yesterday.

The Senate Appropriations Committee requested the report in conjunction with the Defense Appropriations Act for Fiscal Year 2015, asking that the undersecretary of defense for policy provide a report that identifies the most serious and likely climate-related security risks for each combatant command and the ways those commands integrate risk mitigation into their planning processes.

Fragile States Vulnerable to Disruption

The report finds that climate change is a security risk, Pentagon officials said, because it degrades living conditions, human security and the ability of governments to meet the basic needs of their populations. Communities and states that already are fragile and have limited resources are significantly more vulnerable to disruption and far less likely to respond effectively and be resilient to new challenges, they added.

“The Department of Defense's primary responsibility is to protect national security interests around the world,” officials said in a news release announcing the report’s submission. “This involves considering all aspects of the global security environment and planning appropriately for potential contingencies and the possibility of unexpected developments both in the near and the longer terms.

“It is in this context,” they continued, “that the department must consider the effects of climate change – such as sea level rise, shifting climate zones and more frequent and intense severe weather events – and how these effects could impact national security.”

Integrating Climate-Related Impacts Into Planning

To reduce the national security implications of climate change, combatant commands are integrating climate-related impacts into their planning cycles, officials said. The ability of the United States and other countries to cope with the risks and implications

of climate change requires monitoring, analysis and integration of those risks into existing overall risk management measures, as appropriate for each combatant command, they added.

The report concludes the Defense Department already is observing the impacts of climate change in shocks and stressors to vulnerable nations and communities, including in the United States, the Arctic, the Middle East, Africa, Asia and South America, officials said.³⁶

The Trump Administration has gutted the White House Office of Science and Technology Policy's Science Division, which is, as of this writing, totally without staff, just as it has removed climate research data from the EPA's web site, preferring expedient and dangerous propaganda to critical scientific facts.³⁷ The administration, in thrall to craven ideological commitments, has reckoned that science itself is an enemy – an acceptable casualty in the war against the administrative state. It seems to hold the view that basic facts about the natural world can be revised to meet political aims, and that such revisions can become or be made acceptable, as though the human mind can withstand indefinitely the irritations of falsehood and error, and can be manipulated to deny the results of scientific inquiry because “the party” requires such denial, just as it manufactures the precursors to such denial. The administration's goal seems to be, simply, the maintenance of its own power, which requires hobbling or razing critical organs and institutions of government, however sensible and useful. All of this is reminiscent of the words of the party sadist, O'Brien, spoken as he tortures Winston Smith, in Orwell's novel, *1984*:

We control life, Winston, at all its levels. You are imagining that there is something called human nature which will be outraged by what we do and will turn against us. But we create human nature. Men are infinitely malleable. Or perhaps you have returned to your old idea that the proletarians or the slaves will arise and overthrow us. Put it out of your mind. They are helpless, like the animals. Humanity is the Party. The others are outside—irrelevant.³⁸

But a world such as O'Brien describes, and that Trump (spurred by Steve Bannon and other Schmittians) is seeking to create, at least as far as the American nation-state is concerned, is radically unstable, and Winston Smith is right to confront O'Brien with that fact, despite the latter's clever deflections. This is because truth and facts, being "stubborn things," as John Adams averred, are yet highly valuable for the purposes of survival – which, of course, should go without saying, but given the rise of Trumpism and Bannonism, must be said. The fact is, human minds are *not* "infinitely malleable." Ideologues and demagogues can disorient the public for a period of time, but the enormous energy necessary to sustain the big lies soon becomes impossible to generate and maintain, at which point the truth and facts reassert themselves and take their vengeance. For the purposes of maintaining the pleasure of false belief and for maintaining membership in one or another identity-nurturing tribe, lies can be taken as truths, but only for a while. Thought is a private activity, and it is in thought that facts and truths live. Attacking truth, facts, and science won't change reality – the reality that subsists and persists outside any effort to contort it. Trumpism and Bannonism will crash into ruin because of reality, as did so many other false beliefs that the evidence no longer supported. But Trumpism and Bannonism could not come at a worse time. As Wilson and many others are pointing out, climate change is not then, it is now, and its impact is being felt around the world. It is even implicated in armed conflicts:

A severe drought, worsened by a warming climate, drove Syrian farmers to abandon their crops and flock to cities, helping trigger a civil war that has killed hundreds of thousands of people, according to a new study published Monday.

The research provides the most detailed look yet at how climate change may already be helping spark violent political unrest.

"Up until now we've understood and established that changes in climate may affect human conflict in the future. But everything until now has stopped short of saying climate change is already having an effect," says Solomon Hsiang, a University of California, Berkeley professor who has studied the role of climate change in violence. He did not participate in the new study.

The authors acknowledge that many factors led to Syria's uprising, including corrupt leadership, inequality, massive population growth, and the government's inability to curb human suffering.

But their report, published in the *Proceedings of the National Academy of Sciences*, compiled statistics showing that water shortages in the Fertile Crescent in Syria, Iraq, and Turkey killed livestock, drove up food prices, sickened children, and forced 1.5 million rural residents to the outskirts of Syria's jam-packed cities—just as that country was exploding with immigrants from the Iraq war.³⁹

If one is looking for clear causal evidence between climate change and specific events, such as armed conflicts or intense weather events, one will not find it – at least, not yet, although scientists are working to develop improved tests for attribution in view of what is known about *forcing* (see Glossary).⁴⁰ But it must be understood that climate change will lead to cross-over or transitional events – events that introduce the effects of climate change over time, as predicted by various scientific models. Anomalous *weather* events should be expected as the first signs of real change, and such anomalous weather events have consequences, just as typical weather events do (when it rains, traffic jams get worse, more people are late for appointments, there are more road accidents, etc.). It's time for the arm-chair skeptics to get in line and join the almost 100 percent of informed climate and other scientists who have satisfied themselves that ACC is real, is happening now, and will have devastating consequences.

1:3 The Moral and Political Challenges

The *future* consequences of climate change demand not only technological innovations in the way we generate energy, they also demand unprecedented global political action and coordination, serious citizen engagement, and an unprecedented degree of moral maturation. This book is about the need for all of these, and about the creation of an international mechanism (or authority) to focus humanity's energies on the problem. Even if some of the worst climate scenarios don't play out by the end of this century, human beings will suffer very significant disruptions and tragedies all around

the globe as we approach it, some of which have already been discussed. The same fate awaits our non-human cousins – a fact that too often gets short shrift (and, indeed, many species of plants and animals have already paid the ultimate price, as a great many have become extinct, while others are on their way to extinction). Morality (in this book I will generally use the word “morality” rather than “ethics” and “moral” rather than “ethical”) requires a coordinated and vigorously implemented plan of action by and among the world’s national governments. There is an urgent need for 1. active and ongoing planning, 2. the commitment of substantial monetary and other resources, and 3. a stunning level of moral growth and moral magnanimity (as, together, a critical adaptation) such as has never been seen or expected in all of human history. The first two of these have been in the works for some time (we see them referenced in the Paris Agreement and in the blizzard of IPCC reports leading up to it), but the last of these – i.e. the need for a stunning level of moral growth and moral magnanimity – is rarely discussed. All of these require shifts in our way of thinking about our relationships with other people and with the flora and fauna of our planet on an order that is unprecedented. In another of my books I use the Greek word “*metanoia*” when calling for the great shift in thinking required by certain business people in order for them to conduct their affairs within moral parameters.^{iv} I will use the word *metanoia* in this book, too, as regards the kind of shift in thinking demanded to address the consequences of climate change, for the word (like the Hebrew word transliterated as *teshuvah*) suggests not merely an intellectual resolve to change course but a very radical change in one’s thinking, the kind of change that follows and indicates conversion.

The climate change discussion had for too long been confined to the scientific community and to a rather small circle of non-scientists who grasped its implications. It has been only relatively recently, perhaps since Rio’s Earth Summit (June 1992) or not much earlier, that the discussion has (slowly) broken out into more popular fora. This is a good thing, because the larger consequences of climate change will not be felt by scientists alone, but rather by everyone – and some, such as the global poor, far more than others. It is important that everyone – or at least a critical mass of people – become familiar with the science and repercussions of climate change in order to prepare for what’s dead ahead, in just a few generations. As Francis, the current Pope of the Catholic Church, has written, and I could not agree more:

^{iv} David E. McClean, *Wall Street, Reforming the Unreformable – An Ethical Perspective* (London: Pickering & Chatto (Publishers) Limited, 2015).

We need a conversation which includes everyone, since the environmental challenges we are undergoing, and [their] human roots, concern and affect us all. The worldwide ecological movement has already made considerable progress and led to the establishment of numerous organizations committed to raising awareness of these challenges. Regrettably, many efforts to seek concrete solutions to the environmental crisis have proved ineffective, not only because of powerful opposition but also because of a more general lack of interest. Obstructionist attitudes . . . can range from denial of the problem to indifference, nonchalant resignation or blind confidence in technical solutions.⁴¹

1:4 The Need for “Apocalyptic Cosmopolitanism”

As I began to write this book, the possibility of a Republican win in the 2016 race for President of the United States, with Donald Trump as the Republican nominee, was becoming less fanciful. As many concluded prior to November 8, 2016, decisive US action and leadership on climate change would be highly improbable were Trump to win. The Trump campaign was supported by an intensely pro-business lobby which included, of course, very seasoned and very well-resourced lobbyists for the petroleum industry. Those who supported his campaign included avid climate change deniers of various stripes: those who knew just enough of the science to believe their questions about the human causes of global warming were sufficient unto themselves to lead one to conclude that it was either not caused by human beings or that the data are insufficient to support the conclusion that the vast majority of client scientists had drawn; those who believe that God would not allow humans to be so impactful as to actually affect climate; those who believe that climate change was part of a plot among so-called “globalists” to weaken the country; and those who believe that climate change is a hoax perpetrated “by the Chinese.” Also among the deniers were people who are so deep into conspiracy theories that the claims of scientists were questioned without the questioners having any professional background in the sciences whatsoever. Senator James Inhofe, of Oklahoma, who brought a snowball onto the Senate floor as proof that the earth is not warming, is one example of the strangeness, and

deadly ignorance, of the deniers. A *Washington Post* article on this odd and now infamous moment in the Senate captures it with the appropriate cheekiness:

Sen. Jim Inhofe (R-Okla.) has, once and for all, disproven climate change. While “eggheads” at science laboratories were busy worrying about how the increase in heat-trapping gases in the atmosphere was leading to a long-term upward shift in temperatures and increased atmospheric moisture, Inhofe happened to notice that it was cold outside. *Weirdly* cold outside. So cold, in fact, that water falling from the sky had *frozen solid*. So he brought some of this frozen water into the Capitol and onto the Senate floor to show everyone, but mostly to show the “eggheads.”⁴²

Inhofe might have had more punch to his point had it been July and not February, when snow for snowballs is common on the streets of Washington, DC.⁴³ Such intellectual shallowness and ineptitude as regards climate change is of a kind not seen since the Scopes “Monkey” Trial, but one can argue that it is far worse, since whether policy makers believe in natural selection, intelligent design, or Biblical creationism scarcely stands to lead to the deaths of hundreds of millions (or, perhaps, billions) of people, or to bring the world economy to its knees, as is the case with climate change denial and its retarding effects as regards sound policy.

Beyond these forms of irrationalism, a wave of nationalism and tribalism has washed across several European countries and the United States. The Netherlands, Great Britain, France, Germany, Austria, Greece, Russia and the United States are all in (going through?) a period of heightened nationalism, led by demagogic “reformers,” although there is some evidence that the nationalistic tides are ebbing a bit. As I discuss later, Great Britain has opted to leave the European Union (a.k.a. “Brexit”), with the formal mechanism for exiting (notification of intent to withdraw pursuant to Article 50 of the Lisbon Treaty) having been triggered by Prime Minister Theresa May on March 29, 2017. In the Netherlands, a far-right candidate, Geert Wilders, seemed poised to win the office of Prime Minister, but the polls turned out to be wrong (and Dutch voters turned out to vote in greater numbers than anticipated), as was the case in the United States on November 8, 2016. Wilders was and is no fan of the European Union, and he would love to see ethnic minorities, and especially Muslims, marginalized officially – even banished. But his near win exposes a very strong nationalist wave:

It was with a sign of [relief] that the world’s progressives greeted the Dutch general election results on March 15 . . . The international press had descended on The Hague to see if the openly Islamophobic, EU-hating, far-right leader Geert Wilders and his Party for Freedom (PVV) would further the dawn of populism in Europe. Despite “the Dutch Donald Trump’s” strong early lead in the polls, however, current prime minister Mark Rutte came out ahead by a decent margin . . . [F]or progressives worldwide, it’s undisputedly good news that Wilders at least did not win the election. But populism and polarization clearly did. And going forward, it’s likely that other European progressives will be faced with a similar Sophie’s choice: Compromise your values in order to keep conservative voters, or stick to your original platform and possibly lose.

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Germany, a country keenly aware of its hyper-nationalist past and appropriately nervous when nationalism rears its head, is also experiencing a rise in nationalist fervor, spurred by the stresses placed upon it in its role as the economic engine of Europe and as the linchpin of the now over sixty-year-old effort to unify it:

In Germany, the Eurosceptic, anti-immigration Alternative for Germany (AfD) party might get [in the next election] 10% of the votes according to recent polls, nearly twice as much as it did in the last federal election. According to the AfD platform, Islam does not have a place in Germany, and the party’s leader wants to shoot migrants who try to cross the border illegally. The AfD doesn’t have nearly the support of the leading Christian CDU. But there is enough populism in the air that even German chancellor Angela Merkel—the new leader of the free world—said in December 2016 that she favors a burqa ban. This is the same leader who, in 2015, decided to welcome over a million refugees using the famous slogan “Wir schaffen das”—“*We will make it happen.*”⁴⁵

As it turns out, the AfD received not 10% of the vote in the September 2017 elections, but rather it received a surprising 13%, and so the far right entered the Bundestag (the “lower house” of the German parliament) for the first time in some fifty years.⁴⁶ In France, Jean-Marie Le Pen’s *National Front*, headed by his daughter Marine (who is, supposedly, estranged from her father over her rejection of some of his more rabid views), is one of the more visible examples of the new nationalism. Though Emmanuel Macron won the most recent presidential race in May 2017, beating the ultra-nationalists Marine Le Pen and François Fillon, that outcome was far from certain:

France’s conservative Republicans appear to [be] trying to beat Marine Le Pen’s extreme right National Front party at their own game. The party picked François Fillon as its leader—a man who thinks that the European Union is inefficient and useless and believes that France is not, and should not be, a multicultural society. A corruption scandal involving government jobs for his family may have dimmed Fillon’s chances of winning, but [the] fact that this hardliner is the ‘center right’s’ candidate speaks volumes about the state of French politics.⁴⁷

Just at the moment in which the world’s peoples are facing a *global* threat that cares not a jot for political borders, maps, or tribal fervor, many countries seem to be considering a retreat from robust international engagement, enamored with their own versions of Bannanism. But more than ever the peoples of the world need to see themselves as *world* citizens, though embedded in particular political communities and cultures, and the world’s governments must begin to move more rapidly – and deliberately – toward a true global solution to the problems that attend ACC, including hundreds of millions of new climate migrants and climate refugees, tens of millions of people who are newly indigent, massive losses of financial wealth, and global economic disruptions that will make the Great Depression of the 1930s and the more recent financial crisis of 2007/8 seem like minor inconveniences. We are at a moment of apocalypse, i.e. of grand disclosures about the tolerances of our planet and about our roles as members of the biotic community. The choices that we make now will lead either to radical new beginnings for our species, or to unprecedented catastrophe. More than

at any other time in human history the world needs cosmopolitan thinking and the moral virtue of magnanimity that will maintain it through periods of incredible political and psychological stress. Yet, while much attention has been paid to metrics, the science of climate change, alternative energy, and technical intervention possibilities (such as Carbon Capture and Sequestration (“CCS”) and various ways to increase the global albedo), very little attention has been paid to the *cultivation of characters* and a *new politics* that will allow us to meet the coming challenges without turning on one another viciously, or turning on the other forms of life that inhabit the planet with us. Pope Francis’s phrase, “blind confidence in technical solutions,” is apt. Technical solutions do have a role to play to stave off wholesale social breakdown and the bloody belligerence that can be counted on to follow it (just think of a failed state such as Somalia), but morality – our *conscious* determination to regard the good of others as critical – must get us the rest of the way. Indeed, it is morality, to no small degree, that will make available many of the technical solutions, since they can only come into being through the expenditures of resources, private and public, and the expenditure of resources is, in part, the result of moral priorities, moral decisions and moral imagination. But I wish to emphasize morality *simpliciter*, not morality as a driver for technological innovations. I do not wish to make morality another instrument placed in the service of technology, commerce, or innovation; I wish to focus on its centrality to what it means to be a human being, as rooted in care for others, for life, and for the habitats in which life is possible.

1:5 Protrepis

We human beings need to change, to *adapt* to a new reality, in our morality and in our politics. We need to become different kinds of beings if we are going to survive and thrive. Our penchants for self-interest and self-service must be conditioned more significantly by a desire to serve the welfare of the planet and its inhabitants, and so we must forge a new understanding of the nature and complexity of our obligations. Our morality and politics must become *magnanimous*. So far, in our evolutionary journey and throughout our recorded history, magnanimity seems to have appeared in isolated eruptions, and has been less common than ordinary altruism, which is quite common. That can no

longer be the case if we are going to survive the new natural and social realities that climate change is introducing. To survive, magnanimity (which can no longer be seen as supererogatory, *but rather as at the center of the needed adaptation*) must become *quotidian*, commonplace. Yet we are far from making any such demand on ourselves, just as we have been far from making the demands on ourselves to be charitable and to move charity to the core of our sense of self. For thousands of years we have hoped that the seeds of magnanimity preached by the likes of Jesus of Nazareth and Siddhartha Gautama would spread into human hearts and human institutions, but such has not come to pass. How will we then get to a *ubiquitous* magnanimity? I think the exigency of the moment will shove us in its direction, for just as there is climate forcing, there is *moral forcing*. If we resist that moral forcing, and so delay the inner transformations that will be required in human minds and hearts all across the globe, our fates will be sealed. I suppose it can be summed up this way: Love or die; expand our moral horizons substantially, or watch catastrophe unfold before our eyes and before the eyes of our children and grandchildren.

I can already hear the critical voices: “You don’t understand human nature, apparently”; “You’re hopelessly naïve.” I have several answers to these criticisms. First, fear – not just greed or selfishness – is a great motivator, *so long as that fear is not paralyzing* (a critical proviso, for we know that, generally, fear does not motivate toward sustained action), and whether most know it yet or not, they should be very afraid indeed. When enough people do realize it, the ground will be prepared for the needed personal and communal transformations. Second, I follow Aristotle and other philosophers in their view that human beings are malleable and can be reshaped through training and re-habitation, and can even be brought to mental conversion (although we are not *infinitely* malleable, as O’Brien, and some real-life demagogues, hold). This is even more true when the circumstances are optimal for that re-habitation to take place. Now is the time for the teacher, the bard, the noble orator, and the cleric to reach out to the world’s peoples with a new gospel rooted in grand visions of what we can become if we rise to meet the challenge – *in solidarity*. So far, their voices have been few and, at times, too timid, or too Pollyannaish, or too insipid. This must not remain the case. We need new and

relentless moral and political leaders who have carillons grafted into their throats, and who include the clarion call to action in their utterances.

Surely, the shift to magnanimity of which I speak will not come without a price. To paraphrase the naturalist John Burroughs, with the introduction of benevolence, mercy, altruism, and magnanimity into the world, we pay the price of added burdens, but we also stand to reap a great reward in the creation of social and civic organizations that are impossible without them. So it was with the spread of democracy and political liberalism. So it will be when we take the turn toward magnanimous regard for the lives of climate refugees, born and yet unborn, for those in coastal cities who have lost their life-savings, and to those caught up in wars and conflicts due to droughts and food insecurity. Magnanimity was summed-up, in the American civic context, by John F. Kennedy, Jr.'s famous admonition, in his 1961 Inaugural Address, “[A]sk not what your country can do for you – ask what you can do for your country.” In that spirit I proffer this: We can no longer ask what the world can give to us; we must learn to ask in all seriousness, and without any further delay, what it is we can give to the world. The magnanimity of which I speak would require a lot from us. It would require us to train for lives of personal ministry and sacrifice. This is a tall order in an age of me-ism and consumerism, and it may be too tall an order for a species still guided, all too often, by its amygdalae rather than by its moral resolve. Yet, it seems to me, the adaptation does not need all the members of our species to make the shift, but only a certain critical number. As these lead (by their examples), many others will follow. It is hard to know whether they will follow in time, but it is likely that they will. Successful change breeds successful change.

1:6 Thinking as Citizens of States and of the World, Concurrently

The looming crisis (climate change has already *begun*, but most of the catastrophic results – at least for human beings – seem to be (or so we believe presently) a few decades into the future) forces us to consider doing what *Realpolitik* thinkers have told us can never be done, i.e. to think as citizens of the world rather than as citizens of nation-states with dense Westphalian borders, as denizens of a

small *planet* rather than as denizens of a small community, and as stewards and not just as users and consumers of the environment. We must become *truly* and *deeply* cosmopolitan in our thinking, just as, at the same time, our ecological thinking must become focused *and* holistic, but as of yet most people seem barely able to concern themselves with their proximal neighbors or with a time horizon beyond a few months or years, let alone with people thousands of miles away and with time horizons decades into the future and that cross generations (and here I am referring, most specifically, to people in rich countries, not to people struggling to survive in poor countries and who are, quite understandably, preoccupied with basic survival). As I indicated, there are still very strong anti-cosmopolitan winds blowing around the world. Indeed, the world is filled with rank nativism and tribalism. Overcoming these will be no easy task, but overcome them we must. To begin to think distally and to plan as one vast human community over long periods will require a leap of our moral imaginations – a leap not just on paper wedged between the covers of philosophy texts or religious tracts, but rather in actual fact. The *metanoia* required is one that would, if actualized, shape a planetary love ethic, and not only a love ethic that concerns itself with other human beings now alive, but with future generations and with all the life on earth that, like ourselves, has resulted from mindboggling evolutionary changes over mindboggling periods of time (at the hands of God, or of nature, or both, as your personal metaphysics would have it). Such *metanoia* would implant in the breasts of all people what Albert Schweitzer called “the ethics of reverence for life.”⁴⁸

But intellectual, moral, and political conversions must be built upon scaffolds that allow them to come to completion. A social and political program of *re-habitation*, one that will have us roll up our sleeves and work from intelligent, pre-existing blueprints so that our energies are not dissipated pursuing desiderata only, or wasted on mere sentimentalism, is required. Such scaffolding is what I am calling *apocalyptic cosmopolitanism*, a cosmopolitanism driven by moral forcing associated with climate change, which in turn is built upon earlier versions of cosmopolitanism that have already given us multinational bodies, non-governmental watchdogs, and several rounds of intergovernmental conclaves to address climate change and related exigencies: sustainable development; renewable resources; alternative energy; and environmental protection and conservation. The antecedents to apocalyptic cosmopolitanism were first averred by Diogenes the Cynic, re-emphasized with less truculent anarchism by Epictetus, and built upon by Hugo Grotius, Samuel von Pufendorf, and Immanuel Kant. They have lighted the way for apocalyptic

cosmopolitanism, which has taken shape around the works of dozens of contemporary thinkers – thinkers such as Martha Nussbaum, David Held, Seyla Benhabib, Daniele Archibugi, Will Kymlicka, and Kwame Anthony Appiah, to name but a few.

Immanuel Kant gave us one of the clearest accounts of legal and political cosmopolitanism. Cosmopolitanism *simpliciter* (the general idea that one should not think of oneself as merely a citizen of a particular political community but, rather, at the same time, as having serious obligations to others outside of one’s own political community, ethnic group, tribe, or nation) has been met with suspicion over the ages for a number of different reasons, one of which is the belief that human beings are simply not capable of a high degree of care or concern for geographically distal peoples, or even peoples separated by *social* distance (race, class, religion, etc.) even within the *same* political community or society. Kant was aware of this skepticism (a skepticism that is still pervasive today), but he did not hold that cosmopolitan thinking can be brought about through pipe dreams or magical thinking. To the contrary, Kant was quite sober about human propensities and limitations, the darkness of the human heart, if you will. He wrote in his essay *The Idea of a Universal History with a Cosmopolitan Intent*, as regards human beings and their moral weaknesses, “[T]hat from such warped wood as is man made, nothing straight can be fashioned. Nature only enjoins us to the approximation of this idea.”⁴⁹ What then compels us to extend our concerns beyond family, friend and neighbor, to those living in far flung places? It is nothing connected with magical or naïve thinking, but rather, as Kant saw it, it is our tendency to war and to engage in other forms of belligerence (these days, these other forms include cyber-belligerence) that will do this. We have known for some time that it is dangerous to behave as though we live in a world sealed off from others. When we see discord and violence in far-off places – and never before have we been in a better position to do so, just as it is now quite hard to consider any place to be “far-off” – it is not difficult to imagine that discord visited upon *us*. As Kant put it in another of his political writings:

Because a (narrower or wider) community widely prevails among the Earth’s peoples, a transgression of rights in one place in the world is felt everywhere; consequently, the idea of cosmopolitan right is not fantastic and exaggerated, but rather an amendment to the unwritten code of national and international rights, necessary to the

public rights of men in general. Only such amendment allows us to flatter ourselves with the thought that we are making continual progress towards perpetual peace.⁵⁰

Kant's point was driven home to the world when it considered the upwards of two hundred million casualties (the killed and the wounded) of two world wars. It took all of these tragic casualties to give the world the United Nations and to bring European states to the point of constructing the European Union, however flawed they may be in the minds of nationalists (I will revisit nationalists' views of the United Nations in Chapter Three).

Climate change will create conditions that will oppress the peoples of the world (especially the poor) and its other living denizens in far more impactful ways than any wars that have ever been fought, or likely ever would be fought, with the possible exception of global thermonuclear war. Even now, as I write these words, news reports are coming in that the temperature in parts of India has topped an oppressive 123° Fahrenheit (about 52° Celsius), a new record,⁵¹ and references are being made with some frequency to the Marshall Islands, which are about to face submersion (in just a few short decades) due to sea level rise, and which are even now suffering the effects of the encroaching ocean:

Most of the 1,000 or so Marshall Islands, spread out over 29 narrow coral atolls in the South Pacific, are less than six feet above sea level — and few are more than a mile wide. For the Marshallese, the destructive power of the rising seas is already an inescapable part of daily life. Changing global trade winds have raised sea levels in the South Pacific about a foot over the past 30 years, faster than elsewhere. Scientists are studying whether those changing trade winds have anything to do with climate change. But add to this problem a future sea-level rise wrought by climate change, and islanders who today experience deluges of tidal flooding once every month or two could see their homes unfit for human habitation within the coming decades.⁵²

The Marshall Islands are often cited by those who point to the dangers of ACC, and often what is happening there (flooding due to sea level rise) is received with a shrug. But the predicament of the Marshall Islands will be repeated globally, and in countries not so easy to shrug off. In the United States, Miami Beach is experiencing regular flooding, even on sunny days, due to very modest sea

level rise, and things are predicted to become much worse. In fact, hundreds of cities around the world are at risk of flooding due to sea level rise, and that is expected in the not too distant future.⁵³

If a cosmopolitan politics and morality were deemed necessary to end *wars*, they are, *a fortiori*, necessary to address the vastly more oppressive conditions that climate change will produce. The call being made in these pages (Chapter 3) for a central or global authority to address the human causes of climate change faces almost as many challenges as presented by climate change itself. But the exigency of the latter can be made to hasten the former. We are out of time. We are at the precipice. As the effects of climate change will impact the entire planet, piecemeal approaches by individual nation-states won't do – especially when, to date, many of those approaches are not legally binding.⁵⁴ And as the recent election of Donald Trump shows us, there are political risks that abide at the state (country) level and that could, if they come to pass, derail efforts to prepare strategies for effective mitigation with resolve and with the appropriate level of resources. We now see clearly that political risk is an important consideration in the forging of any future international climate change agreements, and hedges to political risk (including outlier risks) must be provided for in those agreements.

There are reasons for hoping that political risk at the national level won't completely hamstring our efforts, and Michael Bloomberg and Carl Pope, in their book, *Climate of Hope: How Cities, Businesses, and Citizens Can Save the Planet*, show how work at the local level can have large payoffs in terms of mitigation and adaptation. But I am not persuaded that reemphasizing the local as opposed to the national is all that needs to be done. I believe that we must all make more fundamental changes in our ways of thinking, for the work of cities, however cooperative that work has been, leaves the human character untouched, other than tangentially. In fact, given the exigencies and the global impact of climate change, the solutions should never have been relegated to cities to devise, whether that relegation was *de facto* or *de jure*. That they were shows us where we have been misled into believing that the borders of nation-states are tightly stitched seams that “keep us in” and “keep them out.” But a view of the Earth from space shows a seamless natural globe, where oceans flow into one another and ocean currents create thermal “conveyor belts” that maintain consistent global temperatures, and where air flows freely from one place to another, ceaselessly. The Atlantic and Pacific are, essentially, one ocean, and the skies over Timbuktu are the same as the skies over Arkansas and Ushuaia. Despite our ethnic and political differences, that truth, at this present moment,

trumps all others. If we insist on living apart, cocooned within political borders, we will all suffer together.

International agreements and conventions that address climate change – shaped in Rio (The Earth Summit), Johannesburg, Kyoto, Doha, Montreal, Paris, Marrakesh, and elsewhere – are, some may with warrant claim, only a notch above a bricolage of wish lists for addressing the problem, although the work should not be blithely dismissed, as they were and are important steps that helped to focus the world’s attention, resources, and energies. Those agreements and conventions are the result of the work of thousands of dedicated people. While it is true that creating binding and enforceable agreements between the world’s states cannot materialize without such first steps, i.e. joint recognition of the problem, initial commitments of resources, etc., the exigency allows little room for normal politics and normal algorithms for international cooperation, even if many of the world’s cities are doing the heavy lifting that national governments should be doing, or at least coordinating. Judged in relation to the urgency, the world’s national governments and the world’s peoples seem to be operating in procrastination mode (in the United States, ground zero for climate change denial, things are actually worse than procrastination), lulled into a kind of torpor because the worst effects of climate change are years off. Status quo thinking still persists. The Majority Leader of the United States Senate, immersed in and concerned with ordinary partisan and ideological considerations, said of the Paris Agreement: “Before [President Obama’s] international partners pop the champagne, they should remember that this is an unattainable deal based on a domestic energy plan [Obama’s “Clean Power Plan”] that is likely illegal, that half the states have sued to halt, and that Congress has already voted to reject.”⁵⁵ Candidate Trump vowed to undo his predecessor’s “Clean Power Plan,” and President Trump has largely carried out that promise.⁵⁶ Commensurate with the foot dragging in the US Congress, President Trump’s EPA has taken steps to remove scientific data related to climate change from its web site, a rare instance of government efforts to suppress well-established scientific findings as well as ongoing research (reminiscent of the bonfires of 1930s Germany), in part to placate the fossil fuel lobby and other business interests – a move that one might expect in a totalitarian state or a banana republic, but not in the United States.

In contrast to this, many continue to argue, correctly, that the issue of climate change is a human rights issue. Of course, how can it not be, and how can any policymaker miss the human rights

dimensions of the threat? The political theorist Simon Caney addressed climate change as a human rights issue, and his arguments are convincing. According to Caney,

The important links between climate change and human rights have been neglected . . . I [defend] three distinct conclusions: 1. Climate change jeopardizes human rights and in particular human rights to life, health, and subsistence . . . 2. Analyzing the impacts of climate change in terms of its effects on human rights enjoys advantages over other ways of evaluation the impacts of climate change . . . 3. Endorsing a human-rights framework for evaluating the impacts of climate change has implications for our understanding of who should bear the burdens of climate change and what kinds of policies are appropriate.”⁵⁷

There are also civil rights implications.

1:7 Climate Change and Civil Rights: *Juliana v. United States*

Allowing conditions in various nations to devolve to the point of utter social and economic breakdown, which is what seems on the horizon without the proper actions, places policymakers and other responsible civic leaders directly in the middle of a moral imperative unlike any that has ever been tackled. Beyond concerns for *human* rights, others are stressing the *civil* rights implications of climate change. Among attempts of citizens to fight back against backward thinking is a court case brought by young adults in the United States, *Juliana et al. v. United States*:

The path was cleared by a federal district court judge in Oregon who wrote an opinion preliminarily finding that a stable climate is a fundamental constitutional right. In the groundbreaking decision, announced on Thursday, U.S. District Court Judge Ann Aiken ruled in favor of a group of 21 children and young adults in their suit against the federal government. In denying the government’s motion to dismiss, Aiken, based in Eugene, Oregon, opened a path for an eventual court-mandated, science-based plan to bring about sharp emissions reductions in the United States. The case, *Juliana v. United States*, will now go to trial starting sometime in 2017 and could prove to be a major civil rights suit, eventually finding its way to the U.S. Supreme Court.⁵⁸

The content of Aiken’s opinion in *Juliana* provides an interesting read, not only because of the court’s acceptance of climate change as settled science, but also because it signals just that departure from the *status quo* that is needed, and a much stronger role that the courts may soon play in forcing action to address GHG emissions. Judge Aiken acknowledged that the case was quite unusual, stating “This is no ordinary lawsuit.” But that fact alone did not lead her to conclude that she should grant the federal government’s request to dismiss it. The judge sums-up the case as follows:

In sum: plaintiffs allege defendants [the United States government] played a unique and central role in the creation of our current climate crisis; that they contributed to the crisis with full knowledge of the significant and unreasonable risks posed by climate change; and that the Due Process Clause therefore imposes a special duty on defendants to use their statutory and regulatory authority to reduce greenhouse gas emissions. Accepting the allegations of the complaint as true, plaintiffs have adequately alleged a danger creation claim.⁵⁹

And in the Conclusion to her opinion, Judge Aiken writes (and I quote here the Conclusion in its entirety, with emphases added):

Throughout their objections, defendants and intervenors attempt to subject a lawsuit alleging constitutional injuries to case law governing statutory and common-law environmental claims. They are correct that plaintiffs likely could not obtain the relief they seek through citizen suits brought under the Clean Air Act, the Clean Water Act, or other environmental laws. *But that argument misses the point. This action is of a different order than the typical environmental case. It alleges that defendants' actions and inactions — whether or not they violate any specific statutory duty — have so profoundly damaged our home planet that they threaten plaintiffs' fundamental constitutional rights to life and liberty.*

A deep resistance to change runs through defendants' and intervenors' arguments for dismissal: they contend a decision recognizing plaintiffs' standing to sue, deeming the controversy justiciable, and recognizing a federal public trust and a fundamental right to a climate system capable of sustaining human life would be unprecedented, as

though that alone requires its dismissal. This lawsuit may be groundbreaking, but that fact does not alter the legal standards governing the motions to dismiss. *Indeed, the seriousness of plaintiffs' allegations underscores how vitally important it is for this Court to apply those standards carefully and correctly.*

Federal courts too often have been cautious and overly deferential in the arena of environmental law, and the world has suffered for it. As Judge Goodwin recently wrote, ¶ “The current state of affairs . . . reveals a wholesale failure of the legal system to protect humanity from the collapse of finite natural resources by the uncontrolled pursuit of short-term profits . . . [T]he modern judiciary has enfeebled itself to the point that law enforcement can rarely be accomplished by taking environmental predators to court . . . The third branch can, and should, take another long and careful look at the barriers to litigation created by modern doctrines of subject-matter jurisdiction and deference to the legislative and administrative branches of government.” [Alfred T. Goodwin, *A Wake-Up Call for Judges*, 2015 Wis. L. Rev. 785, 785-86, 788 (2015)].

Judge Goodwin is no stranger to highly politicized legal disputes. Nearly fifty years ago, he authored the landmark opinion that secured Oregon's ocean beaches for public use. Private landowners wanted to construct fences and otherwise keep private the beaches in front of their properties; they brought suit to challenge an Oregon state law requiring public access to all dry sand beaches. *State ex rel. Thornton v. Hay*, 462 P.2d 671, 672-73 (Or. 1969). Writing for five of the six members of the Oregon Supreme Court, then-Justice Goodwin rooted his determination the beaches were public property in a concept from English common law: ¶ “Because so much of our law is the product of legislation, we sometimes lose sight of the importance of *custom as a source of law in our society*. It seems particularly appropriate in the case at bar to look to an ancient and accepted custom in this state as the source of a rule of law. The rule in this case, based upon custom, is salutary in confirming a public right, and at the same time it takes from no man anything which he has a legitimate reason to regard as exclusively his.” *Id.* at 678.

In an argument with strong echoes in defendants' and intervenors' objections here, the plaintiff private property owner contended it was "constitutionally impermissible . . . to dredge up an inapplicable, ancient English doctrine that has been universally rejected in modern America." Kathryn A. Straton, *Oregon's Beaches: A Birthright Preserved* (Or. State Parks & Recreation 1977). *The Oregon Supreme Court was not persuaded by this call to judicial conservatism.* Because of the application of an ancient doctrine, Oregon's beaches remain open to the public now and forever.

"A strong and independent judiciary is the cornerstone of our liberties." These words, spoken by Oregon Senator Mark O. Hatfield, are etched into the walls of the Portland United States courthouse for the District of Oregon. The words appear on the first floor, a daily reminder that it is "emphatically the province and duty of the judicial department to say what the law is." *Marbury*, 5 U.S. at 177. *Even when a case implicates hotly contested political issues, the judiciary must not shrink from its role as a coequal branch of government.*

I ADOPT Judge Coffin's Findings & Recommendation (doc. 68), as elaborated in this opinion, Defendants' Motion to Dismiss (doc. 27) and Intervenors' Motion to Dismiss (doc. 19) are DENIED.

IT IS SO ORDERED.

Dated this 10th day of November 2016.

/s/_____

Ann Aiken

United States District Judge

Juliana has proceeded at full steam since Aiken's decision. Following a number of motions by the Trump Administration, and responses by the *Juliana* plaintiffs, on June 28, 2017 U.S. Magistrate Judge Thomas Coffin issued an order setting a trial date of February 5, 2018 before Judge

Aiken.⁶⁰ Our Children's Trust (www.ourchildrenstrust.org), the organization that is spearheading and supporting the plaintiffs in *Juliana*, is working with attorneys around the world who are developing and advancing legal actions to compel science-based government action on climate change.

Juliana is exciting and promising but, that case aside, the world's governments are still moving too slowly. Even given the regular COP meetings, they are operating according to the snail's pace usually expected and tolerated in the forging of more pedestrian international agreements, especially since the crisis concerns more than the reduction of carbon emissions and the creation of alternative and renewable energy sources. But, of course, by the time we see the *worst* effects there will be no time to act intelligently and decisively. It will be too late. Failure to act now to prepare the world for what is coming would be the most deeply immoral act of omission (or, if we continue to use the Earth's atmosphere as a carbon sink, of *commission*) of which the leaders of the world's peoples have ever been guilty.

1:8 Psychological Barriers

If the problem of climate change is “an inconvenient truth,” in the words of former United States Vice President Al Gore, then what is needed are more inconveniences freely accepted by the world's peoples, especially in developed states: budgets that reflect the urgency; domestic plans for carbon emission reduction; domestic and international plans to 1. assist, 2. relocate, and/or 3. assimilate climate refugees; restrictions on inessential driving (of fossil fuel reliant cars); requirements for reflective shades in windows that also generate electricity; filament tube lighting in the daylight hours (which carry the sun's light indoors) rather than traditional electric lights; mandatory state-subsidized solar panels; mandatory reflective roofs so that buildings contribute to the global albedo and reduce energy costs, etc. Some of these are being addressed now, especially by the mayors of the world's cities – see, for example, “The Covenant of Mayors for Climate and Energy”⁶¹ – but more coordinated action by national governments, especially in the United States (and especially in view of its abandonment of the Paris Agreement in June 2017), is needed.

If the accumulated effects of climate change will be far worse than all the wars of the 20th century combined, why do the world's peoples still operate as though radical action can be postponed? I suspect that one reason is that the magnitude of the problem seems surreal. It is understandable that

people need time to digest the fact that the lives they had will be unavailable to their grandchildren and great grandchildren, as will be the nature and scope of humanity's concerns. As Bloomberg and Pope point out:

A 2009 study concluded that fear does not, in fact, galvanize people to fight climate change. "Although shocking, catastrophic, and large-scale representations of the impacts of climate change may well act as an initial hook for people's attention and concern, they clearly do not motivate a sense of personal engagement with the issue and indeed may act to trigger barriers to engagement." Other studies have found that using exclusively dire messages about climate change can actually increase skepticism and denial of the problem.

Advocates for climate action also have a tendency to focus on abstract ideas that hold little meaning for most people, such as whether we need to limit eventual warming to 2 degrees Celsius above pre-industrial levels by 2100, or whether the upper limit should be 1.5 degrees. The reality is that the uncertainty involved means we do not know with precision whether we can achieve either of those goals; nor do we know for certain what the consequences will be if we do not. Regardless, most people put little faith in projections that far out, which is understandable. Scientists have been wrong plenty of times before. What people want to know is not exactly what will happen to the Earth eighty years from now but what will happen to their house, their job, and their community this year. Telling people that they might possibly save the Earth from distant and uncertain harm is not a great way to convince them to support a particular policy. But what happens when you tell people that they can definitely, right now, reduce the number of asthma attacks suffered by children, save their own families and friends from respiratory disease, extend their own life expectancy, cut their own energy bills, make it easier for them to get around town, improve their quality of life, increase the number of jobs in their community, and strengthen our national energy security—all while increasing the long-term stability of the global climate? ⁶²

There are various attitudes and approaches to address the public's response to climate change. While I believe Bloomberg's and Pope's approach has much merit, I am not so quick to write-off the power of fear, that is, the fear that people ought to have for their children and for generations thereafter (as I have already indicated). While it is true that a *paralyzing* fear does no good, not all fear need be paralyzing. We all conduct our lives with reference to a certain level of fear, and without that fear we would be rendered far less effective at maintaining ourselves and at providing for improvements in the quality of our lives as well as the lives of our families and communities. As Robert Jay Lifton tells us, "[Coming to terms with climate change] creates a mind-set capable of constructive action, and is a significant source of hope." Lifton counsels, as regards fear, that "death anxiety" can be put to constructive use.⁶³ Further, Bloomberg and Pope seem to hold that there is good reason to believe that people are more interested in, and so more motivated by, considerations of improvements in the here and now, e.g. cutting the number of asthma attacks suffered by *other people's* children, today, or increasing the life expectancy of *their neighbors*, today, than they are interested in the lives of people who will be faced with the consequences of climate change decades from now. But if people are as fundamentally selfish as this, on what basis do they believe this? Or else, if they are arguing that people are concerned with *their own children's* asthma and *their own life expectancy*, and that that should be the hook we use to motivate them to action, i.e. their fundamental *egoism*, then I must reject their proffer as capitulation to the darker angels of our nature. Yes, a healthy self-regard is important. But playing to human egoism, to human selfishness, is not the best way to motivate people to adopt good public policies regarding climate mitigation and adaptation, policies that must be based on concern for people everywhere in the world, for people who are total strangers, and for people yet unborn. Only those policies will be sustainable.

1:9 Constructive Fear as Catalyst for Sacrifice

The fear that the lives known to people might not be known to their children was also faced by the Western Allies during World War II, for example. Yet, as Bill McKibben and others have pointed out, major sacrifices were made by the civilian population even in the face of that uncertainty, largely because of fear (and a sense of solidarity) – not because of possible opportunities. Unused pots and pans and scrap metal were set aside to be melted into armaments, Americans accepted gasoline rationing so that fuel would be available for war vehicles, and people funded the war effort through

the purchase of war bonds and through the payment of higher taxes. Almost overnight, automobile manufacturers, such as Ford, started turning out war vehicles by the thousands when just a year or two earlier all they made were civilian cars and civilian trucks for corporate profit. There was shared sacrifice, and pride in both the sacrifice and the sharing. Undergirding such sacrifice was the fear that the sovereignty and self-determination of the country was on the line.

But today, we seem to prefer coddling and infantilization. I realize that may sound a bit hyperbolic or harsh, even a bit unfair (perhaps “soft persuasion” is a more charitable phrase). But what we hear are *suggestions* and *desiderata* about the need to use more energy-efficient light bulbs and to drive more efficient automobiles, while we indulge foolish debates with ardent deniers who are only interested in maintaining their current standard of living, or current levels of profits. Suggestions and desiderata do not in any way reflect the gravity of the problem that we are facing. The fact is, given the exigency, gasoline/petrol-powered vehicles should soon be *outlawed*, fines should be imposed for the overuse of heating oil other than in certain cases, a biting tax on fossil fuels should be immediately imposed (something even embraced by Rex Tillerson, the CEO of Exxon, and the center of a proposal delivered to President Trump by his party’s long-time leaders, including James Baker III) to begin to reflect the real cost of using the atmosphere as a carbon sink, methane emissions from factory farms should be taxed to reflect the true costs of raising animals by the billions for slaughter, and solar panels should be made mandatory for all private homes and buildings, with subsidies and tax credits made available to defray the costs.⁶⁴ As for our food, we must take a hard look at, and then reduce, the enormous quantities of meat and dairy products consumed (not merely tax methane emissions), since the raising of livestock for slaughter as well as for dairy products contributes enormously to GHGs in the atmosphere. Methane is a more potent GHG than carbon dioxide. My point here is only that we – and especially Americans (we whose country was, until recently, the largest producer of GHGs, by far) – are not taking the problem as seriously as we must, and the comparison between how we prepared for the second world war and how we are preparing for climate change makes this clear.

There is indeed an alternative to despair and psychological paralysis, but it is not to be found only in the crafting of new anthropocentric incentives, such as Bloomberg and Pope propose. That alternative is *solidarity* – solidarity with shared determination to meet the challenge head on, *and to pay the necessary costs to do so*. The moral quality of solidarity is head and shoulders above anthropocentric or egoistic considerations. As one commentator has put it:

As in World War II, every aspect of everyday life has to change if the world is going to win the climate war. We're kidding ourselves if we think it won't require sacrifices . . . And we're underestimating the climate threat if we think it can be fixed without addressing sensitive issues such as meat eating, air travel, and continued population growth.⁶⁵

I agree, but only to a degree, with Bloomberg and Pope when they argue that "The changing climate should be seen as a series of discrete, manageable problems that can be attacked from all angles simultaneously. Each problem has a solution. And better still, each solution can make our society healthier and our economy stronger."⁶⁶ But I want to stress that there is more to be gained, in the long run, if we cultivate a new sense of *solidarity* and *stewardship* of the Earth, which will arise from a new vision of our place in the biosphere and a new ethic concerning our relationship with the Earth and with future generations, rather than one that, transactionally, focuses on climate change as a series of discrete problems to be solved. A malignant lung tumor is a "discrete problem" to be solved, and it can be solved with a scalpel, all else being equal. But the physician who does not address the patient's bad eating habits, tobacco smoking, generally unhealthy lifestyle, and the possibility of metastases is guilty of malpractice. That is, we need to cultivate a *metanoia*, not merely discrete solutions. As well, I agree, but only to a degree, with the following claim; my full agreement is precluded because of the dualistic thinking that Bloomberg and Pope proffer:

Instead of debating long-term consequences, let's talk about immediate threats. Instead of arguing about making sacrifices, let's talk about how we can make money. Instead of pitting the environment versus the economy, let's consider market principles and economic growth. Instead of focusing on polar bears, let's focus on asthmatic children. And instead of putting all hope in the federal government, let's empower cities, regions, businesses, and citizens to accelerate the progress they are already making on their own.⁶⁷

All of these suggestions are fine, as far as they go, but they must be subsumed under the requirement to forge a *metanoia*, however abstract or highfaluting that may sound. Remember, we got where we are by solving, *transactionally*, a bricolage of individual problems (industrial, technological, and political) without giving sufficient attention to the accumulated accretions of those solutions across

the environment and across interdependent ecosystems, leading to many different kinds of problems and harms (just consider Rachel Carson’s work on this point, and think of Francis Taylor’s blinkered philosophy of “scientific management”). I reject the “instead of” dualisms proffered by Bloomberg and Pope. The proper approach isn’t an “instead of” approach, isn’t more dualistic and blinkered thinking, but rather it is a *both-and* approach and *holistic* thinking. Those “instead of” prescriptions display just the sort of thinking that got us into the trouble we are in today, and not just as regards the subject at hand, but as regards many other social matters, from race, to class, to gender, to housing. Policy makers have an obligation to take a one-thousand- or ten-thousand-foot view of social and environmental problems, and to think of the durability of the solutions they forge. They should not think like business people or mechanics or managers, whose time horizons are short.

This is why one of the best meditations on the crisis of climate change is *Laudato Si’*, though devoid of the raft of citations found in academic and technical writings on the issue. I say this because *Laudato Si’* is informed by that literature, digests it, and presents the general reader with a holistic reflection on the problem, and suggests holistic solutions. In Chapter Six, under the heading “Ecological Conversion,” *Laudato Si’* calls for an “ecological spirituality.” For those who are not Christians, insert your own faith tradition, or just the word “humanist” or “humanism” where appropriate, as the call for “ecological conversion” is a call to all, not only Catholic Christians:

“The external deserts in the world are growing, because the internal deserts have become so vast.” *For this reason, the ecological crisis is also a summons to profound interior conversion.* It must be said that some committed and prayerful Christians, *with the excuse of realism and pragmatism*, tend to ridicule expressions of concern for the environment. *Others are passive; they choose not to change their habits and thus become inconsistent.* So what they all need is an “ecological conversion,” whereby the effects of their encounter with Jesus Christ become evident in their relationship with the world around them. Living our vocation to be protectors of God’s handiwork is essential to a life of virtue; it is not an optional or a secondary aspect of our Christian experience . . .

In calling to mind the figure of Saint Francis of Assisi, we come to realize that a healthy relationship with creation is one dimension of overall personal conversion,

which entails the recognition of our errors, sins, faults and failures, and leads to heartfelt repentance and desire to change. The Australian bishops spoke of the importance of such conversion for achieving reconciliation with creation: “To achieve such reconciliation, we must examine our lives and acknowledge the ways in which we have harmed God’s creation through our actions and our failure to act. We need to experience a conversion, or change of heart” [emphases added].⁶⁸

The problem before us cannot be solved through an aggregation of siloed steps, as on an assembly line. It can be mitigated that way, but not solved that way. At the present hour, we need the manager, the physicist, the conservationist, the grade school teacher (and perhaps most important, the grade school teacher!), the theologian, and the philosopher. We need the participation of all, and the conversion of all to a new way of thinking about the only planet we have. As Stephen M. Gardiner puts it:

Indeed, our best chance of addressing the [perfect ethical] storm [of climate change] seems to rest with ethical motivation, and especially concern for future generations. If this is correct, knowing how to channel such motivation into appropriate institutions, capture it in good moral theories, and support its development in people’s characters and lives becomes a major task. Many can contribute here, at all levels of society. In the academy itself, psychology, law, economics, political science, sociology, and many other disciplines all have a role to play . . . Clearly, the perfect moral storm in general, and the pure intergenerational problem and global test in particular, pose substantial challenges to business-as-usual.⁶⁹

Only through a new way of thinking will we cultivate new habits, and only through new habits will we cultivate a new way of thinking (I’ll have more to say on this seeming conundrum, shortly). The challenge is more daunting than the creation of technical solutions. The challenge before us is the challenge of re-education on a grand scale and of collaboration across disciplines, and across societies.

1:10 Normal Economics and Politics Are Over (Some Just Don't Know It Yet)

Market libertarians and market fundamentalists (I will use the terms interchangeably, and I think with some warrant) who push back against some of these ideas are, perhaps, among our largest obstacles to dealing with climate change appropriately, perhaps right up there with climate change deniers. (As it turns out, sometimes they are one and the same.) They will obsess in favor of “market-based solutions,” and they will decry the efforts of a “tyrannical government” seeking to impose severe hardships on taxpayers. Such objections are absurd given what we are facing – an emergency of global proportions that has no respect for political borders – and they amount to coddling a citizenry that needs to gird-up, toughen-up, and prepare to do what is necessary for the sake of future generations of human beings and other life on earth. There is an economics-and-politics-as-usual perspective, just as is Mitch McConnell's and so many others' in the Republican Party. But just as the second world war would not abide such a perspective, *a fortiori* climate change does not. Citizens who complain about the hardships of having to buy solar panels or reflective roofing materials clearly lack understanding, and it falls to those who do understand to bring them along, or at least to get them to step out of the way. What is also clear is that poor and so-called working-class citizens will need government's assistance to help make these changes in their lives. The rest, the global middle-class and the wealthy, will have to shoulder much of the burden, just as developed states will have to shoulder much of the burden to assure we do not exceed the 2° C limit. In an age in which inequality is rampant, the very wealthy (who also tend to have the largest carbon footprints) will certainly have to step up and pay far higher taxes than they have. A (what I shall call) Climate-Connected Alternative Tax or “CCAT” should be assessed on the very wealthy, especially where income from capital gains and interest exceeds, say, \$1,000,000 a year, increased at each incremental break-point, with (and this would be critical) severe penalties for evasion. The tax revenues raised would go *directly* into subsidies or a climate mitigation lock-box. Despite the outcry from libertarians and market fundamentalists, *thinking within a framework that is inappropriate in view of the crisis*, the moral demands of the moment speak to the necessity of such substantial policy shifts. Again, during the second world war certain firms were virtually “ordered” to produce the things that the government needed for the war effort. It is more to the point to say that many businesses and industries were happy to assist and didn't need to be coerced:

Basically, Roosevelt made the decision that he had to mobilize the proprietors of the mines, the factories, and the shops. He realized Congress could provide the money, but it could not build the planes, design the tanks, or assemble the weapons. Without the cooperation of industry, massive production would never get off the ground. So the challenge was to bring the proprietors of the nation's chief economic assets into the defense effort as active participants. He recognized also that private business could not find all the capital required for the expansion of the plants nor take the risk that the end of the war would leave them with no orders and excess capacity. So the federal government, through the Reconstruction Finance Corporation, advanced the necessary money to expand the factories, often leasing them to industry. The government developed new sources of supply for raw materials and created quick mass transportation. The government also went into the business of producing synthetic rubber and aluminum, as well as other emerging industries, and helped stimulate new technologies.⁷⁰

There were commercial hardships (as well as windfalls). But the business leaders that complied with the government's requests did so out of an understanding of the urgency and out of patriotism and the threat of a common and dangerous enemy. They were not competing with other firms; they were at war with a threat to their very way of life, albeit a threat with human faces. I predict that new leaders will arise in the face of climate change, just as some have already. When it comes to climate change, normal economic and political thinking has no place. We must enter a "war mode." Yes, the baseline assumptions needed to keep our very critical free-enterprise system functioning will not be gainsaid, as it was not gainsaid by Roosevelt. We don't have time to revisit old ideological arguments about economics and public policy, and we don't need to. Free-market economics won that argument. But there will need to be *bypasses* in our ordinary assumptions, such as the bypasses created by the Reconstruction Finance Corporation. When we think climate change we must think *war*. The war metaphor will help keep the citizenry focused on the exigencies and the threats, and even lead them to accept their own personal sacrifices with a sense of pride and a sense of solidarity, rather than a sense of loss.

1:11 William James and The War Mode

The war metaphor leads me to consider the insights of William James, the father of American psychology and one of the fathers of the American philosophy known as Pragmatism (which is not to be confused with the ordinary sense of the word, though there are overlaps). In a very insightful essay, “The Moral Equivalent of War,” James writes that “The war-party is assuredly right in affirming and reaffirming that the martial virtues, although originally gained by the race through war, are absolute and permanent human goods. Patriotic pride and ambition in their military form are, after all, only specification of a more general competitive passion.”⁷¹ In another of his essays, “What Makes Life Significant,” James recounts a visit to Chautauqua, a town in northwest New York, along the shores of Lake Chautauqua (which is, today, even more resplendent than it was in James’s day):

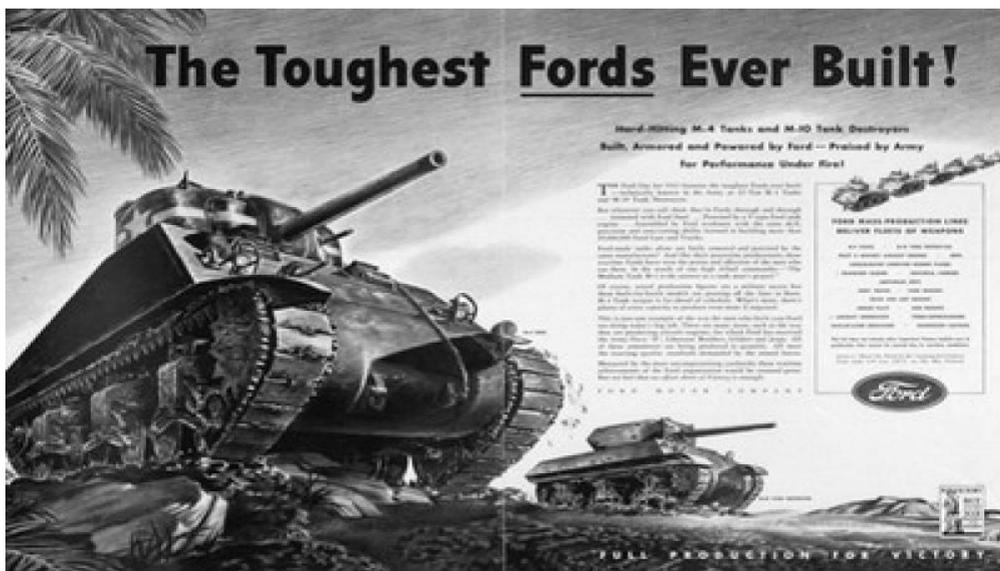


Figure 2. Ford Motor Company advertisement during World War II (Ford Motor Company). In *The American Legion Magazine*, Volume 34, No. 6, June 1943.



Figure 3. Scrap metal drive during World War II, April 1942. Franklin D. Roosevelt Presidential Library & Museum.

A few summers ago I spent a happy week at the famous Assembly Grounds on the borders of Chautauqua Lake. The moment one treads that sacred enclosure, one feels one's self in an atmosphere of success. Sobriety and industry, intelligence and goodness, orderliness and ideality, prosperity and cheerfulness, pervade the air . . . You have kindergartens and model secondary schools . . . You have culture, you have kindness . . . You have, in short, a foretaste of what human society might be.

. . . And yet what was my own astonishment, on emerging into the dark and wicked world again, to catch myself quite unexpectedly and involuntarily saying: 'Ouf! what a relief! Now for something primordial and savage . . .

Such was the sudden right-about-face performed for me by my lawless fancy! There had been spread before me the realization—on a small, sample scale of course—of all the ideals for which our civilization has been striving . . . a Utopia.

. . . So I meditated. And, first of all, I asked myself what the thing was that was so lacking in this Sabbatical city, and . . . I soon recognized that it was the element that gives to the wicked outer world all its moral style, expressiveness and

picturesqueness,—the element of precipitousness, so to call it, of strength and strenuousness, intensity and danger . . . What excites and interests the looker-on at life . . . is the everlasting battle of the powers of light with those of darkness; with heroism, reduced to its bare chance . . . But in *this* unspeakable Chautauqua there was no potentiality of death in sight anywhere, and no point of the compass visible from which danger might possibly appear. The ideal was so completely victorious already that no sign of any previous battle remained, the place just resting on its oars. But what our human emotions seem to require is the sight of the struggle going on. The moment the fruits are being merely eaten, things become ignoble . . .

Such absence of human nature *in extremis* anywhere seemed, then, a sufficient explanation for Chautauqua's flatness and lack of zest [emphases added].⁷²

James recognized that what is required for a life of significance and meaning is a blend of ideals and of the virtues that propel us to make them realities in the actual world. This need not be done through and in the agonism of *actual* war, but is seen in the *agonism* of the non-martial strivings of men and women of all stations of life, from the very rich to the very poor. “[Not] to our generals and poets, I thought, but to the Italian and Hungarian laborers in the Subway, rather, ought the monuments of gratitude and reverence of a city . . . to be reared,” James tells us. He goes on:

It is quite obvious that something more than the mere possession of ideals is required to make a life significant in any sense that claims the spectator's admiration. Inner joy, to be sure, it may *have*, with its ideals; but that is its own private sentimental matter. To extort from us, outsiders as we are, with our own ideals to look after, the tribute of our grudging recognition, it must back its ideal visions with what the laborers have, *the sterner stuff of manly virtue*; it must multiply their sentimental surface by the dimension of the active will, if we are to have depth, if we are to have anything cubical and solid in the way of character [emphases added].⁷³

James's prescribed agonism does not see the contests as necessarily unsalutary, for agonism, at its best, can force one to recognize the significance of the life of the persons or institutions – or even the natural world – with which one is engaged in a contest. James's view of the “flatness” of Chautauqua

led him first through a phase of scorn that, at first blush, may be addressed only by a return to the harsh realities of the world – actual wars, actual clashes, real poverty, etc. – for at least in this maelstrom the capacities of the human spirit may be engaged, developed, expanded, and celebrated. Better to tolerate such wars, clashes and poverty than to live in a world that is totally at rest, in which the fruit is “merely eaten” with no memory of or regard for the toil and sweat required to bring it to table, in which history has ended. Here James and one of the fathers of American conservation, Aldo Leopold, share a similar insight and warning about the dangers of effete-ness as that cultivated in advanced market economies. Wrote Leopold in his famous *A Sand County Almanac*, “There are two spiritual dangers in not owning a farm. One is the danger of supposing that breakfast comes from the grocery, and the other that heat comes from the furnace.”⁷⁴ There is something in us that is quickened by contest, by struggle, i.e., by the need to confront and defeat a true enemy, a true threat.

But James was no war monger. He realizes that that agonism and lives lived *in extremis* may be had without pervasive human degradations, *anomie*, and the miseries of actual war. For the agonism that he passingly thought to be the qualities of poets, captains of industry, athletes, and warriors are found everywhere one can find ideals fused with virtues strenuously actualized in the service of such ideals. So we find him telling us in “The Moral Equivalent of War” that the agonism that makes life worth living can be channeled into peaceful pursuits. James believed that martial agonism – the devotion to a cause, the willingness to fight and to die for it – is one of our *better* impulses, and has forged the rise of human civilization. Yet he believed that martial agonism can be redirected into non-martial pursuits, equally filled with the “romance” that is often captured in reflections and stories about wars, revolutions, and violent clashes. We hear in Alfred, Lord Tennyson’s poem “The Charge of the Light Brigade” a message that stirs sympathy and pride at the thought of men riding into extreme mortal danger, into almost certain death, for the sake of country. But the charge might be equally stirring if it comes in response to a call to mobilize and fight against a threat deadlier than an opposing army, a threat that can not only kill you and your countrymen/women, but rob you, your, and their descendants of life. In relative terms, those of us in rich countries are living in “Chautauqua,” a utopia of sorts, and so, once again, note that James employs the word “utopia” in his proffer:

Having said this much in preparation, I will now confess my own utopia. I devoutly believe in the reign of peace . . . The fatalistic view of the war function is to me nonsense, for I know that war-making is due to definite motives and subject to prudential checks and reasonable

criticisms, just like any other form of enterprise. And when whole nations are the armies, and the science of destruction vies in intellectual refinement with the science of production, I see that war becomes absurd and impossible from its own monstrosity. Extravagant ambitions will have to be replaced by reasonable claims, and nations must make common cause against them.

. . . Martial virtues must be the enduring cement; intrepidity, contempt of softness, surrender of private interest, obedience to command, must still remain the rock upon which states are built — unless, indeed, we wish for dangerous reactions against commonwealths, fit only for contempt, and liable to invite attack whenever a centre of crystallization for military-minded enterprise gets formed anywhere in their neighborhood.

. . . The martial type of character can be bred without war. Strenuous honor and disinterestedness abound everywhere. Priests and medical men are in a fashion educated to it, and we should all feel some degree of its imperative if we were conscious of our work as an obligatory service to the state. We should be *owned*, as soldiers are by the army, and our pride would rise accordingly. We could be poor, then, without humiliation, as army officers now are. *The only thing needed henceforward is to inflame the civic temper as past history has inflamed the military temper.* H. G. Wells, as usual, sees the centre of the situation. “In many ways,” he says, “military organization is the most peaceful of activities. When the contemporary man steps from the street, of clamorous insincere advertisement, push, adulteration, underselling and intermittent employment into the barrack-yard, he steps on to a higher social plane, into an atmosphere of service and cooperation and of infinitely more honorable emulations. Here at least men are not flung out of employment to degenerate because there is no immediate work for them to do. They are fed and drilled and training for better services. Here at least a man is supposed to win promotion by *self-forgetfulness* and not by self-seeking . . .” [Emphasis added.]⁷⁵

And so must we be self-forgetful if we are, as global citizens, to address climate change, and the threat it will be to our billions of descendants.

1:12 Let's Not Romanticize: Toward a New Environmental Realism

Before I close this Chapter, I want to say a few words about how we got here, or better put, *why* we got here, i.e. how we got to the point of heating the earth to critical levels. Often, we forget that “mother nature” – that happy locution that evokes visions of sweet nurturing and of Madonna and Child – has not been particularly kind to human beings (or for that matter, tens of thousands of other species), even as she has given us life and has allowed us to come this far without extinction. We speak triumphantly and often of how we “beat the odds” as a species, but we just as often forget the misery and sacrifices of those members of our species who did not live to see their way to adulthood or to live lives free from crippling diseases. The toll of human misery has been staggering, even unbearable to contemplate. “Mother Nature” did not fit us with claws, but she did bestow upon us slow speeds relative to a number of predators which have hunted and killed us. She gave us no fangs, no excess tissues to protect against extreme cold or heat or friction, no gills to breathe the water that sometimes engulfs us, no hard hooves to spare us injury from sharp objects as we traversed the ground, and, though we have an amazing immune capacity, we are often overcome by microorganisms that lead to serious illnesses and painful deaths. We are susceptible to various toxins (some lethal) found in a variety of plants, funguses, fish, and parasites. And, of course, there are the genetic diseases, many of which are horrific and heartbreaking. Many even succumb to sunlight. None of these basic facts has changed since *Homo sapiens* (or even our early hominid forerunners) came on the scene, although we have found ways to make our lives more secure and healthier, but most of that only in recent years.

We have suffered and yet still suffer sweltering heat, bitter cold, floods, tidal waves, tornadoes, electric storms, harsh landscapes, epidemics, pandemics, forest fires, poisoning, animal attacks, insect infestations, blighted crops, injuries of all sorts and too many to be named, and the consequences of our own honest or innocent mistakes (the ancient Egyptians smeared their faces with pure mercury, for cosmetic purposes, and young women in 20th century America who were employed to paint the glow onto watch hands ingested enough radium, by licking the points of their tiny paintbrushes, to destroy their bones and die early deaths), and we have had to dwell in the darkness of night which exposed us to a range of different hazards. And let us not forget the varieties of mental illness that plague us, either through predisposition or because we have failed to engage society, understood broadly, in ways that might have allowed us to avoid them.

Metaphysically, many of us have often felt abandoned in a universe that seems to pay no regard to our existence – and even people of deep religious faith succumb to the cold harshness of our constant contest with both other human beings and the non-human natural world, even those who are the most fortunate among us (misery and trepidation have a way of invading both the hut and the mansion). Human misery is the subject of that sub-field of theology known as theodicy, which grapples with the compatibility of a benevolent God with the desolation found in so many of the lives of our brothers and sisters around the world and spanning all generations. We recall Voltaire, in his little book *Candide*, lampooning the blind, indomitable sanguinity of the German philosopher G.W. Leibniz (in the character of Dr. Pangloss) with respect to Leibniz’s idea of this world being “the best of all possible worlds” and all things being as they are, and as they must be, because of “the principle of sufficient reason,” which supposedly suffuses the universe. Voltaire’s lampooning is stark and damning:

Never was anything so gallant, so well accoutered, so brilliant, and so finely disposed as the two armies. The trumpets, fifes, hautboys, drums, and cannon made such harmony as never was heard in Hell itself. The entertainment began by a discharge of cannon, which, in the twinkling of an eye, laid flat about 6,000 men on each side. The musket bullets swept away, *out of the best of all possible worlds*, nine or ten thousand scoundrels that infested its surface. The bayonet was next *the sufficient reason* of the deaths of several thousands. The whole might amount to thirty thousand souls. Candide trembled like a philosopher, and concealed himself as well as he could during this heroic butchery . . . Candide, amazed, terrified, confounded, astonished, all bloody, and trembling from head to foot, said to himself, “If this is the best of all possible worlds, what are the others? . . .” [emphases added].⁷⁶

When we lament where we are now concerning climate change (as well as the degradation of the environment generally), we must remember these facts, for they are indeed *facts*. No, it isn’t only the fact of war, which we bring upon ourselves or that is otherwise delivered unto the innocent who become its collateral fodder and justified under “the principle/doctrine of double effect,” it is more likely the ordinary afflictions that nature itself delivers – the “cannon balls” and “musket bullets” of Ebola, HIV, stillborn deliveries, drownings, typhoons, blizzards, mudslides, earthquakes, and lightning fires. A Panglossian disregard of them in an attempt to paint nature, romantically, as “pure”

and “innocent” and always “wholesome” will not do. For it is because of what nature has delivered unto us, so often, that human beings sought to find ways to make our lives safer, more predictable, and easier.

For well over a hundred years, this is precisely what the use of fossil fuels has helped our species to do. Fossil fuels have been one of the pillars upon which modern civilization has been built. Because of them we no longer fear the night, we have effective sewage treatment because we have pumps powered by electricity, we have fast transportation, we have hospitals and clinics that buzz with life-saving machines, we have super-productive agriculture, and we have many tools and inventions undreamt of prior to the industrial revolution. I can see no way to being hyper-critical of the coal companies, or of ExxonMobil, or of BP, or of the dozens of other oil and gas producing companies that have made modern civilization possible (their reported deceptions and business avarice aside, at least for the moment). These companies are far from angelic, but the snide caricatures of them seem, to me, wholly out of place – even juvenile. No, they are not angelic, and their business practices around the world have led to the displacements of communities (such as the Ogoni people of the Niger Delta), the pollution of pristine shorelines (the Exxon Valdez disaster comes to mind, but there are many, many other examples), and the creation of undersea dead zones (the result of BP’s ocean drilling activity in the Gulf of Mexico, as just one example). And nation-state protection of them has destabilized the Middle East and has led to a great deal of bloodshed. Yet, I doubt most of their severest critics would opt to live one year without the capacity to flip-on a light switch, take a cross-town bus, use their dialysis machines to clean their blood, or eat produce made possible by modern agricultural techniques. Their more recent role as merchants of doubt, however, will get no defense here, and for their role in such doubt they deserve harsh punishment. The point I make is a general one, an attempt to bring some perspective to the fixing of blame.

Let us remember this: For millennia, the very environment that we see the need to protect – “Mother Nature” – has often killed us and tossed aside other species like jetsam. An adolescent grasp of the world and an adolescent form of environmentalism dismisses these facts and leads to a forgetfulness of just how dangerous the non-human world, out of which we ourselves come and of which we ourselves are a part, has been and still can be. Were you able to ask the dead of Pompeii and Herculaneum, or the victims of the December 2004 Asian tsunami, about benevolent “Mother Nature” they might have a different and less cheerful story to tell you. Yes, we are part of nature. Yes, we

need to conserve natural spaces. Yes, we must be good stewards of the lands and waters that we use. But let us not forget that we are often the victims of that same nature – and we probably always will be. One can make peace with this, but the fact remains.

It goes without saying – but I will say it anyway – that we human beings have made many mistakes, and as regards the environment, terrible mistakes. Hopefully we shall have time to correct those mistakes. But if, at last, we run out of time because the proposals in this book and in many others (proposals that address environmental issues broadly or climate change specifically) are not accepted and acted upon, I will shed no tears for nature *simpliciter*, so often as much killer as nurturer, as much mauler as healer, and not only of our species, but of *all*. Let us proceed with our eyes wide open as we address climate change, but let us avoid romanticism, thin sentimentalism, and false assessments of “pristine” and “wonderful” and “good” wilderness. While I am versed in the literature on environmental ethics I proffer, for practical purposes, what the philosopher Andrew Light has called “enlightened anthropocentrism” – what I take to be a *transitional* attitude and perspective. I think it is the most useful for producing better policies, policies that serve to preserve ecosystems and the non-human biome as much as they serve human needs. The world’s publics and its policymakers will not descend into the turgid debates of philosophers, such as those between ardent *non-anthropocentrists*, at one end of the spectrum, and equally ardent anthropocentrists (which I shall call “vulgar anthropocentrists”), at the other end.⁷⁷ Light writes:

A public and applied environmental ethics would not rest with a mere description of the value of nature (even a description that justified a secure foundation for something as strong as a claim for the rights of nature). A public environmental ethics would further question whether the description of the value of nature it provided could possibly cause human agents to change their moral attitudes about nature, taking into account the overwhelming ethical anthropocentrism of most humans. As such, a public environmental ethics would have to either embrace an enlightened anthropocentrism about natural value or endorse a pluralism which admitted the possibility, indeed the necessity, of sometimes describing natural value in human-centered terms rather than always in non-anthropocentric terms.⁷⁸

I don't follow Light, however, in the distinction he draws between enlightened anthropocentrism and the pluralism he describes, so I subsume the latter under the former, as it seems to me to be an easier way to conceptualize an approach to environmentalism that stands the best chance to spur the world's publics to action. This subsumption allows the person who adopts enlightened anthropocentrism to have moments in which she shifts her moral imagination all the way over to the non-anthropocentric end of the spectrum (though never, because it is *enlightened*, entirely to the vulgar anthropocentric end which ignores the needs of other species and the healthy operations of ecosystems). Given this freedom of conceptual movement, one is permitted to maintain deep spiritual connections with the non-human world, and experience the salutary effect (and affect) of that connection (*Tat Tvam Asi*, the Vedic sages tell us – “That, Thou Art”). Just as there is “the necessity, of sometimes describing natural value in human-centered terms rather than always in non-anthropocentric terms” there is also utility, sublimity, and moral insight that attend describing nature's value in non-anthropocentric terms rather than always in anthropocentric terms. Here is where *judgment* and *sagacity* are required, rather than pedantic philosophical debates. My own version of enlightened anthropocentrism leaves room for voices that prefer to talk of the non-human world as having intrinsic value so long as those voices do not sever, *utterly*, considerations of human goals and needs in setting an environmentalist policy agenda. I would want the Earth to continue generating new life and new species even if humans were no longer on the scene, or faced the possibility that we would not be; but it is my strong preference that the Earth do so while we humans are still here and still flourishing (or at least trying to). I assume that that strong preference is also the strong preference of most people. Yet, I will say that, while philosophers continue to debate the utility and sense of the idea of the Earth having intrinsic value, my own environmentalism is guided by this practical moral maxim leading me to a practical intrinsicism. I shall call this the *Maxim of Practical Intrinsicism*: One should desire the Earth to continue as a generator and preserver of life even if it became clear that human beings would no longer be members of the biotic community; and were one forced to choose between the survival of human beings and the survival of the Earth, one should choose the Earth.

This principle seems incongruent to what I have just said about the pain and suffering our species has had to endure at the hands of the very nature that produced us, but it is not. Valuing the Earth this way gives rise to a deep ecological imaginary whereby we preserve our best chances to protect both the Earth and human interests – thus, the word “Practical.” Also, and admittedly, the *Maxim of*

Practical Intrinsicism is question begging, as it assumes that which the philosopher endeavors to determine, i.e. whether the Earth has intrinsic value, or whether all value is based upon human interests and preferences. Beyond that, it is hard to imagine the scenario in which I or anyone else would have to make such a choice. But I maintain and utilize the *Maxim of Practical Intrinsicism* as a *meta principle* and heuristic which may serve as a hedge to keep us from slipping into the objectification and commodification of the world, i.e. into vulgar anthropocentrism. Within this deep ecological imaginary, this intrinsicity can be construed to emanate to all life forms, and so to all ecosystems and to all features of ecosystems that support them (the non-living or elemental features of the Earth), and so it can preserve our sense of reverence for each, and all. It is the practical consequence with which I am concerned, not whether an unassailable metaphysical argument can be fashioned in defense of intrinsic value. Whether the Earth has intrinsic value or not is not something to be philosophically settled. Ultimately, whether it does or does not comes down to a choice, although that choice can be philosophically and scientifically informed.

Cleavage to and employment of the Maxim does not entail romanticism or mawkishness. Let us recall that nature is too dangerous to be the stuff of romantic and mawkish attitudes, just as it is too beautiful and too often the cause of sublime experiences to be reduced to a collection of commodities or a sink for our various wastes. In considering nature, we can reach up and touch the face of God, or feel the hot breath of the Angel of Death on the backs of our necks. Nature is as laced with beauties as it is red in tooth and claw. Nature itself has given us our big brains. With them, we see and understand it for what it is (at least, we try to, and we're still learning) – our parent and, at last, our executioner, “Mother Nature,” “*Hagia Sophia*,” bitch mother, and Kali, all rolled into one. “She” can’t expect that we will go silently or quietly into that last, long night, given her gift to us of cognition, given her gift of our big brains, and of our will to live. In a bond of global human covenant, let’s not disappoint her. Let’s fight for our futures and for the futures of other species. For as she threatens with one hand, she points to the way out of the morass with the other. Let’s become proper stewards of the world. There is still time, though there will be pain, and in that time, and through that pain, there is much work to do. Are we up to the task, intellectually, morally, spiritually, and politically, just as we think we are up to it technologically? That remains to be seen. Much has to do with whether or not we recognize that we are only members of the biotic community, not its masters, conquerors, and gods.

Chapter 2 ►

METANOIA

Respect is to be given for all beings placed upon this earth by the Creator.

– Tecumseh, Leader of the Shawnee (1768–1813) ⁷⁹

Our ability to perceive quality in nature begins, as in art, with the pretty. It expands through successive stages of the beautiful to values as yet uncaptured by language. – Aldo Leopold ⁸⁰

You think you own whatever land you land on
The Earth is just a dead thing you can claim
But I know every rock and tree and creature
Has a life, has a spirit, has a name ...
The rainstorm and the river are my brothers
The heron and the otter are my friends
And we are all connected to each other
In a circle, in a hoop that never ends.

– From the song, “Colors of the Wind”
written by Alan Menken and Stephen Laurence Schwartz ⁸¹

Abstract: Human beings are creatures of habit, it is often said. We are often conditioned to see things in certain ways. Often, our habits of action and sight leave us ignorant of states of affairs that should matter, but which it does not even occur to us to note or engage. We are rendered *insensitive* to them. Such is the power of habit and of conditioning, of socialization and ideological reproduction. It sometimes takes moments of epiphany to jolt us into new habits and sharper vision, to allow us to see for the first time that which was always before us. Such jolts can lead to what I have called herein, *metanoia*. Engaging the challenge of climate change, in particular, and of our abuse of the environment, in general, will require such *metanoia*, and the *repetition* of such *metanoia*, until our attitudes and our visions concerning the Earth are reconstituted into a new ecological imaginary.

2:1 Myopia and Blindness

Human beings can tend toward myopia on many critical issues until our visions are sharpened by undeniable truth, “hot realities” that can no longer be ignored or dismissed – or when we are faced with losing it all; when we are at the very edge of the precipice or know that we are fast approaching

it. It plays-out over and over again. We see only the road in front of us and not very much else, until we are jolted out of complacency.

Limited vision has its advantages, of course. It allows us to – actually *forces* us to – focus on the matters at hand, the tasks right before us that require our attention. It allows us to conserve our mental and physical energies as we undertake life’s necessary performances with constant reference to our playbooks of habits. Change is not welcome unless it is clear that there will be a substantial “payoff” if that change is embraced. But when it is not clear, or when the payoff is far down the road, and when the expenditures of energy will be considerable, we dig in, drag our heels, even fight against the people or forces or circumstances that are presenting us with the necessity for change, even to the point of treating them as enemies. We can even deny actual *facts* when faced with the need to change. When it has come to the treatment of women, rampant racism, tribal and national affiliations, the treatment of workers, the treatment of children, and the care of the environment, we have, for millennia, walked about only partially or poorly sighted. We have, because of habit or because of choice, not seen what was/is in plain sight. The irony is that we are so sure of our vision and our habits (which, socially and culturally, become traditions – *traditio*, or that which is “handed down”), and so confident in our grasp of what we take to be “reality,” that we actually celebrate and valorize our limited sight. When the habits and the traditions harden it is difficult to tell us that we are only a few steps removed from viciousness, cruelty, or even stupidity. With new vision there is, at least often, pain. New vision can uproot and upend, and it can shatter identities, leaving the subject existentially disoriented and in need of a reconstitution of self.

We think that we are somehow off the spectrum of animality because we groom ourselves in the morning, attend religious services or universities, and have mastered a lot of edifying “stuff.” But let a shock enter our lives and all of the beatitudes of the Sunday school lecture and all the sublimities of Tagor’s *Gitanjali* or Byron’s odes melt away, like wax in a kiln, to reveal what is sometimes hard not to call a brute or, sometimes, a devil. Knowing this is our first line of defense against it. This tendency to cling to what is known and familiar, something common among animals, is linked to a psychological need in humans – the need for epistemic closure. The need for epistemic closure or, as the American philosopher Charles Sanders Peirce put it, the need for “settlement of opinion,” is powerful. Settlement of opinion is like settled customs; it allows us to preserve our energy, and so it,

too, serves an important function from the point of view of evolutionary biology, from the point of view of our animality. But the danger in settled opinion or settled belief is that it can interfere with the growth and innovation that will allow us to meet new challenges and to better understand ourselves and our obligations. As Robert Hoyk and Paul Hersey put it:

The need for closure is “the desire for a definite answer on some topic, any answer as opposed to confusion and ambiguity.” It’s the tendency to jump on the first opinion that comes to mind instead of tolerating a state of not knowing and taking the time to look at a problem or judgment from many different angles. The need for closure is augmented under work conditions that make processing of information more difficult: time pressure . . . , fatigue, and excessive background noise. When such conditions exist, it’s more difficult to tolerate a state of confusion and ambiguity. Although need for closure is influenced by situational factors, it is also a personality trait. Some people are more able to tolerate states of ambiguity than others. Arie Kruglanski has developed the Need for Closure Scale, which measures this personality dimension. Those high in the trait of need for closure are more apt to endorse items on the scale such as, “I usually make important decisions quickly and confidently,” “I do not usually consult many different opinions before forming my own view,” “When I’m confused about an important issue, I feel very upset,” or “It’s annoying to listen to someone who cannot seem to make up his or her mind.”⁸²

Sometimes, the force of an argument leaves us no option other than to engage in introspection, to recognize our myopia, or to “unclose” or unsettle a belief that had been closed and settled. Given the considerable emotional energy utilized to maintain homeostasis, it is not always an argument or a few new but marginal facts that spur us to change our minds, or even to catalyze full-blown *metanoia*. Sometimes, at a moment in which we do not expect to, we “simply” “see” the need to give up a long-held belief, point of view, and/or attitude – although the “simply” rests on a ground of preconditions that are not always immediately discernable but that allow the change, the *metanoia*, to become possible. On occasion, a personal and sudden *epiphany* creates a transformative moment. Even many of those persons whom we admire the most required something to shake or shock them in order for them to break through their “visual” limitations so that they might see something critically important

to which they had been (sometimes conveniently) blind. To demonstrate this point I offer three examples of people seemingly very unrelated to one another and on wholly different missions in life. The first is that of Aldo Leopold, whom I mentioned earlier and to whom I will refer again. The second is that of Malcolm X. The third is that of Saul of Tarsus. I could have chosen from among dozens of others, both women and men, but these three individuals will do.

2:2 Aldo Leopold's "Green Fire"

One does not often talk of Aldo Leopold (1887 – 1948) as being myopic or blind. To the contrary, Leopold is celebrated as one of our great environmental thought leaders and as one of the fathers (along with Theodore Roosevelt, Gifford Pinchot, and several others) of the land conservation movement in the United States. In his very early adulthood his vision regarding the interdependence of biota and ecosystems was not as sharp as it would come to be later in life. As regards that interdependence, the scales began to fall from Leopold's eyes one day, and quite out of the blue (or perhaps I should say out of the *green*), as recorded in a rather famous passage from his book, *A Sand County Almanac – And Sketches Here and There*, a masterpiece that crosses genres and disciplines and evokes a sense of kinship with the natural world and with species both extant and extinct. Leopold wrote *A Sand County Almanac* near the end of his life. It was published a year after his death.

Leopold was an outdoorsman, a hunter, and a lover of the land and its biota before he was a conservationist in any full sense of the word. "Conservationism" in the United States was, in fact, a new thing under the sun at the time Leopold reached adulthood and became one of the first professionals employed by the new National Forest Service, after completing his graduate work at the also-new Yale School of Forestry. That is, his view of the "outdoors" was, in his youth, very much the view of the myopic (though certainly not vulgar) anthropocentrist, though his love of the land, cultivated in him by his father, Carl Leopold, was deep – far deeper than most of his contemporaries. As we all are, Aldo Leopold was a son of his times. Believing that wolves were a nuisance species that should be extirpated to allow for game to increase toward their maximum numbers, Leopold had no compunction about killing wolves on sight, until *something* spoke to him, jolted him, causing his field of "vision" to widen and deepen. What he wrote about the moment that began his transformation

has the qualities of good poetry, and reads like the account of a revelation received by a prophet. In *A Sand County Almanac*, it is recounted under the heading (in the essay), “Thinking Like a Mountain”:

Only the mountain has lived long enough to listen objectively to the howl of a wolf. Those unable to decipher the hidden meaning know nevertheless that it is there, for it is felt in all wolf country, and distinguishes that country from all other land. It tingles in the spine of all who hear wolves by night, or who scan their tracks by day. Even without sight or sound of wolf, it is implicit in a hundred small events: the midnight whinny of a pack horse, the rattle of rolling rocks, the bound of a fleeing deer, the way shadows lie under the spruces. Only the ineducable tyro can fail to sense the presence or absence of wolves, or the fact that mountains have a secret opinion about them. My own conviction on this score dates from the day I saw a wolf die. We were eating lunch on a high rimrock, at the foot of which a turbulent river elbowed its way. We saw what we thought was a doe fording the torrent, her breast awash in white water. When she climbed the bank toward us and shook out her tail, we realized our error: it was a wolf. A half-dozen others, evidently grown pups, sprang from the willows and all joined in a welcoming mêlée of wagging tails and playful maulings. What was literally a pile of wolves writhed and tumbled in the center of an open flat at the foot of our rimrock. In those days we had never heard of passing up a chance to kill a wolf. In a second we were pumping lead into the pack, but with more excitement than accuracy: how to aim a steep downhill shot is always confusing. When our rifles were empty, the old wolf was down, and a pup was dragging a leg into impassable slide-rocks. We reached the old wolf in time to watch a fierce green fire dying in her eyes. I realized then, and have known ever since, that there was something new to me in those eyes—something known only to her and to the mountain. I was young then, and full of trigger-itch; I thought that because fewer wolves meant more deer, that no wolves would mean hunters’ paradise. But after seeing the green fire die, I sensed that neither the wolf nor the mountain agreed with such a view.

Since then I have lived to see state after state extirpate its wolves. I have watched the face of many a newly wolfless mountain, and seen the south-facing slopes wrinkle with a maze of new deer trails. I have seen every edible bush and seedling browsed, first to anaemic desuetude, and then to death. I have seen every edible tree defoliated to the height of a saddlehorn. Such a mountain looks as if someone had given God a new pruning shears, and forbidden Him all other exercise. In the end the starved bones of the hoped-for deer herd, dead of its own too-much, bleach with the bones of the dead sage, or mold under the high-lined junipers.⁸³

Leopold's insight led to what environmentalists would later refer to, in less poetic language, as "trophic cascade," i.e. the series of side-effects that follow the removal of a top predator from an ecosystem. Why did Leopold not come to this realization earlier? Why did he not understand that a predator was not simply an incumbrance to human beings' desire to hunt, whether for meat or for the twisted pleasure of killing (which some call "sport")? Why did he not see earlier that a mountain range or a forest is an ecological *system*, and that all the life there is interrelated, including the wolves which were and are among the largest and most obvious of the megafauna in the field – that the removal of one species through incontinent hunting (and, even now, I find the scene of shooting into a gathering of frolicking and defenseless animals more than disquieting, even enraging) would or could have very deleterious effects on the rest of the ecosystem?

Leopold was young when he had his epiphany (just twenty-two years old), and, per his own account, "full of trigger itch." As I said, he was a son of his times. It does take time to mature such that one is *ready* for an epiphany, so I am not indicting. (Indeed, Leopold is one of my heroes, and it should be noted that it took me decades to arrive at my own sensibilities about the environment, and they are still evolving.) What is important here is that he was transformed, and transformed, thankfully, quite early in life. This incident, wherein he saw the "fierce green fire" die in the wolf's eyes, commenced the transformative "moment," a "moment" reminiscent of those described in Native American philosophies and religions. (See, for example, Harold Harrod's *The Animals Came Dancing: Native American Sacred Ecology and Animal Kinship*.) Why this *particular* moment, given that he had hunted all his young life and had seen dead wolves before? It is hard to say. Epiphanies are often uncanny in just this way. Nevertheless, it was important that the moment happened – important for

all of us. Leopold, because of that moment, was set on the road to true holism, seeking to understand the linkages between every lichen, mammal, bird and plant (etc.) in an ecosystem – a complicated web of life and water and rocks and sun, of bacteria and fungi, of mosses and grasses and flowering plants, of wolves and deer, of watersheds and soil, each of which can be disturbed only at the risk of affecting or, at worst, imperiling the web itself.

I will have more to say about Leopold’s valuable insights later. But for the current purpose, I wish to focus on this – that Leopold’s epiphany did not come because of mere scientific study or logic chopping in an armchair. He was gripped, finally, by the emotional power of the death of an animal he so frequently hunted or saw hunted (or encouraged to be hunted) without any such epiphany. The death of the wolf, that particular wolf, was revelatory, personally *apocalyptic*. That revelation led to a blizzard of scientific studies and new insights. Those who deny the power of affect in the process of our education about the natural world should pay heed to Leopold’s epiphany, for it was filled with affect, though affect alone is never enough. Leopold himself wrote: “The evolution of a land ethic is an intellectual as well as emotional process.”⁸⁴ Part of the *metanoia* (itself a process) needed to address the environmental catastrophe we have caused will come from a new *felt* connection with the rest of the natural world – a felt connection that no philosophical treatise or policy manual can replace – combined with our scientific knowledge of it.

2:3 Malcolm X in Cairo

To jump far afield (or *seemingly* far afield), we have another story – the story of Malcolm X (1925—1965), the black nationalist American Muslim who fought vigorously to give voice to a justifiably angry people. Prior to his undertaking the *Hajj* (the pilgrimage to Mecca, in Saudi Arabia, which is required of each able-bodied Muslim, whose circumstances permit, at least once in his or her lifetime), Malcolm X’s speech was scathing and vitriolic concerning whites. He essentialized their whiteness, making white skin a sign of inveterate evil and incorrigible moral depravity. As he saw it, he was just returning the “favor” of sentiments long-expressed toward blacks by whites. He referred to whites as “blue-eyed devils,” returning the insults, hostility, and anthropological conclusions held for centuries by Europeans about so-called “Negroes” (the invented locution that served to strip

people of African descent of their particular ethnic and religious identities, merging them all under a single, invented term that reduced them to a word that referenced phenotype only). Malcolm's perspective and vitriol were understandable, given the conditions that Africans in America had to endure for centuries, and what Africans themselves, in Africa, had to endure under European colonial rule (against which Malcolm railed, as well), and given what he and his family had endured at the hands of whites (Malcolm's father was killed by marauding white supremacists and his family was abused and ripped apart by other whites). But as both a thinker and leader, his understanding of both Islam and race were in need of correction and refinement, and that correction and refinement would come as a result of his undertaking the *Hajj*. It isn't that some new anthropological *argument* or discovery was made during the *Hajj*. It is simply that the facts before him forced him to draw some new conclusions about race, about whiteness specifically, and about himself. Malcolm had to reconsider his own epistemic closure. Here he speaks of time he spent passing through Cairo, Egypt in connection with the *Hajj*:

The major press, radio, and television media in America had representatives in Cairo hunting all over, trying to locate me, to interview me about the furor in New York that I had allegedly caused—when I knew nothing about any of it. [The furor concerned, among other things, controversial remarks Malcolm made concerning the assassination of John F. Kennedy, in which he suggested that the assassination was simply the “chickens coming home to roost.”] I only knew what I had left in America, and how it contrasted with what I had found in the Muslim world. About twenty of us Muslims who had finished the Hajj were sitting in a huge tent on Mount Arafat. As a Muslim from America, I was the center of attention. They asked me what about the Hajj had impressed me the most. One of the several who spoke English asked; they translated my answers for the others. My answer to that question was not the one they expected, but it drove home my point.

I said, “*The brotherhood!* The people of all races, colors, from all over the world coming together as one! It has proved to me the power of the One God.” It may have been out of taste, but that gave me an opportunity, and I used it, to preach them a quick little sermon on America's racism, and its evils. I could tell the impact of this upon

them. They had been aware that the plight of the black man in America was “bad,” but they had not been aware that it was inhuman, that it was a psychological castration. These people from elsewhere around the world were shocked. As Muslims, they had a very tender heart for all unfortunates, and very sensitive feelings for truth and justice. And in everything I said to them, as long as we talked, they were aware of the yardstick that I was using to measure everything—that to me the earth’s most explosive and pernicious evil is racism, the inability of God’s creatures to live as One, especially in the Western world.

I have reflected since that the letter I finally sat down to compose had been subconsciously shaping itself in my mind. The *color-blindness* of the Muslim world’s religious society and the *color-blindness* of the Muslim world’s human society: these two influences had each day been making a greater impact, and an increasing persuasion against my previous way of thinking. The first letter was, of course, to my wife, Betty. I never had a moment’s question that Betty, after initial amazement, would change her thinking to join mine. I had known a thousand reassurances that Betty’s faith in me was total. I knew that she would see what I had seen—that in the land of Muhammad and the land of Abraham, I had been blessed by Allah with a new insight into the true religion of Islam, and a better understanding of America’s entire racial dilemma. After the letter to my wife, I wrote next essentially the same letter to my sister Ella. And I knew where Ella would stand. She had been saving to make the pilgrimage to Mecca herself. I wrote to Dr. Shawarbi, whose belief in my sincerity had enabled me to get a passport to Mecca. All through the night, I copied similar long letters for others who were very close to me. Among them was Elijah Muhammad’s son Wallace Muhammad, who had expressed to me his conviction that the only possible salvation for the Nation of Islam would be its accepting and projecting a better understanding of Orthodox Islam.⁸⁵

This collision with traditional Islam, of which the Black Muslims (The Nation of Islam) of America were a politically-driven offshoot, required Malcolm to embrace a more universalist vision, to rethink the nature of the boundaries around his primary loyalty group – boundaries once impenetrable, but

now porous. In Mecca, Malcolm X had the kind of radical transformative moment that would not permit him, as a man who embraced truth and honesty, to engage the race problem in America in the way he did prior to his pilgrimage. In his case, this would require him to persuade others who were yet operating with an essentialist view of whites and whiteness that he left behind in the Arabian Peninsula. His campaign of persuasion began even before leaving for home, as he immediately commenced writing letters to those people whom he wanted to see race and Islam as he came to see them. It was as though the scales, having fallen from his eyes, allowing new vision, required his immediate action. Such is often the case when the scales fall, or begin to fall, as we note from a much older example, the case of Saul of Tarsus, and it is from the story of Saul that we have derived the notion, or metaphor, of scales falling from one's eyes, allowing for new sight, and new *insight*.

2:4 Saul of Tarsus

The story of Saul of Tarsus (c. 5—c. 67), the Pharisee persecutor of the first Jesus followers, is well known to even the modestly religiously literate person. It is preached about from pulpits, taught in Sunday schools, and it informs discussions about epiphanies and sudden conversion experiences of all types. We often refer to people who make sudden changes in their lives, such as in the cases of Aldo Leopold and Malcolm X, as coming in the wake of a “Road to Damascus Experience,” meaning that a flash of insight, an epiphany, a *Eureka!* moment, often ineffable and uncanny and not always reducible to any clear inner dialogue or cognitive appraisal, moved them to act in wholly new and unpredicted ways. In the case of Saul, his contemporaries could never have predicted – given all they knew about him, which was limited – that this brutal persecutor of the earlier Jesus followers would become, in a very real sense, the systematizer and theorizer of the various messages of the early Christian community (one of which, it is of interest to note, was the redemption of all creation, and not just human beings). How did Saul transform from persecutor to leader of the early Jesus movement? The account is reported in the New Testament (or Christian scriptures) book of Acts, Chapter 9:

Then Saul, still breathing threats and murder against the disciples of [Jesus], went to the high priest and asked letters from him to the synagogues of Damascus, so that if

he found any who were of the Way, whether men or women, he might bring them bound to Jerusalem. As he journeyed he came near Damascus, and suddenly a light shone around him from heaven. Then he fell to the ground, and heard a voice saying to him, “Saul, Saul, why are you persecuting Me?” And he said, “Who are You, Lord?” Then the Lord said, “I am Jesus, whom you are persecuting. It is hard for you to kick against the goads.” So he, trembling and astonished, said, “Lord, what do You want me to do?” Then the Lord said to him, “Arise and go into the city, and you will be told what you must do.” And the men who journeyed with him stood speechless, hearing a voice but seeing no one. Then Saul arose from the ground, and when his eyes were opened he saw no one. But they led him by the hand and brought him into Damascus. And he was three days without sight, and neither ate nor drank.⁸⁶

What did Saul really see as he neared Damascus? Was his vision the result of guilt over the persecution of people who did him no harm? Why did he immediately refer to the “voice” as “Lord?” We will never know the answers to those questions. We only have this account from Acts and a few of Saul’s (who would be named Paul, after his conversion) own references to clue us in, although lore about Saul/Paul has come down to us through the centuries. What we take from that account is that Saul was struck *blind*, and would remain blind for three days. The importance of Saul’s blindness cannot be gainsaid, for it reflected his blindness to the metaphysical truth of Jesus’s existence, and so resurrection, as Christian tradition has it. The curing or terminus of Saul’s blindness is physicalized in the narrative by the “scales” that would fall from Saul’s eyes – the scales that either caused or were attendant to his blindness. Upon the falling of the scales Saul was “given” *new* vision:

Now there was a certain disciple at Damascus named Ananias; and to him the Lord said in a vision, “Ananias.” And he said, “Here I am, Lord.” So the Lord said to him, “Arise and go to the street called Straight, and inquire at the house of Judas for one called Saul of Tarsus, for behold, he is praying. And in a vision he has seen a man named Ananias coming in and putting his hand on him, so that he might receive his sight.” Then Ananias answered, “Lord, I have heard from many about this man, how much harm he has done to Your saints in Jerusalem. And here he has authority from the chief priests to bind all who call on Your name.” But the Lord said to him, “Go, for he is a chosen vessel of Mine to bear My name before Gentiles, kings, and the

children of Israel. For I will show him how many things he must suffer for My name's sake." And Ananias went his way and entered the house; and laying his hands on him he said, "Brother Saul, the Lord Jesus, who appeared to you on the road as you came, has sent me that you may receive your sight and be filled with the Holy Spirit." Immediately there fell from his eyes something like scales, and he received his sight at once; and he arose and was baptized. So when he had received food, he was strengthened. Then Saul spent some days with the disciples at Damascus.⁸⁷

These three very brief sketches of epiphanies, of sudden revelation and insight, which some might call *Eureka!* moments, may be instructive for many who doubt the possibility of significant shifts in ways of seeing, or even outright conversions and *reversals* (*metanoia* or *teshuvah*) in thought. What brings them about? The things that can bring them about are disparate and can be complex: readiness for a new "truth"; new circumstances and conditions; psychological need; a sudden flash of clarity; guilt; doubt; the threat of death or significant loss, etc. But one thing is clear to me in considering each account: Whatever triggered the conversion could only be the result of a mind that was receptive (conditioned) because of some prior commitments and knowledge. The case where that conclusion may seem not to be tenable is that of Saul, but I would argue that Saul was indeed receptive to the transformation that he underwent on that famous road to Damascus. It entailed swapping a "false belief" about this trouble-maker named Jesus for a "true belief" about him (at least in Saul's mind), but the swap, however radical, was rooted in his knowledge of the Hebrew scriptures and Jewish tradition, which Saul knew well as a member of the Jewish sect called the Pharisees. As a Pharisee, and a particularly zealous one, Saul was committed to following religious truth wherever it led him, whether to the persecution of others or to personal suffering and martyrdom on behalf of those who once had good cause to fear him. It was Saul's pre-existing knowledge and commitment to religious truth that led him to persecute the Jesus followers, and it was this commitment that led him to work out many of the foundational ideas of the institutional Christian church. It was what we might call his "personality type" that, already given to strict religious observance and ardor, once redirected, would be a *tour de force* on behalf of those who would become the first Christians and to, ultimately, change the history of the world. This idea is supported by the work of psychologist John Kounios:

Though eureka-style insights appear suddenly in your awareness, it's important to stress that they don't come into existence from nothing. They usually consist of new connections between things that you already know. Your ability to make new connections is limited — or empowered — by the amount of knowledge you have. So if your goal is to be struck by new ideas, you first have to do the relevant homework in whatever field you hope to be innovative.

It's also worth noting that although creative insight and analytical thinking are distinct modes of thought, they complement each other. Some eureka moments present insights that are in need of more systematic elaboration before they can be implemented. It may take several insights, each followed by analytical work, to produce, refine and assemble all the ideas necessary to complete a complex project.⁸⁸

Leopold's epiphany was not sparked *merely* by the "green fire," nor was Malcolm X's epiphany sparked *merely* by the collision of his racial essentialism with the facts regarding the racial makeup of the Muslim world, nor was Saul's epiphany sparked *merely* by a flash of insight on an ancient road in the Middle East. All required an uncanny blend of pre-existing knowledge and new conditions or circumstances that each of them took to be highly relevant – mixed with a large dose of chance. More than likely, doubt was somehow involved – doubt about the conclusions that they had reached (their epistemic closure) prior to their epiphanies. Absolute dogmatic certainty would have made the epiphany nearly impossible.

As already noted, Leopold's epiphany led to modern conservationism and to his famous "land ethic," which will be discussed later. Malcolm X's led to a shift of thought in the minds of millions of African Americans such that the early message of racial essentialism, the inveterate evil of whites, and total separatism would move very close to, if not entirely dissolve into, the message of universal brotherhood preached by Martin Luther King, Jr. and Abraham Joshua Heschel, a message that was (and is) critical to renewed efforts by government to bring about racial justice, and which was (and is) critical to avoiding bloody racial conflict across the country. In the case of Saul/Paul, it is clear that without him the early Christians would not have developed a coherent set of ideas concerning the person and nature of Jesus (or Christology) that was so critical to the early Church's ability to

sustain a coherent if not always univocal theological message. Indeed, epiphanies shape societies, even whole civilizations, and civilizations beyond them.

2:5 Roquentin's Folly: Toward New Ways of Seeing

Why is knowledge of such epiphanies or *Eureka!* moments important? It is important because what is needed now, as we face the threats of climate change, are pervasive epiphanies and *Eureka!* moments, across the globe. If background knowledge in the face of new exigent conditions, mixed with doubts about the stock of knowledge one is bringing to the crisis of climate change, is what is needed to move people to action, then we need to make sure that we continue to teach and to sow salutary doubt that leads to personal inquiry into the scientific facts and to philosophical and political reflection, in the hope that people emerge from their lessons with fresh eyes to see that we are at a dire moment in our history as a species. We are now at a moment, in coming to understand our impact on the rest of the natural world, in which there must be not singular epiphanies, but millions of them. These epiphanies, like the ones just sketched, must spur an awakening to the facts and tragedy of environmental degradation in general, not only of ACC. Having learned of the damage we have done to our planet, millions and then billions must awaken to the need to think in completely different ways – toward, in a manner of speaking, “thinking like a mountain.” If Leopold, Malcolm X, and Saul/Paul could have such profound and impactful transformative experiences, leading to significant *social* transformations, what would happen if millions more awaken and step into a “new truth” about their relationship to and with the Earth, that *they* are, in part, responsible for thousands of miles of “dead zones” in our oceans, for vast islands of plastic refuse that kill millions of marine creatures and sea birds every year, for acidic and warming seas that kill thousands of miles of critical coral reefs, for the near eradication of many species of marine life due to destructive overfishing, and for the destruction of the habitats of hundreds of species through the reckless burning of forests (in order to replace trees with cash crops) all around the world? As the biologist and naturalist E.O. Wilson tells us:

Only a major shift in moral reasoning, with greater commitment given to the rest of life, can meet this greatest challenge of the century. Wildlands are our birthplace. Our

civilizations were built from them. Our food and most of our dwellings and vehicles were derived from them. Our gods lived in their midst. Nature in the wildlands is the birthright of everyone on Earth. The millions of species we have allowed to survive there, but continue to threaten, are our phylogenetic kin. Their long-term history is our long-term history. Despite all of our pretenses and fantasies, we always have been and will remain a biological species tied to this particular biological world. Millions of years of evolution are indelibly encoded in our genes. History without the wildlands is no history at all. We should forever bear in mind that the beautiful world our species inherited took the biosphere 3.8 billion years to build. The intricacy of its species we know only in part, and the way they work together to create a sustainable balance we have only recently begun to grasp. Like it or not, and prepared or not, we are the mind and stewards of the living world. Our own ultimate future depends upon that understanding. We have come a very long way through the barbaric period in which we still live, and now I believe we've learned enough to adopt a transcendent moral precept concerning the rest of life. It is simple and easy to say: Do no further harm to the biosphere.⁸⁹

The “major shift in moral reasoning” that Wilson speaks of is what I have been referring to as a *metanoia*, which entails profound *regret* and a sense of *urgency* to change. We do not have much more time in order to effect it. Yet, as Stephen Gardiner has pointed out, most of the effort and intellectual energy has been focused on technical/technological approaches to address climate change, rather than on ways to catalyze a major shift in moral reasoning toward a new ecological imaginary. Robin Hanson, a social scientist who has studied various responses to catastrophe, wrote in a recently-published anthology that deals with a range of possible catastrophic events – *Global Catastrophic Risks*, edited by Nick Bostrom and Milan M. Ćirković – that “[w]hile there are many kinds of catastrophes that might befall humanity, most of the damage that follows large disruptions may come from the ensuing *social* collapse, rather than from the direct effects of disruption. In thinking about how to prevent and respond to catastrophe, it is therefore crucial to consider the nature of social collapse and how we might minimize it [emphasis added].”⁹⁰ This is true, as far as it goes, and the worry concerning social collapse is the core worry of this book. But heading off or at least minimizing social collapse will require more than quick responses from government emergency management

teams and technical/technological remedies, yet you would not think so when surveying much of the literature on mitigation and remediation. In the “Introduction” to the same book, the editors provide counsel as to how humanity should prepare for serious global catastrophes, even those that might be, or create, extinction events. Note where the emphases are placed:

The fruitfulness of further work on global catastrophic risk will, we believe, be enhanced if it gives consideration to the following suggestions:

- In the study of individual risks, focus more on producing actionable information such as early-warning signs, metrics for measuring progress towards risk reduction, and quantitative models for risk assessment.
- Develop and implement better methodologies and institutions for information aggregation and probabilistic forecasting, such as prediction markets.
- Put more effort into developing and evaluating possible mitigation strategies, both because of the direct utility of such research and because a concern with the policy instruments with which a risk can be influenced is likely to enrich our theoretical understanding of the nature of the risk.
- Devote special attention to existential risks and the unique methodological problems they pose.
- Build a stronger interdisciplinary and international risk community, including not only experts from many parts of academia but also professionals and policymakers responsible for implementing risk reduction strategies, in order to break out of disciplinary silos and to reduce the gap between theory and practice.
- Foster a critical discourse aimed at addressing questions of prioritization in a more reflective and analytical manner than is currently done; and consider global catastrophic risks and their mitigation within a broader context of challenges and opportunities for safeguarding and improving the human condition.⁹¹

While all of the recommendations on this list have a very important place in preparing various societies to survive catastrophes, there is something missing. What is missing is any discussion of the need for more robust moral and political (including *civic*) education with an eye toward constraining the selfish impulses that speed-up and exacerbate the referenced social collapse. Of course, it may be argued that the various responses on Bostrom's and Ćirković's list already rest upon high-level moral reasoning, and I would not quarrel with such an argument – again, as far as it goes. But what I am referring to is the *individual's* internal/internalized moral response to catastrophe or pending catastrophe, not merely the responses of institutions and professionals. To bring about the *metanoia* of which I am speaking and to which Wilson avers, we need to be working at it in our *personal lives*.

The love ethics of Jesus and Buddha, or even Immanuel Kant's notion of the "moral law" or J.S. Mill's sketch of the "utilitarian saint" takes on an importance that transcends its importance in pre-catastrophic times. Those ethical approaches, employed in the face of looming catastrophe, take on far greater urgency, as they have to do with whether anyone will live *at all*, and the "anyone" now, in view of climate change, includes (members of) many other species or even whole species. The major shift in moral reasoning will also be a "conversion of attitude," as philosopher Steven E. Webb refers to it. Many people flee from the suggestion that their attitudes need to be adjusted, for the reasons mentioned above – i.e. fear of the impact of change and the need for epistemic closure. They take that suggestion as an arrogant imposition on their autonomy. So technical fixes and transactional solutions (such as those proffered by Bloomberg and Pope) are offered as substitutes for a direct confrontation with sensibilities weighed down by the inertia of epistemic closure or simple personal or cultural intransigence. But there are moments, and this is one of them, during which our sense of autonomy and our egos must become destabilized enough to allow us to hear the voices crying in the wilderness, or even from within. Webb, seemingly aware of the delicacies associated with a request of others that they change their attitudes, radically, begins with a disarming question using as a foil the character Antoine Roquentin in Jean-Paul Sartre's novel *La Nausée*. For the purposes of this discussion and for those unfamiliar with the novel, may it suffice to say that Roquentin's deep existential "troubles" had to do with his skewed and dark way of seeing the world (or at least Webb suggests that it is skewed and dark, and I tend to agree):

Can one propose a “conversion of attitude” without the arrogance of proselytizing? How would one go about converting a Roquentin, for example? For the question of whether reality is meaningful or not [as Roquentin lives out that question, and suffers his answer to it] – to those who feel compelled to ask it – is not likely to be helped much by argument. I can only suggest a possible approach:

I acknowledge and accept responsibility for the quality of my perceptions because I assume that reality is not “out there” merely to be stumbled upon, but is there to be completed by me because my very self participates in it. Reality makes no sense, not even a negative sense, without response of some kind. Does it not seem arbitrary to suppose that the discovery of reality lies in the direction of my imaginatively or theoretically absencing myself from it, of being disengaged and passive with respect to it? You, my friend [Webb would say to Roquentin], seem to take reality as whatever reveals itself to your blank stare. You sit on your bench and your eyes fall on those roots [the roots of the chestnut tree that Roquentin saw as the occasion for deep existential vertigo, as the occasion for understanding the brute reality of all things that are impenetrable to human intellect]; that is all you have to give them. So it doesn't surprise me that your dead scrutiny received in return a frightful ugliness that seems to spread out and envelope everything in your vicinity. But is it not true that your dark reverie is also a response for which you are finally responsible? That is how I view the matter. Whether you acknowledge it or not, it *may* be the denouement of your whole way of life, the cumulative effect of certain habits of perception and comportment that together have put in motion the hidden trend of meaninglessness that has been leading you along unaware. If that is so, any denial of responsibility for that vision is bad faith, is it not? You turn a blank eye to things and then declare that they are intrinsically unable to warm the heart of any undeceived man or woman. I experience reality as a call from things that bids me to complete them with whatever love and respect I am able creatively to turn toward them. And I feel bound by this bidding, beholden to it. Somehow on certain occasions – and I should be happy to tell you about them – things seem to beckon my participation, as if they needed me to bring them to completion. Those are the experiences of things that I credit, which I lay down as my norm and

guide in this question of reality and its meaning. In my better hours things seem as glad for me as I am for them, and in my worse hours I search in memory to receive again the blessing I believe is in them. In itself, most abstractly or nakedly considered, anything I encounter just *is* its making itself available for response, and I have no final criterion as to how I should respond other than whatever is in my experience I may be able to call upon as trustworthy in what it discloses. Can I on the strength of such experiences as I might relate refute your experiences to the contrary? No. I can only ask you to witness to those experiences in which you yourself implicitly place your trust. And what are they? Your own descriptions testify that you are appalled by what shows itself. So I must ask you, how does it occur to you to place your trust so completely in what appalls you? Why would you be *intent* on remaining passive to such experiences? Is not passivity itself the very mode of response most likely to beckon forth the absurd?⁹²

The purpose of the inclusion of this passage is that it suggests the need for a change in vision and – to be more faithful to Sartre himself – of *existential* orientation in the world. But before I unpack it I wish to include another passage to place “in conversation” with it. What follows is from philosopher Hans Jonas’s book *The Imperative of Responsibility: In Search of an Ethics for the Technological Age*. Jonas lays out a number of arguments designed to create greater understanding of the very nature of our obligation to one another in view of the many technological changes that have been effected in the twentieth century. Jonas tells us that:

All previous ethics – whether in the form of issuing direct enjoinders to do and not to do certain things, or in the form of defining principles for such enjoinders, or in the form of establishing the ground of obligation for obeying such principles – had these interconnected tacit premises in common: that the human condition, determined by the nature of man and the nature of things, was given once for all; that the human good on that basis was readily determinable; and that the range of human action and therefore responsibility was narrowly circumscribed. It will be the burden of the present argument to show that these premises no longer hold, and to reflect on the meaning of this fact for our moral condition. More specifically, it will be my contention that with

certain developments of our powers the *nature of human action* has changed, and, since ethics is concerned with action, it should follow that the changed nature of human action calls for a change in ethics as well: this not merely in the sense that new objects of action have added to the case material on which received rules of conduct are to be applied, but in the more radical sense that the qualitatively novel nature of certain of our actions has opened up a whole new dimension of ethical relevance for which there is no precedent in the standards and canons of traditional ethics.⁹³

Jonas then goes on to quote Sophocles' *Antigone* to help establish his worries concerning humanity's great capacities to engage and dominate the physical environment in which it finds itself:

Many the wonders but nothing more wondrous than man.
This thing crosses the sea in the winter's storm,
Making his path through the roaring waves.
And she, the greatest of gods, the Earth –
Deathless she is, and unwearied – he wears her away
As the ploughs go up and down from year to year
And his mules turn up the soil.

The tribes of the lighthearted birds he ensnares, and the races
of all the wild beasts and the salty brood of the sea,
with the twisted mesh of his nets, he leads captive, this clever man.
He controls with craft the beasts of the open air,
who roam the hills. The horse with his shaggy mane
he holds and harnesses, yoked about the neck,
and the strong bull of the mountain.

Speech and thought like the wind
And the feelings that make the town,
He has taught himself, and shelter against the cold,
Refuge from rain. Ever resourceful is he.

He faces no future helpless. Only against death
shall he call for aid in vain. But from baffling maladies
has he contrived escape.

Clever beyond all dreams
The inventive craft that he has
Which may drive him one time or another to well or ill.
When he honors the laws of the land and the gods' sworn right
High indeed in his city but stateless the man
Who dares to do what is shameful. ⁹⁴

The above passages from Webb's and Jonas's works can help us articulate the need for serious adjustments in thought and feeling about ourselves, about other life forms, and about the Earth itself – and provide guidance concerning how to bring those adjustments about. Webb would inform Roquentin that his manner of looking at things and his dark conclusions (and the sickness of soul that results) are his own choice, his own “fault”; they stem from his own insistence to view the world as *radically other*, so radically other that the distance between himself and the “things” in the world is incalculable and untraversable, and the emotional response to that distance utterly overpowering – even *nauseating*. Roquentin dwelt in his self-made epistemic bubble and brought about his own epistemic closure. “Why would you be *determined* to remain passive to such experiences?” is, in sum, Webb's question to Roquentin – and to those like him who are not characters in a novel but who live in the real world. Similarly, in our industrial, technological, and often *scientific* age, we have come to view the world as radically other, so radically other that we fail to see that we are inextricably bound to it for our life, happiness, and even our sanity, except that, unlike Roquentin, we are not at all appropriately aware of the resulting sickness, though we see symptoms of it all around us – but the symptoms are hidden beneath an avalanche of diversions and distractions. What is the way out? Webb makes it clear that mere argument will not work, and as concerns our attitudes toward the Earth I believe this conclusion is largely correct. What Webb is doing, by using Roquentin as an imagined interlocuter, is attempting to reveal errors of vision. Roquentin saw himself as a monad, irremediably separated from other beings, suffering the “sin of existing.” Webb suggests that there is another way to look at things, which is his own, and in which he engages the world not as an infinitely distant

spectator might, but rather as a participant who is “glad” precisely because of his participation – his conscious and self-aware participation. For Roquentin to give ear to Webb, he would have to drop his cocksureness, his assumption that it is others who are existing in bad faith, unable to confront “the truth” about human existence, and consider an alternative, equally insightful, equally live possibility. This is no less true of the attitudes of late capitalism, which would have us see the Earth as a reserve of resources, taking humanity as relationally over and against it, in a constant attitude of appropriation and ingratitude (i.e., taking the Earth for granted).

As it turned out, Roquentin did arrive at his own epiphany, spurred by the sickness caused by his own choice. As is often the case, as we know now, it came through something that he could not have anticipated, but for which he was primed. In Roquentin’s case, salvation would come through the possibilities of the creative process itself. In considering another character in the novel, the “Negress” who sings, and “the Jew” who composed the song she sang, Roquentin gets a glimmer of the possibility of a way out. Of the Negress who sings and the Jew who composed, Roquentin says:

She sings. So two of them are saved: the Jew and the Negress. Saved. Maybe they thought they were lost irrevocably, drowned in existence. Yet no one could think of me as I think of them, with such gentleness . . . They are a little like dead people for me, a little like the heroes of a novel; they have washed themselves of the sin of existing. Not completely, of course, but as much as any man can. This idea suddenly knocks me over, because I was not even hoping for that any more. I feel something brush against me lightly and I dare not move because I am afraid it will go away. Something I didn’t know any more: *a sort of joy*.

Couldn’t I try [Roquentin wonders] . . . Naturally, it wouldn’t be a question of a tune . . . but couldn’t I, in another medium? . . . It would have to be a book: I don’t know how to do anything else. But not a history book: history talks about what has existed — an existant can never justify the existence of another existant. My error, I wanted to resuscitate the Marquis de Rollebon [a minor historical figure about whom Roquentin planned to write]. Another type of book. I don’t quite know which kind — but you would have to guess, behind the printed words, behind the pages, at something

which would not exist, which would be above existence. A story, for example, something that could never happen, an adventure. It would have to be beautiful and hard as steel and make people ashamed of their existence. I must leave, I am vacillating. I dare not make a decision. If I were sure I had talent . . . But I have never—never written anything of that sort. Historical articles, yes—lots of them. A book. A novel. And there would be people who would read this book and say: “Antoine Roquentin wrote it, a red-headed man who hung around cafés,” and they would think about my life as I think about the Negress’s: as something precious and almost legendary. A book. Naturally, at first it would only be a troublesome, tiring work, it wouldn’t stop me from existing or feeling that I exist. But a time would come when the book would be written, when it would be behind me, and I think that a little of its clarity might fall over my past. Then, perhaps, because of it, I could remember my life without repugnance. Perhaps one day, thinking precisely of this hour, of this gloomy hour in which I wait, stooping, for it to be time to get on the train, perhaps I shall feel my heart beat faster and say to myself: “*That was the day, that was the hour, when it all started*” [emphases added].⁹⁵

The theme of salvation spills across Roquentin’s words. Roquentin is in need of deliverance as much as the heartbroken or soul-sick mother in Prades or Peoria responding to the preacher’s altar call, as much as the Buddhist novice in search of respite from *dukkha*. Roquentin comes to realize that “The world of explanations and reasons is not the world of existence.”⁹⁶ So too, the world of commerce, of capital, of unending conveniences, of the “standing reserve” (to use Heidegger’s language), is not a world in which we were meant to live, as the Earth itself is trying to tell us. The nausea that will attend extrication from the assumption that it is, and the many practices that support that assumption as well as flow from it, are not very different from the nausea Roquentin experiences while remaining within his closed hermeneutic circle.

The error of assuming radical otherness (e.g., concerning environmental matters) has infected some of our most prominent and celebrated philosophers. For example, John Dewey, despite his well-known holism, “systems-thinking,” non-dualism, and naturalism writes, in *Experience and Nature*:

It is an old saying that the gods were born of fear. The saying is only too likely to strengthen a misconception bred by confirmed subjective habits. We first endow man in isolation with an instinct of fear and then we imagine him irrationally ejecting that fear into the environment, scattering broadcast as it were, the fruits of his own purely personal limitations, and thereby creating superstition. But fear, whether an instinct or an acquisition, is a function of the environment. Man fears because he exists in a fearful, an awful world. The world is precarious and perilous. It is as easily accessible and striking evidence of this fact that primitive experience is cited. The voice is that of early man; but the hand is that of nature, the nature in which we still live. It was not fear of gods that created the gods.

For if the life of early man is filled with expiations and propitiations, if in his feasts and festivals what is enjoyed is gratefully shared with his gods, it is not because a belief in supernatural powers created a need for expiatory, propitiatory and communal offerings. Everything that man achieves and possesses is got by actions that may involve him in other and obnoxious consequences in addition to those wanted and enjoyed. His acts are trespasses upon the domain of the unknown; and hence atonement, if offered in season, may ward off direful consequences that haunt even the moment of prosperity—or that most haunt that moment. While unknown consequences flowing from the past dog the present, the future is even more unknown and perilous; the present by that fact is ominous. If unknown forces that decide future destiny can be placated, the man who will not study the methods of securing their favor is incredibly flippant. In enjoyment of present food and companionship, nature, tradition and social organization have cooperated, thereby supplementing our own endeavors so petty and so feeble without this extraneous reinforcement. Goods are by grace not of ourselves. He is a dangerous churl who will not gratefully acknowledge by means of free-will offerings the help that sustains him.

These things are as true today as they were in the days of early culture. It is not the facts which have changed, but the methods of insurance, regulation and acknowledgment.⁹⁷

Dewey was not entirely wrong. Sometimes (often) the world is “fearful, awful,” as I discussed in Chapter 1. There is no point in whitewashing that fact, or of romanticizing the world. Either one would be an act of bad faith. But built into Dewey’s words are certain assumptions that have provided modernity with *its* background assumptions, led to *its* vulgar anthropocentrism, assumptions which create a conception of nature as something to be engaged through struggle, bent to human will, and if not bent then broken and subdued (for the purposes of *human* “growth” and the resolving of *humanity’s* “morally problematic situations,” to use Deweyan language), because nature is frightful and must be controlled. In words such as Dewey’s we find what some take as permission to dominate nature, even if that was not what Dewey intended. Though there are Dewey defenders who would contest this point vigorously (among them, Hugh P. McDonald – see his *John Dewey and Environmental Philosophy*), in Dewey the *summum bonum* was always *human* growth; rarely did Dewey speak of that growth as overcoming a very problematic view that “man” exists over and against a “fearful, awful” world. Even if one would point to Deweyan holism and non-dualism (or even to some of his poetry) to rebut this suggestion, his anthropocentrism would still bleed through in his work. This is also the case in the work of Richard Rorty, who claims to have been a disciple of Dewey’s. We find Rorty telling us that “cruelty is the worst thing that we do.” But for Rorty cruelty had always to do with our relationship with and treatment of *other human beings*. Other than tangentially, Rorty never seemed to consider the possibility that our destruction and pollution of the environment was also a form of cruelty to hundreds of other sentient species, which we hook, brand, stamp, slice, flay, suffocate, poison, chop, abandon, impale, shoot, electrocute, relegate to filthy conditions, beat, burn, freeze, and, yes, even *humiliate*. (He does allow that “Most of us are at least half convinced that the vegetarians have a point, that animals do have some sort of rights.”⁹⁸) As philosopher Nancy J. Holland has put it, “It is hard to reconcile any form of environmentalism with Rorty’s exclusive moral concern with [human] cruelty.”⁹⁹ To be very clear, Dewey and Rorty are certainly not the worst offenders – not by a long shot, and that is precisely why I have included them here. For if these rather sensitive, holistic, and non-dualistic philosophers could, despite their intellectual sensitivities, operate from within a robust anthropocentrism, what of those who are less sensitive, less holistic, and dualistic? The anthropocentric perspective has run far and deep in modernity, and it takes a continual inner dialogue to check it, even for enlightened and morally sensitive philosophers. The vast majority of the writings in philosophical ethics have been anthropocentric, with certain notable exceptions (Jeremy Bentham, for example, in his *The Principles*

of Morals and Legislation, in which he gives voice to our blindness to the harsh and abusive treatment of non-human species), although in recent years things have begun to change.¹⁰⁰

Hans Jonas tells us that the “novel nature of certain of our actions has opened up a whole new dimension of ethical relevance for which there is no precedent in the standards and canons of traditional ethics.” Do we understand this? I believe Jonas was right, and that we do not yet understand it. We need a new ethics, one rooted in sagacity, or the *metanoia* that is most urgent will not take place in time to save us. Jonas, like Webb, is calling us to a change of vision and attitude. How will we get that change of vision to come about? Not simply by or through arguing will the change come; the change will be the result of a proposal for a conversion of attitude “without the arrogance of proselytizing.” To that end, we must consider the various ways to, as philosopher Martha Nussbaum puts it, “cultivate humanity,” not just cultivate novel technologies. Cultivating humanity means humanities education, but to achieve this in time to save us we will need to extend that education beyond the university classroom and effect it on the dirt roads and superhighways and cities of the world. Nussbaum, in suggesting ways to cultivate a democratic sensibility in the citizens of democratic states, provides a list of actions that must be undertaken, lest the democracy atrophy and die from within (which, arguably, is happening now in the United States), and a similar list can be drawn up to effect the *metanoia* which is the concern of this book. On Nussbaum’s list are:

- The ability to think well about political issues affecting the nation, to examine, reflect, argue, and debate, deferring to neither tradition nor authority
- The ability to recognize fellow citizens as people with equal rights, even though they may be different in race, religion, gender, and sexuality: to look at them with respect, as ends, not just as tools to be manipulated for one’s own profit
- The ability to have concern for the lives of others, to grasp what policies of many types mean for the opportunities and experiences of one’s fellow citizens, of many types, and for people outside one’s own nation
- The ability to imagine well a variety of complex issues affecting the story of a human life as it unfolds: to think about childhood, adolescence, family relationships, illness, death, and much more in a way informed by an understanding of a wide range of human stories, not just by aggregate data

- The ability to judge political leaders critically, but with an informed and realistic sense of the possibilities available to them
- The ability to think about the good of the nation as a whole, not just that of one's own local group
- The ability to see one's own nation, in turn, as a part of a complicated world order in which issues of many kinds require intelligent transnational deliberation for their resolution.¹⁰¹

But what kind of ethics do we need in order to engage the environment as we should? For Jonas is surely right – the old ethics is no longer enough. Humanity holds itself in high regard, “Clever beyond all dreams,” but the *warning* by and not only the *observation* of Sophocles rings out, for we dare not do “what is shameful.” Yet, our treatment of the Earth has been quite shameful. It is time for a radical change.

2:6 *Metanoia* Toward “Ethicology”

Here I bring in the voice of someone with quite a different vocation from Wilson's, Webb's or Jonas's, that of one who explicitly used the term *metanoia* in his own writings about the potential for moral awakening. “The real job,” wrote the Cistercian monk Thomas Merton, “is to lay the groundwork for a deep change of heart on the part of the whole nation so that one day it can really go through the *metanoia* we need for a peaceful world.”¹⁰² Let me rephrase this now, in view of the threats of climate change: *The real job is to lay the groundwork for a deep change of heart and mind on the part of the whole world so that one day we can really attain the metanoia we need in order to save ourselves, to save thousands of species, and to embrace our rootedness in the only planet we have.* Merton, writing about the dangers of war, and not of ecological disaster *per se* (although he was aware of and sensitive to many ecological threats¹⁰³), expresses the daunting challenge of attaining a peaceful world. He wrote:

I am not a pure pacifist in theory, though today in practice I don't see how one can be anything else since limited wars (however “just”) present an almost certain danger of nuclear war on an all-out scale. It is absolutely clear to me that we are faced with the

obligation, both as human beings and as Christians, of striving in every way possible to abolish war. The magnitude of the task cannot be allowed to deter us. Even if it seems impossible, we must still attempt it. This demands of course a spirit of faith.

I believe the only really valid thing that can be accomplished in the direction of world peace and unity at the moment is the preparation of the way by the formation of men who, isolated, perhaps not accepted or understood by any “movement,” are able to unite in themselves and experience in their own lives all that is best and most true in the various great spiritual traditions. Such men can become as it were “sacraments” or signs of peace, at least. They can do much to open up the minds of their contemporaries to receive, in the future, new seeds of thought. Our task is one of very remote preparation, a kind of arduous and unthanked pioneering.¹⁰⁴

This sounds like what we need, but there’s a problem. We don’t have the luxury of thinking of ourselves as “unthanked pioneers” engaged in “remote preparation.” Climate change is here *now*, and the preparatory work of forging a global *metanoia* is work that must be performed within “the fierce urgency of now,” as Martin Luther King, Jr. described the moment in which he called for the sins of his country, especially as regards African Americans, to be addressed.¹⁰⁵ The fierce urgency of now requires us to rethink what we mean by ethics, and how we can accelerate the rate of environmental epiphanies. Traditionally, ethics involved considerations of what human beings owe to one another in direct relations or through the indirect or transitive relations of our institutions. Ecology and environmentalism have been construed, popularly and superficially, as humans’ relationship with and treatment of the non-human world. What is needed now is a widening of our construal of ethics and of ecology/environmentalism *such that they are each seen as two sides of the same coin*, as it were – and we need this without any further delay. Some of this widening has already taken place in the literature on the subject of environmental racism and environmental justice, which examines and critiques the ways human beings are harmed through the pollution (and there are various types of pollution, including aesthetic pollution, i.e. the creation of blight) of land, water, and air in such ways that the poor and racial minorities suffer disproportionately. Thus, there is a tripartite relation consisting of:

- A. The Offender (some person or institution);
- B. The Offended (those receiving and bearing the costs of the pollution); and
- C. The Environment (the land, water, and air which are the vectors for the damage done to *B* by *A*).

Since the foci of environmental racism or environmental injustice are other human beings, there is scant consideration of the harm done to non-human biota. This is not a criticism of the literature or the activism that attends it, but rather it is simply an observation.

The *metanoia* that I call for entails the construal of the subject of ethics itself as one beyond a dyadic or triadic relation. Rather, ethics will be *polygonal*, focused on a nexus of obligations, in which the environment is not merely regarded as a vector of possible human harm through pollution or its use as a standing reserve, but is regarded for its own sake and for the sake of nonhuman species, given a stewardship model of ethical obligation (what I have called, in Chapter 1, enlightened anthropocentrism) rather than the typical moral agent model which limits concerns to other human beings. Environmentalism is now subsumed under *ethikos* (ethics), and *ethikos* becomes incomplete without an appropriate level of concern for the non-human, inanimate environment and non-human biota, in the polygonal relations.



I shall call this polygonal ethics *ethicology*. It is similar to Leopold’s famous land ethic in that it, too, proffers that ethics regard nonhuman biota and its support systems, as well as regard human relations, as it traditionally has. But it is, as well, more radical, in that it intends a shift in thinking such that ethics, as a subject, does not *start* from anthropocentric assumptions, does not *start* with a concern for human relations, only after which is its foci to be *extended* beyond them. “Ethics” ends. It becomes ethicology, and the curricula for teaching it must therefore be radically rethought. We are now moving away not only from the philosophizing of “dead white males,” but away from human chauvinism, speciesism, and blind human self-regard *in toto*. It is a result of the *metanoia*. “Eth-” from the Greek “*ethikos*” or, in English, “ethics,” and “-cology” from “ecology.” It takes up and takes seriously Jonas’s concern that “traditional” philosophical ethics is no longer adequate and no longer capable of answering an array of new social realities, and it takes up Webb’s proffer that we must adopt more salutary ways of seeing and interpreting the world, even a new ontology. Further, it derives from a reflection upon Leopold’s concerns that the boundaries of ethics must be extended to include consideration of and concern for the land itself. Again, by “land” Leopold meant the actual soil and all the biota that dwell in, upon, and above it (as a field of energy or “energy circuit” that must be in healthy balance if it is to remain stable). We must extend human concerns, in a conscious and full-

throated way, beyond our humanness – our view of ourselves as a species over and against the world – and toward our “Terran-ness” – recognizing that we are embedded in and a part of the life of the Earth, in both a reflective use of *ethical imagination* toward the formation of *reflexive engagements and responses*. The result, I predict, will be a keener understanding that the Earth is susceptible to true *injury* (construed as harm to its capacity to provide suitable habitats and resources for all of its life forms) and should be treated as a living partner, not as if it were, but in actual *fact*. (My references so far to the “non-living” environment was for the purposes of making a provisional, crassly practical, and so instrumental distinction concerning the ways in which we engage with the Earth; by “non-living” I was not intending to maintain a hard dualism such that there is a hard break between “the living” and the “non-living.”) If the Earth has intrinsic value, it consists in this – its ability to generate and sustain life, whether or not human beings are present to experience or to benefit from the process. We are the kinds of beings who benefit by valuing the Earth simply for itself, and this axiological attitude informs our forms of life. At our best, we do not ask “what we get out of” such an axiological attitude. The attitude leads to *reverence* and reverence rewards us by guiding us toward better relations with the environment and with one another. Of course, we are not yet at our best.

The construal of the Earth as being subject to injury calls to mind the more expansive notion of violence provided by Johan Galtung, though the comparison is only partly useful. Violence, for Galtung, is not merely the use of physical force on another, but rather violence can be said to take place when, by whatever means, one is forcibly prevented from pursuing one’s interests, from doing as one wishes and has the right to do, all things considered. So, the notion of violence is extended beyond its common usage, i.e. the notion of inflicting physical harm on another person. In a similar way, I wish to extend the meaning of “injury” beyond its common uses, as having application beyond human agents and non-human species. The utility of the “injury” over “damage” as regards the environment has a far greater *metanoic* payoff, and seems, as well, closer to the truth concerning our negative impacts on other species and ecosystems. We should change our habit of saying that these are merely “damaged” by what we do, as we tend only to speak of things, such as car fenders or yard gates, as being “damaged,” but rather form the habit of saying that they are “injured.” Thus, the Earth itself is brought into the envelope of our concerns as moral agents. For many philosophers, the move I just made is far too quick. But as I said near the end of Chapter 1, we can no longer afford to spend our time in search of the lines of demarcation between that which must be viewed as having intrinsic

value and that which is to be viewed in vulgar anthropocentric terms or having only conditional value. There are times when we must stipulate and put away philosophical debate. This was the attitude of the founders when the Declaration of Independence was drafted, wherein they held that human beings have “unalienable rights.” The Earth, which produces and sustains life, over long eons of evolution, has intrinsic value. The only thing left to argue is what follows from that stipulation. What I have called enlightened anthropocentrism does not contradict this stipulation, but rather it assumes it. The anthropocentric impulse, the impulse to inquire as to the use to one’s self of a part of non-human nature, must end when the planetary injuries, caused by humans, collect to the point at which (*inter alia*) a negative cascade of death and disorder results. At this point, non-human nature must have, at least, an equal place in our moral imaginations as responses and actions are deliberated. Where the injury is severe enough, the planet must be thought to take precedence. One of the most disturbing things about the idea of global thermonuclear war is that it may be fought so that some remnant of humanity may perchance survive it, and carry on with its contingent and transitory concerns. Rarely is any thought given to the massive amount of death and injury caused to non-human biota, or to the evolutionary process itself (the same is true of nuclear weapons testing). This level of injury, this level of disregard, cannot be characterized as evil, as it transcends evil in a way that no single word can explicate. It is radical wrong that leaves us speechless, and leaves us to describe it apophatically, only by reference to what it is not.

I propose ethicology as a *sagacious turn* of a kind that we must also come to see in our politics, a way to facilitate the objectives of healthy human relationships and stewardship (cross-generationally), initiating a richer understanding of the importance of our many obligations as Terran agents, which obligations are not, nor can they be, shared with other species on Earth in quite the same way (at least, as far as we know, presently). I think this requires that we *love* the Earth, in the sense of giving ourselves to it with high reverence for it and love it such that we would sacrifice our lives as individuals to protect it. Only through the mental preparation to die to save ourselves, other life forms, and the Earth itself (as generator of *all* life and provider of *all* habitats) will we be able to reverse course sustainably. This may sound like an extreme form of deep ecology, but consider that we are often willing to die for causes much less substantial than the protection of other species, their habitats, and the Earth which generates both. I am not suggesting that we sacrifice ourselves in some mass suicidal gesture, or that we employ physical force to protect biota and ecosystems where there are

other options available. But I am suggesting that we think about doing the opposite of taking the Earth for granted or allowing it to be systematically injured, and the opposite is to sacrifice for that which or for whom one loves; and as our Native American brothers and sisters have taught us, referring to the Earth as a *who* rather than a *what* takes us closer to the truth than the dualism, separation, and objectification of the world that has arisen in what is commonly called “modernity.” We are prepared to sacrifice ourselves or to use force in efforts to protect ourselves, our families, our children, and, at times, even our transitory personal effects. The polygonal modality of ethicology simply requires that we extend the list of that which we value enough to make such sacrifices. It is not calling merely for the extension of ethics beyond humans to the land, as Aldo Leopold rightly said it should be, *but a transformation of the nature of ethics itself* such that it is impossible to conceive of ethics without considering obligations to all of the natural world. Ethics should never again be construed as limited to concerns about our obligations to other human beings, and it should never again be taught, whether in universities or elsewhere, from within such a limited horizon. Ethics must be polygonal, or it is nothing. If, as Leopold proffered, human beings are simply members of the biotic community, how can ethics be construed differently or proceed otherwise? The fare served up to undergraduates in our colleges and universities includes surveys of the ethical writings of Kant, Aristotle, Mill, Bentham and perhaps a few others, but most of those writings are mostly devoid of any sustained attention to the obligations of human beings to the non-human and non-living world. If we continue to include them in our ethics courses as staples, then the works of naturalists, conservationists, and environmentalists must be taught alongside them, and not only in certain colleges and universities typically associated with such subjects as conservation and ecology, but in all, and perhaps most urgently in colleges and universities with no such associations. For centuries, what we have called “ethics” has been woefully inadequate in its scope. Thus, the employment of the word ethicology, a neologism and a word admittedly unlovely, but a word intended to push us away from old curricula and old ways of thinking.

I return to Leopold’s *A Sand County Almanac*, and invoke his famous land ethic to assist me in constructing the architecture of what I am calling ethicology. Leopold counsels this: “Examine each question in terms of what is ethically and esthetically right, as well as what is economically expedient. A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise.”¹⁰⁶ While there is a good deal that a philosopher could critique

about this construction (What exactly is meant by “esthetically,” “stability,” and “beauty” here?), Leopold’s land ethic foregrounds very important considerations that tend to be shoved into the background of our ethical analyses and social undertakings, especially (but not only) our commercial undertakings. Leopold himself clarifies how the land ethic is to be construed and employed, even if there remain certain questions and worries. But I adopt it and, now, would expand it, saving a more detailed defense of Leopold’s land ethic for another more “properly philosophical” work, and for that I request the more philosophical reader’s patience.

2.7 Introducing “The Ethicological Imperative”

Ethicology would expand and extend Leopold’s land ethic, retrofitting it to become a new conception of ethics *per se*, leaving behind traditional approaches and requiring a new non-anthropocentric starting point for considerations of our obligations to others. Ethicological inquiry begins with what I shall call “The Ethicological Imperative”:

You, as an ethical agent with an evolved capacity for aesthetic appreciation, creation and discrimination, owing your daily survival to the Earth’s resources (including the resources of diverse beauties, on which we feed our souls) and possessing the intellectual and physical capacities to (i) destroy those resources, (ii) conserve those resources, or (iii) enhance the quality of those resources for one’s own and other species (of both the current and future generations), should, therefore, examine each action and plan (to the degree the context warrants) in terms of what is ethically right and in terms of what displays a high level of aesthetic mindfulness, rather than examine each such action and plan in terms of what is merely instrumentally expedient in the short-run. Given your status as an ethical agent, you must consider all actions in view of their impact (i) on the preservation, integrity, and stability of the biotic community, (ii) on the beauty that surrounds and inheres in the non-living world in which the biotic community maintains its habitats, (iii) on the elemental environment that supports it, and you must (iv) duly recognize the dignity, autonomy, preferences

and rights of all other rational creatures (including human beings), and act in ways that do not contradict their status as rational creatures.

Most ethical inquiry, or inquiry into what Dewey called “morally problematic situations,” begins and usually ends with (iv), and even in that case “rational creatures” is usually limited to human beings. Ethicology *decenters* the human, but *includes* the human (as, as Leopold put it, merely another member of the biotic community). It does this, first, because it seems right to do so in the light of the toll we have taken on the biosphere and Earth’s elemental resources, but, as well, it serves as a constant reminder that our ordinary ethical considerations must be far more expansive than we once believed; it is an aid to re-habituation of thought, to *metanoia*, and so to adaptation. Ethics *becomes* ethicology (ethical considerations become “ethicological considerations,” and unethical behavior becomes “unethicological behavior”), i.e. not merely the study of our obligations to one another as humans but the study of our obligation to every form of life and every elemental system on the planet, and to the planet itself. This is not to romanticize what we take to be “mere” rocks and soil (what I am calling the “elemental”), to require that we literally ask permission every time we thrust a spade into the ground or skip a stone over a pond (although as a device for recall, for mindfulness, that would not be precluded), but is intended to have both spiritual and practical results by *catalyzing a process of re-habituation* that will, in turn, allow us to avoid many of the mistakes we have made since the industrial revolution and the onset of modernity, when our eyes became occluded by the “scales” of objectification, commercialism, consumerism, materialism, desacralization, irreverence, and what Max Weber called, in his *Sociology of Religion*, “disenchantment.”¹⁰⁷

Having introduced The Ethicological Imperative (and for now, it is only an introduction, requiring a much more detailed explication of how it can be employed but which must be the subject of a future work, as space does not permit me to undertake that here) and by way of suggesting one of many possible therapies, permit me to tell you a story. It is about a man who gave a presentation to a class I once took when I attended a little seminary in New York. This will provide an object lesson in the mindfulness that can be generated by ethicology (and show the value of devices for recall, as mentioned above).

2:7 From the Cutting Room Floor

I attended a small seminary in New York, at which I completed a course of study leading to ordination as an interfaith minister. During a presentation on comparative religions, one of the presenters to our class, invited to discuss the Ifá religion (or Yoruba religion), held forth for an hour on the theology and rituals of that religious tradition. He himself was a *babalawo*, an Ifá priest. The students in the class, most of whom had no knowledge of African religions, listened respectfully, taking notes and writing down the names of books referenced by our presenter, for further research. Our presenter, not himself African but rather hailing from the Caribbean island of Trinidad, was decked-out from head to toe in kente cloth, a multi-colored cloth made of cotton and silk and originating in Ghana, but worn throughout the continent of Africa and beyond. It was all very quaint, we thought; it was not, nor was it intended to be, a scholarly presentation. But at the point of what we assumed was the end of the presentation, the *babalawo* revealed something quite unexpected about himself. He revealed that he was by training a scientist, more specifically a marine biologist, and that he had been involved in very interesting work researching the various life forms around deep ocean hydrothermal vents. The class perked up at his orthogonal revelation. The presentation was *not* over; it had, in a way, just begun. The energy in the class changed. Attentions became more pointed.

Hydrothermal vents, fed by undersea volcanoes, provide heat and the rich chemical cocktail needed to sustain life in total darkness, suggesting that life on Earth might be able to exist without sunlight, since photosynthesis (the process of using sunlight to create chemical compounds that give plant cells the energy they need) is an impossibility at the depths where these vents are found (the creatures that thrive there, in almost boiling hot water, use *chemosynthesis* to create energy, instead).

For one particular research expedition, which was the subject of an episode of the science documentary series *Nova* (which airs in the United States on public television), our *babalawo* was one of the marine biologists chosen. While the particular segment that he showed the class didn't make it off of the cutting room floor (for reasons that you will soon learn), it was extraordinary and moving. (The *Nova* producers were kind enough to give the *babalawo* the footage edited out of the final cut.) In it, the *babalawo*-marine biologist is insisting to the leader and chief scientist of the expedition that it would be wrong to merely *take* specimens from the sea floor surrounding the vents

without the appropriate respect being paid to the sea goddess, Yemoja (Yemaya).^v This request was more than odd as far as the chief scientist and the rest of the crew were concerned – it was plain nutty! The *babalawo* wanted to inject an unheard of folk religion ritual into the operation of a stunningly expensive scientific expedition, on which every hour of crew time and fuel came at a monetary price. What could be more absurd? But the *babalawo*, himself a respected scientist, lobbied the crew and, ultimately, got what he wanted, i.e. a request to be made of Yemoja seeking *permission* to extract tube worm (*Riftia Pachyptila*) specimens from around the vents, after a proper offering to the sea goddess. What sort of offering?

Well, the proper foods for the offering were unavailable on the vessel, so the *babalawo* compromised. After promising that the whole ritual would take just a few minutes, he handed out small paper cups to the several members of the expedition who were assembled at the stern of the massive, grey vessel, whose engines generated a loud drone that had to be talked over if one wanted to be heard. To each cup the *babalawo* added what he could find without disturbing the ship mess – some nuts, some candy, and a few other morsels. He asked each member to go to the gunwales, one at a time, and drop the offering overboard (just the contents, not the cups) while reciting an incantation that the *babalawo* prepared, something to the effect: “We ask you, Yemoja, permission to take some of your creatures in an effort to better understand your oceans.” Giggling, smiling, blushing, and smirking, these hard-edged, no-nonsense scientists did what they promised they would do. After they made their offerings, they stood back, hands clasped respectfully, and awaited the *babalawo*’s green light. Did Yemoja agree to allow them to take the specimens, or not? The answer was, well, divine – Yes! At which time the scientists applauded.

^v Yemoja, also known by Yemaya and other names in religious practices from Africa to the Americas, is considered to be the deity of all things feminine, including conception, fertility, love, and childbirth, and is considered to be the protector of the seas, rivers, and lakes.

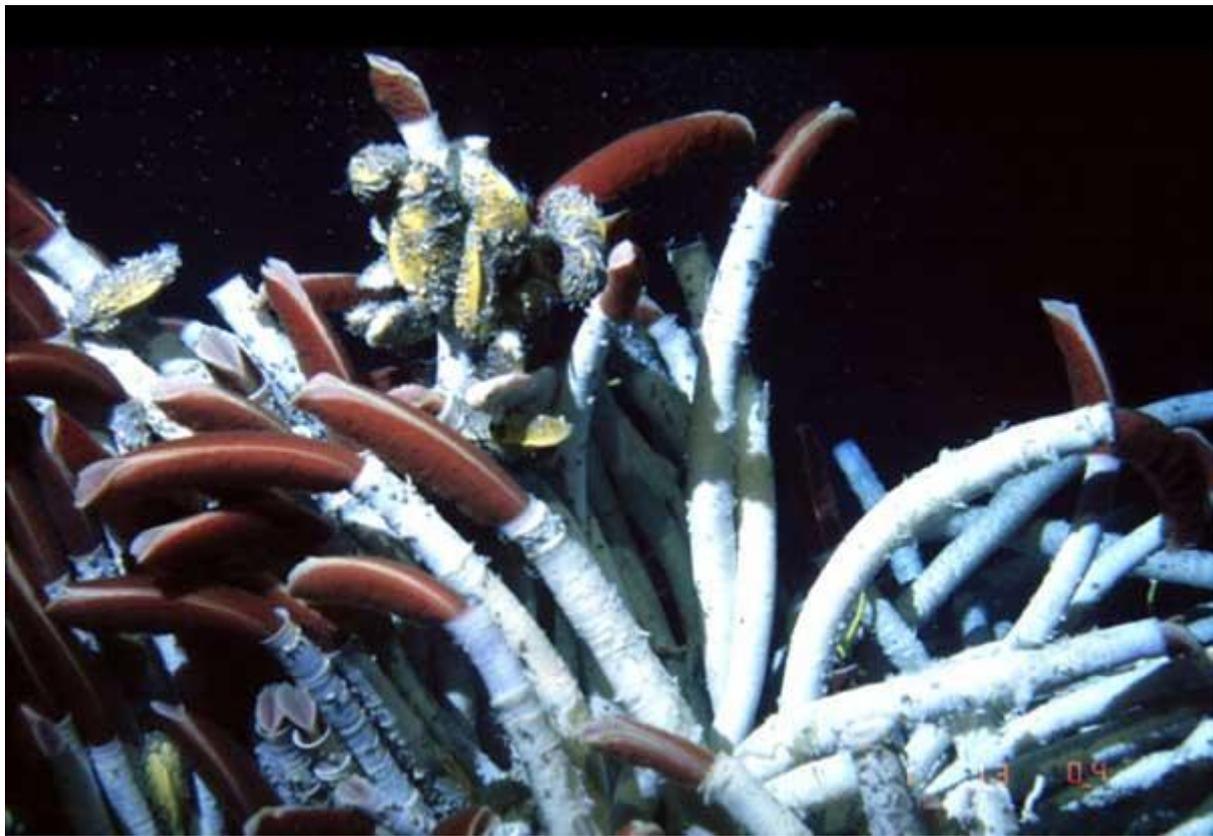


Figure 4 *Riftia Pachyptila*. Source: NOAA (Photo credit: Dr. Monika Bright, University of Vienna. Used with permission.)

(Before I finish the story, this aside: Water was retrieved from around the vents for chemical analysis. The *babalawo* asked that one or two buckets of the water be retrieved for his personal use. He took two buckets of the water back to his cabin, stripped naked, went to his shower, and slowly poured the water over his body, while praying. On his account, this was a deeply moving experience for him. I will have more to say about this later. Now, back to the story.)

After the ceremony, several of the *babalawo*'s fellow scientists came up to him and thanked him. They told him that, oddly and unexpectedly, the ceremony had moved them, that they felt that somehow what was done seemed like the *right* thing to have done, even though they couldn't explain why, and even though such a ceremony would never have occurred to them. The *babalawo* was not surprised by this answer. Just as he knew that the worms would be taken whether or not he got the

answer he sought from the sea goddess, he also knew that he taught a lesson that at least some of the other scientists would never forget – the lesson of reverence for life and of interdependence.

This bit of seeming absurdity (to most modern ears) represents the sorts of therapies in which we need to partake if we would find our way back from our blindness or myopia. For some, it will be opening the windows and removing the screens, actually letting the insects *into* the house. For some, it will be walking barefoot in the mud in the backyard after a storm. For some, it will be walking alone in a rainstorm, mindfully, soaked all the way through, as the *babalawo*, mindfully, drenched his naked body in the procured sea water. For some, it will be sleeping under the stars for the very first time and listening to the racoons and the possums and the chipmunks that they knew were there but never took the time to watch, even from a distance. For some, it will be letting periwinkles slowly move across bare feet and ankles in a tidal pool, without disturbing them. For some, it will be pulling back from smashing the wasp that just landed by the Adirondack chair, recognizing that, it, too, wishes to live; that it, too, is the end result of eons of evolution, no less so than we are. For some, it will be riding a bike the five miles to work, just to feel the breeze that can never be felt through a windshield. No, it may not require paying homage to Yemoja out on the open sea. It might be picking up an acorn that has just fallen in your driveway, in mindfulness, as though you'd never seen an acorn before – and it may very well be that in your twenty or thirty or sixty years, you never really have.

What I am discussing here are therapies, not ends in themselves. What I am discussing here is a process of hallowing – of hallowing the Earth, not just those upon it who claim the word “people” for themselves alone. The *babalawo* poured the deep-sea vent water over his body to *trigger* his imagination and what religious scholars call a hierophany – a moment in which the sacred is brought into the mundane. It was intended to generate the *affect* – not merely the rational understanding – of a connection. We live at a time in which, at least in some parts of the world, rituals, liturgies, and the sacralization and hallowing of the ordinary have fallen out of fashion. Such is at the heart of our environmental crisis.

2:8 Don't Overthink It: The Role of Action in Attitude Change and *Metanoia*

Ethicology requires that we rethink what we take to be necessities, and it requires this rethinking to be quite radical. It requires us to rethink the foods we eat, the travel that we undertake (and its modes), and the habits of daily life that contribute to our carbon footprint or that delay restoration and mitigation. But I want to suggest that this rethinking might best follow (or perhaps be contemporaneous with) a period of *methodological thoughtlessness*. Why thought-less-ness? Suppose I say that it is better for you and for the ecosystem of which you are a part to ride a bicycle to run errands rather than drive, feed the birds in your backyard, and spend several hours per week walking, notebook in hand, in the woods or in another natural environment? Suppose I told you that, above your objections (*inter alia*, “I really don’t think it’s feasible to commit to this”; “I really don’t have the time.” Etc.), to just *do* these things, and that by doing them the rationale for doing them will gel thereafter?

There is something about engaging the Earth as we should, something about *embodied action* that allows us to see the value in alternative approaches to living-out our day, our week, our year, our lives. Embodied action (that is action that is not accompanied by complex reasoning or justifications) can quiet the mind’s objections to doing those things that we already know to be best or at least better for us (as *embodied action* quieted the skepticism of many of the scientists on the research vessel, leading them to think anew about their connection to the environment). It’s like telling yourself that you will bring home some small present to your spouse or partner every Friday evening. You may not feel like it, may not see it as necessary, but something happens in your relationship when you repeat this act of selfless giving. For one thing, the task and the responses to it change *you*. For another, they change your spouse or partner, who comes to appreciate your rhythm of gift-giving. When you both change, your relationship changes. When your relationship changes, the people around you are affected by what they see and hear. And so on. It becomes a *benevolent contagion*. The word “contagion” was used in a similar sense by Nick Hanauer and Eric Liu to describe how individual citizens can improve the larger society through individual acts of good:

[O]ne of the central facts of life on an interdependent web is that every action and omission is potentially powerfully contagious. When you are compassionate and

generous, society can become compassionate and generous. When you are violent and hateful, society can become violent and hateful. You can be the original cause of that contagion. Why? Because humans are copying machines. As the philosopher Eric Hoffer once said, “When people are free to do as they please, they usually imitate each other.” What this means is not that you are powerless but that you can set off a new chain of copying — and you do — every day with every act. In their groundbreaking book on social networks, *Connected*, Nicholas Christakis and James Fowler document the powerful and remarkable effect social networks have on us, and we on them. Exploring a variety of social phenomena, from obesity to home-buying to happiness, Christakis and Fowler show that “social networks affect every aspect of our lives. Events occurring in distant others can determine the shape of our lives, what we think, what we desire, whether we fall ill or die.”

This is to be taken not as generalized ethical precept but rather as a reporting of social fact. Just because you don’t immediately, or perhaps ever, see the virus of behavior leap from host to host doesn’t mean it isn’t leaping. It is, relentlessly. Most people are wired for strong reciprocity, which means we repay good with good and bad with bad, and are willing to repay bad with bad even at some personal cost, just to reinforce group norms. As a result, even when good behavior is the minority choice in a bad setting, those who hew to good behavior can eventually prevail — and they are not suckers for doing so, but rather players of the long game over the short.¹⁰⁸

I am a philosopher (among other things), so I place a great deal of weight upon argument and thought (while refusing to lose my affect and my spiritual sensibility). But *psychology* teaches us lessons that philosophy usually does not. It teaches us that we can improve the quality of our lives, at least sometimes, by first *doing* and then thinking later about all the reasons for our doings – that we can change our attitudes and cognition by first acting in a way consistent with some goal that we value (see, for example, Herman Kelman’s, “The Role of Action in Attitude Change”).¹⁰⁹ This is also true regarding the maintenance of our relationships with other human beings. When we take the time to consider the needs and feelings of others, they take note of it, and the quality of the relationship changes. That is, we don’t want to wait for the perfect argument before we act on what we know we

should do. Often, there is no perfect argument. Overthinking can sometimes be nothing more than an excuse to do as we have always done, and so delay changes that need to be made in order to achieve the valued goal. As was mentioned earlier, change and deviation from habits causes us to expend physical, mental, and emotional resources, and that can be unsettling. Sitting down and thinking too much about the change, rather than plunging into the change, can cause us to hold back, thus delaying an improved way to live in the world.

Consider the things we think are necessary in order to have a good life. We are in the habit of thinking that certain things are necessities when they are not. Labeling nonessentials as necessities is a way the mind locks us into old habits. Declaring, “Oh, I could never do Y because I have always done X,” turns “X” into, for all intents and purposes, a necessity rather than a convenience. Usually all that is meant here is that one does not wish to invest the time and energy to change. Say you ride the train to school or work every day, and you normally drive a mile and a half to the train station, where you leave your car in commuter parking, to be retrieved after the work day is over. The idea of walking that mile and a half instead of driving seems daunting. Why, on some days it will be raining, on others it will be snowing. The temperature where you live may vary greatly from season to season, from sub-freezing to triple digits. So, you conclude that driving to and from the train station is *necessary*. But it really isn’t necessary at all. You’re just “dug in,” in the habit of driving. And here’s the thing: You already *know* it isn’t necessary. The half-hour or so that it would take you to walk to the train station each day would not only be better for your physical and mental health, it would be better for the environment, and your sense of relationship to it. You already know that our lives are too sedentary, and that walking an hour or so a day to and from the train station would go a long way toward saving you from cardiovascular disease, overweight, depression, and diabetes, and would help you achieve other health goals. But you are gripped by the power of old habits, old habits which rationalize the *status quo*.

True addictions aside, the way to break a habit is to break it, and you do that by getting new and better ones. You take the *Nike* approach: You *Just Do It!* The reason that the Nike slogan is so powerful is that it short-circuits our normal patterns of rationalizing for old habits. “I’m not going jogging today; it’s raining!” Response: “*Just Do It!*” “I’m not in the mood to do my usual 30 pushups and 30 crunches this morning.” Response: “*Just Do It!*” “I don’t think I have the energy to get another degree, even

though I'd really like to; it'll take another three or four years to finish!" Response – well, you know the response. You see, we have evolved to privilege homeostasis, so long as there *appears to be* no clear and present danger that requires us to disrupt it. So long as we are not under a threat or facing an exigent need, the brain and the rest of the body conspire to tell us that where we are is *good enough*. But the brain and the rest of the body are frequently *wrong*, since the goal shouldn't be what's "good enough," it should be *flourishing* and living according to all of our capabilities. The difference between the proverbial "renaissance man/woman" and the average so-called "working stiff" is the difference between "*Just Do It!*" and "Things are good enough." The "renaissance man/woman" seeks to *flourish* according to all of his or her capacities; the average working stiff seeks merely to be out of danger and to obtain the basics for biological living and a safe-enough social standing. Of course, it would be delusional to assume that most people will aspire to become renaissance men or women, but it is by no means delusional to believe that most people have the capacity to break certain old and less than optimal habits, since that happens all the time.

Aristotle was right about habits: We form our characters and weave the fabric of our identities – indeed of our lives – not by or through single acts, but by and through repeated acts. As he says in his *Nicomachean Ethics*, "It makes no small difference, then, whether we form habits of one kind or of another from our youth; it makes a very great difference, or rather *all* the difference."¹¹⁰ We are, in other words, the constructions of our habits. I do not think we are what we repeatedly do in some essential sense, that is, I don't think we can be *reduced* to our habits, precisely because we always have the capacity to change and maintain an inner life that is foundational to and for action. There is a "self" behind all the doings. Yet, the idea of the power of habit cannot be gainsaid. One will note in Aristotle that deep ratiocination is not what leads to a life excellently lived. While Aristotle lays out and celebrates the moral and intellectual virtues, he does not reduce ethics to the ability to reason as well as (to give examples from our time) rocket scientists and first-rate intellectuals. Aristotle never forgot the importance of the body in his philosophizing. In fact, for Aristotle human beings should be seen as social animals, and the point of ethics is to guide each such social animal toward those activities that advantage the self and the community.

The threat of climate change is forcing us to rethink our habits, and especially our habits of thinking what we can and cannot do without. And this is coming at a time when increases in the incidence of

depression and other mood disorders, cardiovascular disease, obesity, diabetes, asthma, various cancers, and other maladies of modernity are forcing us to take a closer look at our lifestyles. For the lifestyles that many of us lead, especially in the rich “global north,” are not only causing these maladies, but are responsible for the severe injury done to the biosphere and the elemental Earth. Much of how we live in the global north is utterly dependent upon advanced technologies. It may be time for what I shall call, somewhat reluctantly, "enlightened ludditeism" (along with enlightened anthropocentrism) which will center on people pushing back against being absorbed, Borg-like, into technology, and into consumerism, commercialization, materialism, convenience, and a shallow form of wealth. In the stock market, the smart money wisdom says that when everybody is buying, sell, and when everybody is selling, buy. If I were to bet, I'd bet against the assumption that the future will be owned by the purveyors and owners of highly technological gadgets and the lifestyles that rely upon them, and the bad habits they sometimes engender. I think it will not be long before we tire of looking down at little screens (or up at hologram displays) and seeing delivery drones fill and, yes, pollute the sky with junk we don't need or goods we could wait for, and take to the hiking trails, the tennis courts, picnics on the “dirty” grass, and a deliberate rationing of media intake and commercial stimuli. This bet is a radical one (and by radical I don't mean unlikely, but rather that it will reflect transformations deep within our psyches), but I don't think human beings are made to live as the technomaniacs and consumption barkers want us to (or, as futurist Ray Kurzweil would have it, live as transplanted brains in robot bodies, or have our neo-cortexes uploaded into “the cloud,” living as “transhumans”).

One thing to keep in mind is that our “need” for convenience and new technologies has had a catastrophic environmental impact. We are not using technology so much as we are coming to *be used* by it (an old saw, but no less true), and we do not need much of it but have convinced ourselves that we cannot live without it. We are becoming the slaves, not the masters, and the need to choose from an increasingly dizzying display of technological options for our lives is already leading to anxiety disorders and depression, as the culture calls us to seek “perfection,” the best of the best gadgets (and even the best of the best partners, on display by the tens of thousands on numerous dating sites and apps), rather than to learn contentment and the joys of contentment with that which is not “perfect.” Emerson's wise and urgent counsel was “*Ne te quaesiveris extra,*” but our gadgets keep us focused outward, seeking fulfillment always from sources outside ourselves. While I

appreciate many of the advances that have made our lives better, I also believe that we need to rethink the ethics of the kind of civilization that Palo Alto, including Bill Gates and Mark Zuckerberg, would have us reproduce, as Franklin Foer discusses at length in his book *World Without Mind – The Existential Threat of Big Tech* (2017). Much of the energy we use goes to keep all of those screens lit and filled, all of those gadgets tooting and beeping, all of those drones in the air, and the pockets of all those Palo Alto billionaires and mega-millionaires stuffed with cash, as they promise the emancipation of humanity from the drudgeries of life. The cost of all of this to the environment is enormous. So, on many accounts, is the cost to our souls, as one form of drudgery is replacing another.

2:9 Sagacity, Ecological Spiritualities, and the Holy Refusal of Diminishment

When I deliver lectures to my students on the subject of environmentalism or, specifically, climate change, I introduce them to the character – or *caricature* – known as the “tree hugger.” “Tree hugger” is the disparaging epithet assigned by those “practical persons” (persons steeped in the market and the commercial affairs of life, in what the ancient Greeks called *oikos*) to people who consider themselves environmentalists. The tree hugger is supposedly one who is detached from practical affairs. Unconcerned with the practical economic impacts of ending overfishing, overlogging, and the burning of coal and of rain forests in places like Brazil and Indonesia (in order to grow cash crops on the land the trees occupy), and filled with romantic ardor concerning the nonhuman natural world, the tree hugger, according to those who employ this caricature, is actually deeply immoral, for not to care about the practical needs of their fellow human beings – their need for jobs and income and food and shelter – is indeed deeply immoral. What becomes quite problematic is when political spin-masters find value in labelling any and all environmentalists as tree huggers. Are there actual tree huggers? Yes, I suspect it is fair to say that those who spike trees so that the lumberjacks’ saws snap their chains and recoil into their faces are those to whom one might assign the appellation. Few environmentalists take to using such tactics, however. But all environmentalists must retain some of the ardor of the tree hugger, must *feel* the Earth, *feel* the injuries, and not just contemplate it or make it the subject of policy or income generation or study. Those who do feel the Earth share something with the tree huggers, though they are not blithe or careless about basic human needs. I will give up the tree hugger of the tree-spiking variety to the criticisms due. For the rest of us, those who feel the

Earth, those who would find constructive ways to protect individual life forms, ecosystems and species, a proper defense against the caricature is also due, for we should never, as environmentalists, smother our ardor, even when it sounds radical to the ears of the one-dimensional men and women of “practical” concerns, of *oikos*, as if *oikos* must be alien to environmental concerns.¹¹¹

Ethicology is neutered without the affective dimension, just as religion – broadly construed – is neutered without what Rudolf Otto termed “the numinous.” Our evaluative and ethical tools should include the affective, not merely the rational in its most insipid form. I want to turn to two philosophers who demonstrated the affective commitment to which I refer: Bruce Wilshire (1932 – 2013) and Henry Bugbee (1915-1999). Wilshire and Bugbee didn’t always get the recognition that they deserved, in part because of the nature of the professions of which they were a part – academic philosophy, in which they were odd men out – in it but not of it (thankfully, in my view). They were men who understood the critical importance of the affective, and of the numinous, and of scientific as well as phenomenological truth.

A few years ago, while giving a presentation at Fordham University to a room filled with other philosophers steeped in the philosophical tradition known as pragmatism, I blurted that I was tiring of the hackneyed pathways of pragmatism, and that I was interested in moving from pragmatism to *sagacity*. Those words are now forever sealed in a book, which captures the proceedings.^{vi} As is often the case when I drop such seeds, I only had a sketchy idea as to what I meant and knew that in my lack of clarity I might “step in it.” One of the attendees, in fact the one whose book we were gathered to discuss (and who was one of my teachers), Richard J. Bernstein, remarked that what I seemed to be after – this “sagacity” so-called – was already accomplished and on offer in William James’s writings (James himself one of the founders of the pragmatist tradition), and Bernstein pointed out, with some edge, that it was curious that I didn’t see this, given that in the room that night I quoted James, the pragmatist, with approval, from Bruce Wilshire’s *The Primal Roots of American Philosophy – Pragmatism, Phenomenology and Native American Thought*. The passage I read from the paper that I delivered that evening was this one:

^{vi} Richard J. Bernstein and the Pragmatist Turn in Contemporary Philosophy (ed. Judith M. Green).

James searches for cosmic community. As in each of us our distinct sensory modalities are compounded in one consciousness, why not suppose that each of our consciousnesses might be compounded in the Earth-mind? Why should a central nervous system like ours be the only physiologically discernible correlate of some kind or degree of awareness?

James ailing and dying, his ardent departure from the beautiful earth sounds in these pages of *A Pluralistic Universe* somewhat like Gustav Mahler's at exactly this time in his own last works. James's vision is of reconciliation and universal communion, and is reminiscent of Mahler's *Song of the Earth* and his unfinished Tenth Symphony. James:

Not only the absolute is its own other, but the simplest bits of immediate experience are their own others, if that Hegelian phrase be once for all allowed. The concrete pulses of experience appear pent in by no such definite limits as our conceptual substitutes for them are confined by. They run into one another continuously and seem to interpenetrate . . . My present field of consciousness is a centre surrounded by a fringe that shades insensibly into a subconscious more. I use three separate terms here to describe this fact; but I might as well use three hundred, for the fact is all shades and no boundaries. Which part of it properly is in my consciousness, which out? If I name what is out, it already has come in. The centre works in one way while the margins work in another, and presently overpower the centre and are central themselves. What we conceptually identify ourselves with and say we are thinking of at any time is the centre; but our *full* self is the whole field, with all those indefinitely radiating subconscious possibilities of increase that we can only feel without conceiving, and can hardly begin to analyze.

If we recall Black Elk's vision and its enactment for the people, we see immediately that the warrior-healer's communion with Wakan Tanka [the

Lakota term for God, the divine, or the Great Spirit] and James's last insights bear a deep affinity.¹¹²

A book or article on the subject of sagacity is on my list of future projects. That aside for the moment, the pertinent point is that there's a lot of what I am looking for in James, without a doubt. But in my notion of sagacity I am also looking for something richer than even James was able to deliver. I am looking for the forms of *salvation* which come through a deep understanding and affective response to wholeness. It is important to not only talk about wholeness; it is important to live the life of wholeness, to be continually in communion with what delivers the "much-at-onceness," as James referred to it, the forces of Nature, and *myself* as the intersection of such communion:

William James uses the phrase *much-at-onceness* to describe the fulsomeness of the world that at all times surrounds, nourishes, holds, and stimulates us. But of course, "much-at-onceness" also describes the way in which the sensate human body constantly holds and processes the gifts we receive from the surrounding, fulsome world (*Some Problems of Philosophy*, 32). This provocative little phrase, the much-at-once, can stagger us with unending innuendo, suggestion, and possibility. It directs our attention to the fact that the world is much more than the accumulation of particular things that we can see in front of us. James wants us to become aware of the ever-present More-ness of the world that constantly pummels, pokes, provokes, pricks, and feeds us from all directions; as well, he wants us to become aware of the uncountable numbers and sorts of visual and audible influences and emotional stimuli that web and spark around inside us.¹¹³

All of this, of course, makes me a bad philosopher as things go these days, and as things have gone for many years; I join the ranks of "cranks" such as James Lovelock, I suppose, and perhaps of Wilshire himself, and Thoreau, and Aldo Leopold (who saw fire in the eyes of a dying wolf), and some other men and women whom I consider to have been deeply engaged in burning philosophical inquiry and sustained reflection. But that's not at all bad company to be in these days, perhaps our species' final ones if we refuse to turn to and embrace the sagacity they tried to teach us, for these are

the people whose holism and deep commitment to engaging and understanding the natural world may yet save us.

I can rest on nothing less than *full* engagement, doing, experiencing, and feeling. Aristotle was most as insightful in the *last* chapter/book of his *Nicomachean Ethics* as he was in the earlier ones, though that is the chapter (or at least parts of it) that is often set aside as his idle musings about the value of contemplation. I am concerned about *phronesis* and *prohairesis* (practical thought and ethical choice), as was Aristotle and as are many other philosophers, but there is a time when *they* must be set aside so that one can *feel* and think only one's very being-in-the-world, which is being-in-place, being-in-time, being-in-love, with a focus that, with a force, pushes away mundane intrusions, or else understands *phronesis*, *prohairesis*, and the spiritual contemplation of nature as components of a holistic outlook, rather than separated by factitious demarcations. Ralph Waldo Emerson's focus on work (what he referred to as one's "necessary journey" in his 1836 book, *Nature*, and Thoreau's valorization of walking, like Henry Bugbee's own emphasis on the peripatetic for the good of the life of the mind and soul, are what declare to us, insist to us, that the life of the mind and soul and the life of the feet are not two different lives, and so we might infer that neither is the life of the technologist and the life of the poet two different lives. We have thought otherwise at our peril for too long, split the world into "tree huggers" and "capitalists" for too long, even though the span of time in which we live has been but a mere minute in the life of our species. But that mere minute, like the second it takes to light a fuse, may yet prove more than deadly; it already has proved to be deadly. It is akin to that second of time, geologically speaking, in which we are pouring thousands of gigatons of carbon into the atmosphere.¹¹⁴ A lot of damage can be done in the relative blink of an eye, in a relative second of geological time. It does not take long to commit suicide.

James helped to clear of its stumps and boulders and hidden shards the path to wholeness, but it is with Wilshire's fierce and incredibly risky anti-reductionism and phenomenology, his holy refusal of diminishment, his shameless blending of the vocabularies of shamanism, poetry, "Eastern" and "Western" philosophy and various religious traditions, that I find myself most at home. And this holy refusal of diminishment is most needed for a species that, perhaps, is manufacturing its own extinction. All this talk of shades and the much-at-onceness and shamans sounds quite the mess, of course, especially to those who prefer bright lines and tidy philosophical discussions, crisp and clear

arguments, and gorgeous theoretical constructs. But as the character Bill tells the Angel of Death in the movie *Meet Joe Black*, “That’s life. What can I tell you?” As James *did* tell us, “it’s all shades and no boundaries.” The boundaries are merely imposed and functional limits, and as such are not to be reified. Like some commonplace sense of the self, the commonplace sense that we are discrete and endure is a sense we need, for sure. But we must not fetishize it.

It was through Wilshire that I discovered Henry Bugbee, who also lived-out a holy refusal of diminishment, and it was Bugbee rather than James who I found to be my next guide on the journey to wherever I am trying to go in my own spiritual environmentalism. What does Bugbee tell us in his *The Inward Morning: A Philosophical Exploration in Journal Form* (hereafter, “Inward Morning”), but this, something I wish I had heard and wish I would have been ready to hear some thirty years ago:

I have remained concerned with the works of philosophers, not in themselves, but as helps to the understanding of experience. I study the works of philosophers out of an interest which subordinates theory to understanding. And though I have the patience to thread my way through theoretical considerations as such, I have acquired it only as I have found them to fertilize reflections that are essentially non-theoretical in character. It will ever be important to me to give attention to technical philosophy, but I will never be able to take technical philosophy as the ultimate phase of a reflective life.¹¹⁵

“Technical philosophy,” of course, is that type (at least far more often than not) that is undertaken in universities. But how could I have known to put things this way as an undergraduate studying religion and philosophy? Yet, it seems that Bugbee himself was pulling together ideas and honing a personal approach to philosophy – and to *experience* – that made him wise beyond his years, though he would, years later, come to be ushered out of Harvard as a “lowly” assistant professor. (It seems that he hadn’t published enough; he would eventually land at the University of Montana, at Missoula, for a twenty-year stint as a full professor in the Department of Philosophy. Montana, for a variety of reasons, was more fitting than Cambridge, as one might easily surmise after reading *Inward Morning* – and after visiting that gorgeous state.) Ushered out or not, his deep commitment to place, his

phenomenology of place, which reads more like something one might find in John Muir or Thoreau at their best, captured the attention and the imaginations of many. Here is W.O. Quine (who was a giant in American philosophy) on Bugbee, as recounted in Edward Mooney's anthology, *Wilderness and the Heart: Henry Bugbee's Philosophy of Place, Presence, and Memory*:

Henry came to Harvard in 1947 for five years as assistant professor. Thirty-seven years later, in *The Time of My Life*, I described him as "lean, contemplative, and best visualized in leather jacket with pipe, rod, reel, and creel. He had a mystical sense of the pure poetry of being."

Henry is the ultimate exemplar of the examined life. He walks and talks slowly and thoughtfully, for he is immersed – a Bugbee word – in the wonders of the specious present. *The Inward Morning*, true to form, is a day-by-day compilation of his philosophical reflections, each fresh that day. His thoughts conform to the discreteness of the concrete, eschewing the factitious continuity of abstraction. His is an atheistic mysticism, free of mythological trappings. Like mystics before him, he is drawn to the mountains and wilderness. In and about Missoula he found the ideal blend of academe and wilderness, and after some forty years I made my way there as Henry Bugbee Lecturer.

He was the authentic Henry Bugbee for all his years, and we walked and talked along the banks of a trout stream flanked by the Rockies and the Bitter Roots in their autumn splendor.¹¹⁶

It is noteworthy that Quine here makes reference to Bugbee's emphasis on being "immersed." Immersion for Bugbee was not something that always comes in an epiphanic flash, in a "Road to Damascus" moment, like those I described earlier, but rather it is a deep experience-*ing* of the world in its everydayness, very much as the Buddhists describe mindfulness. In many ways, *The Inward Morning* is a series of mindfulness meditations, or else deep reflections upon past events brought into the present and plumbed for their significance along their various adumbrations – whether the reflection is of a Kamikaze pilot flying headlong into Bugbee's ship (he served as a naval officer on

a mine sweeper in World War II), or venturing off into a swamp on the cusp of Spring, or sculling on the river alone or with his team mates.

Acquainted as he was with the Zen tradition, Bugbee nonetheless kept his distance from any conceptions of “truth in a flash,” as is to be achieved at the moment of nirvana/satori/kenshō. This is quite different from Paul’s and Leopold’s epiphanies, described earlier, although even in those epiphanies the “flash” came in a moment that was more durational than temporal, as we ordinarily think of temporal. The “flash” *commenced* the epiphany, it didn’t contain it. For Bugbee, truth (i.e., the richer, more complete insight) is approached through the *fluid* and *abiding* awareness of engagement with and in service to everyday experience, which, as Quine averred, most of us take as “specious” because so many of us are asleep or else suffer from torpor, which is not entirely our fault since the world we have made seems to want us this way.

Bugbee wrote:

One of the most instructive points which Zen Buddhism has suggested to me is that essential truth, as [our] ultimate concern, may lead us into endlessly inconclusive reflection, *only to dawn on us entirely unexpectedly in moments of non-reflective action*. I cannot follow Zen, however, in the tendency to regard reflection merely as a kind of preparation through disillusionment for the non-reflective advent of essential truth. This brings me to a further implication of the thought that as it is with us in action, generally, so it is with us in reflection: Faithfulness [faith that the deeper way of seeing is not merely delusional] is possible. And it is faithfulness that makes possible constancy in philosophic reflection, just as in doing anything else which we may come to do understandingly in good time. Zen emphasizes the swift advent of essential truth. It does not seem to me to place an equally deserved emphasis on the *slow increment* . . . No doubt Zen does emphasize the all-alongness of that essential truth into which we may suddenly awaken, and it may even bespeak a kind of confirmatory retroactive blending of decisive insight with antecedent presentiment suggesting continuity in the *way* one has come, and imparting a certain wholeness of meaning to one’s life. *But like so much of literature in which the non-theoretical*

*character of essential truth is stressed, Zen seems to bespeak the futility of reflection in a way that is apt to overlook the relevance of faithful reflection to the possibility of reflective understanding . . . There is much that goes by the name of mysticism, as a reflective interpretation of the advent of essential truth, with which I disagree rather deeply. The themes which seem most adequate to the advent of essential truth are not those of the rare and special experience [nibbana/nirvana], discontinuous with daily life, the ineffable transfiguration of the one who is seized (in effect isolating him from the bulk of men, who cannot share his experience), and abandonment of a stake in the everyday world. They are more nearly those of a belief in communication unbound, and a sharing of essential truth in all loyalty, all steadfastness, and all simplicity, just here and all along in the everyday world [emphases added].*¹¹⁷

Let me unpack some of this. First, let me regard the moments of non-reflective action which yield the new and deeper insight. This reminds me of Emerson's warning, in the "Beauty" chapter of *Nature*, that the moments in which beauty is most striking is not when it is *sought*, but rather when we are immersed in everydayness, in our ordinary work:

But this beauty of Nature [wrote Emerson] which is seen and felt as beauty, is the least part. The shows of day, the dewy morning, the rainbow, mountains, orchards in blossom, stars, moonlight, shadows in still water, and the like, if too eagerly hunted, become shows merely, and mock us with their unreality. Go out of the house to see the moon, and 't is mere tinsel; it will not please as when its light shines upon your necessary journey. The beauty that shimmers in the yellow afternoons of October, who ever could clutch it? Go forth to find it, and it is gone: 't is only a mirage as you look from the windows of diligence.¹¹⁸

Second, on "faithfulness" and "faith" Bugbee himself tells us: "If faith is a condition of understanding, it must be as authentic and non-arbitrary as the understanding of which it may be the condition. It must be genuine. The last thing it can be and be genuine is *a device* or *an option*. Faith cannot be recommended: it can only be *called upon* [emphases added]." ¹¹⁹ Faith in what, ultimately? It is faith that immersion and the inward morning are possible and are, in a very important sense, the

whole point of the game, not its half-time. And please note the language – “immersion” evokes the idea of “baptism,” and the “inward morning” evokes the notion of the *point verge* (the point beyond which something new must occur), a moment of fresh insight and the opening of a “redemptive transformative doorway.”¹²⁰

Was Bugbee a metaphysician (someone who had a more expansive sense of what reality is than the typical secular and scientific-minded person)? Yes, I think is the answer, but not the sort of metaphysician who so agitates many modern and contemporary philosophers. Bruce Wilshire writes of Bugbee’s metaphysical perspective and of his faith:

Bugbee delineates sharply a leap of faith in the creative and regenerative cosmos that has formed us and that holds *us* each instant. For a leap of some kind at some time – or a stumbling lunge or a long forgotten stride – has in fact always been made by each of us. No one – not ourselves, not our parents or siblings – really knows us, each in our pulsing and piercing actuality. But people think they do, and we mimetic beings pick up unwittingly from them. We are dulled into some pre-commitment to possibilities that slants and limits all that the world can ever be experienceable by each of us *as being*. Other possibilities are concealed, and the concealment is concealed. The earliest dawn is a rebirth unimaginable before it happens.

So how is it ever to happen? Seductions and shocks. Seductions and shocks administered someway, somehow, by somebody or by some thing. Maybe through what Bugbee and [Gabriel] Marcel call rumination, so like the tilling of soil, when the damndest things turn up; and hopefully stay turned up long enough to be registered, before the groundless ground covers them over again. The universe is creating and maintaining each of us constantly beyond anyone’s ability to comprehend it. In Spinoza’s terms we exist within the roiling nexus . . .

This is keenly suggestive but too abstract for Bugbee. Moreover, it lacks the bite of primal freedom. Waking up, he invokes his totem animal, the fish. Bugbee recounts

fishing for steelhead trout in a river among the redwoods of northern California. A steelhead leaps into the air:

It is a glorious thing to know the pool is alive with these glancing, diving, finning fish. But at such moments it is well to make an offering in one's heart to the still hour in the redwoods ascending into the sky . . . Now the river is the unborn, and the sudden fish is just the newborn – whole, entire, complete, individual and universal . . . To respect things qua existing may indeed be vision, but it is vision enacted, a “seeing with the eye of faith.” At its heart existence and decision interlock. One is himself the leaping trout.¹²¹

So, what's all this about? Am I merely trying to be esoteric? No, there is no time left for mere esoterica, though we have, for sure, moved into denser philosophical prose. Here we find ways of thinking about our relationships with and upon the Earth. We can be moved into a new relationship, into new habits by sudden or a series of fluid epiphanies – by faith that experience will open us to them in time, or through series of “seductions and shocks.” Here's the thing: There is no *one* way to have the scales fall from our eyes, to come to the *point verge* – one may have to avail oneself of different approaches. But why drill down into this, now, in a book about climate change? It is because *we don't heal the world unless we correct our vision*, and there is no single algorithm or therapy that can achieve that for all. The scientists on the ocean vessel on which the *babalawo* performed his ritual found a way to lose some of their scales in a manner that they could never have predicted, although had they possessed faith in the inward morning that Bugbee knew is ready to hand for each of us they would have nurtured some readiness for the new shift in perspective. This book isn't only about climate change. It's about the human condition, and human *conditions* which led us to the crisis. It's about salvations: the salvation of the planet's biota and ecosystems, yes, but it is also about *our* salvation – the cure for our myopia that is needed before we drive over the proverbial cliff. Without rediscovery of the sense that the Earth is not merely profane (a standing reserve) but is sacred (a holy place, perhaps unique, fashioned by unimaginable forces), we may not survive. Epiphanies cannot be forced, cannot be proselytized into reality, as Webb was aware is the case, but the ground can be *prepared* for them through education and through invitations to develop new attitudes and visions. The philosophical language of Jonas, Webb, Wilshire, and Bugbee can be seen as either off-putting

and full of obstacles, or it can be seen as the doorway into newer and better ways of experiencing the Earth and of one's self as a part of it. From my perspective, it is the latter.

2:10 Misshapen Moralities: Thoughtlessness and Doubling

The insipid jobs/environment dualism rests, like all dualisms, upon a deep misunderstanding of the nature of both jobs and the environment, and upon misshapen moralities. This is the result of a failure to *think*, the result of, as well, being attached to a superficial, vulgarly instrumental mindset that construes meaning and value only with reference to filled stomachs. A job is a tool useful for our engagements in the environment, and the job itself is part of that environment (there really is no outside or inside). What has been appealed to by politicians, such as those in the last US presidential contest, is that animal dimension of human existence only. “Jobs! Jobs! Jobs!” was the politicians’ chant out on the hustings (well, it always is, it seems). Thus, we have the dwindling jobs in the Rust Belt, from Buffalo, New York to South Bend, Indiana, placed *over and above* the need to take a holistic and enlightened approach to address economic disruptions, through retraining, conservation, environmental protection, debt forgiveness, government-sponsored work programs (for there are always things that need to be done!), etc., as though it is impossible to give serious attention to both. Even though it is not always true in “dirty” industries themselves, which are often (believe it or not) more sensitive to the environmental and health issues caused by their activities than their lobbyists, politicians pander to fears of their constituents, catalyzing a dualism that should be deconstructed rather than given new life through irresponsible campaign rhetoric. *The problem of climate change requires that politicians think more deeply about how they get votes, and whether they deserve the votes they get.* It requires that they come to appreciate and exercise good *judgment*, rather than mirror back to constituents, lost in the epistemic closure that the politicians helped to create, their own fears, now magnified by the public prominence of their representatives – to be regurgitated to them in an endless feedback loop.

The philosopher Hannah Arendt stressed the dangers of *thoughtlessness* in her reportage on the sensational Jerusalem trial of the Nazi officer Adolph Eichmann, wherein she formulated the notion that evil is not always obvious as such, does not always come in the form of a person equipped with

horns and a tail, but rather is often the result of banal decisions and actions. Arendt's notion that evil is often the result of such banal decisions and actions was scandalous when she introduced it, but upon reflection many came to appreciate her insight. Limiting one's thought and judgment when they should be *expanded* has contributed to the worst atrocities of the modern age. *Departmentalization and compartmentalization of our thoughts and limiting our identities to that of officer, soldier, patriot, worker, employee, politician (etc.) can set the stage for evil*, as the reasons for and outcomes of one's actions are "hidden" from the process of thinking. Arendt's insights are backed-up by others':

Robert Jay Lifton's interviews with physicians who served in the death camps provides an intimate look into the lives and psyches of the professional physicians who played a major role in operating the camps. He tells of commenting to a survivor of Auschwitz that he was struck by how ordinary the Nazi doctors were. They seemed quite average, and hardly demonic. To which the survivor commented: "But it is demonic that they were not demonic." The lesson of Auschwitz is that ordinary people can commit demonic acts. Lifton set out to answer the question of how this was possible for the Nazi physicians . . . This is remarkable when one considers these were all physicians who had taken an oath to heal and now had become practitioners of mass death. The transformation, Lifton argued, was made possible by two factors – a bio-medical narrative that enabled them to think of killing as a form of healing and a psychological process of "doubling," which enabled them to disown their own actions . . . What doubling did was allow the individual physician to be integrated into the hierarchical order of a technical bureaucracy. Bureaucracy neutralizes our capacity to be ethical by separating ends and means. Unlike our personal life, in which we choose both what we shall do (ends) and how we shall accomplish it (means), in a bureaucracy those higher up in authority are believed to be in the best position to see the big picture and choose the ends. Those technical experts lower down in the hierarchy are simply expected to use their knowledge and skill, with unquestioning obedience, to provide the means for carrying out ends chosen by others. Not having chosen the ends, they did not feel responsible for their actions. Again and again at the Nuremberg trials, Nazi bureaucrats argued: "I am not guilty. I had no choice. I was just following orders." Consequently, the demonic capacity to instigate mass death appears (at least in this

instance) to be fostered by a total surrender to a sacred order in unquestioning obedience through a process of doubling accompanied by narratives that reconcile killing and healing – a myth of life through death.¹²²

It is right for politicians to worry about the financial well-being of constituents, but it is another thing entirely to infantilize them, morally and politically, allowing them and enabling them to think that nothing else matters in life or in politics but *their* jobs and *their* personal economic security. Evil, Arendt told us, is the result of thoughtlessness and a failure of judgment. Of Arendt's notion of thinking, sociologist Majid Yar tells us:

For Arendt, thinking amounts to a quest to understand the *meaning* of our world, the ceaseless and restless activity of questioning that which we encounter. The value of thinking is not that it yields positive results that can be considered settled, but that it constantly returns to question again and again the meaning that we give to experiences, actions and circumstances. This, for Arendt, is intrinsic to the exercise of political responsibility - the engagement of this faculty that seeks meaning through a relentless questioning (including self-questioning). It was precisely the failure of this capacity that characterized the "banality" of Eichmann's propensity to participate in political evil.

The cognate faculty of *judgement* has attracted most attention in her writing . . . , deeply inter-connected with thinking, yet standing distinct from it . . . Arendt's concern with political judgement, and its crisis in the modern era, is a recurrent theme in her work. As noted earlier, Arendt bemoans the "world alienation" that characterizes the modern era, the destruction of a stable institutional and experiential world that could provide a stable context in which humans could organize their collective existence. Moreover, it will be recalled that in human action Arendt recognizes (for good or ill) the capacity to bring the new, unexpected, and unanticipated into the world. This quality of action means that it constantly threatens to defy or exceed our existing categories of understanding or judgement; precedents and rules cannot help us judge properly what is unprecedented and new. So for Arendt, our categories and standards of thought are always beset by their potential inadequacy with respect to that which

they are called upon to judge. However, this *aporia* [dead end or impasse] of judgement reaches a crisis point in the 20th century under the repeated impact of its monstrous and unprecedented events. The mass destruction of two World Wars, the development of technologies which threaten global annihilation, the rise of totalitarianism, and the murder of millions in the Nazi death camps and Stalin's purges have effectively exploded our existing standards for moral and political judgement. Tradition lies in shattered fragments around us and "the very framework within which understanding and judging could arise is gone." The shared bases of understanding, handed down to us in our tradition, seem irretrievably lost. Arendt confronts the question: on what basis can one judge the unprecedented, the incredible, the monstrous which defies our established understandings and experiences? If we are to judge at all, it must now be "without preconceived categories and . . . without the set of customary rules which is morality;" it must be "thinking without a banister." In order to secure the possibility of such judgement Arendt must establish that there in fact exists "an independent human faculty, unsupported by law and public opinion, that judges anew in full spontaneity every deed and intent whenever the occasion arises." This for Arendt comes to represent "one of the central moral questions of all time, namely . . . the nature and function of human judgement."¹²³

Consider these words with Hans Jonas's, above, regarding the inadequacies of our traditional ethics for the time in which we are presented with unique problems that may have catastrophic consequences, i.e. *the qualitatively novel nature of certain of our actions has opened up a whole new dimension of ethical relevance for which there is no precedent in the standards and canons of traditional ethics*. It is often said these days that our elected officials are not leaders, but simply mirror the will of constituents and give voice to their demands, with little effort to *educate* or *persuade*. If that is so, the depth of the "doubling" and the accompanying reduction to personal paychecks of those things that simply have to matter is very problematic indeed. In the American context, it may seem both hyperbolic and anachronistic to call the consequences of this doubling "demonic," but when one considers the potential consequences one may be forced to do just that. For our purposes doubling itself *is* the demonic. Those politicians who understand the nature of the environmental threat, yet

hide behind the rules of their profession in order to downplay and deny it, cannot escape the harsh indictment that they are guilty of the demonic.

2:11 Fiddleheads by Drone: Demanding Endless Convenience, and its Costs

On June 15, 2017, Amazon, the giant online retailer, announced that it made a bid to merge with – actually, acquire – the company Whole Foods Market, Inc. (“Whole Foods”). In its filing with the United States Securities and Exchange Commission, Amazon disclosed the proposed acquisition of Whole Foods, as follows:

On June 15, 2017, Amazon.com, Inc. (the “Company”) entered into an Agreement and Plan of Merger (the “Merger Agreement”) among Whole Foods Market, Inc., a Texas corporation (“Whole Foods Market”), the Company, and Walnut Merger Sub, Inc., a Texas corporation and an indirect wholly-owned subsidiary of the Company (“Merger Sub”). Pursuant to the Merger Agreement, Merger Sub will be merged with and into Whole Foods Market (the “Merger”), with Whole Foods Market continuing as the surviving company in the Merger . . . ¹²⁴

The concern of some investment analysts is the future of Whole Foods as a brick & mortar retail business. Though pricey, Whole Foods has provided people with a pleasant shopping experience in which they have at their disposal a wide array of healthy food choices, and can even learn about foods that were never a part of their diets in the past. You can not only buy fiddleheads at Whole Foods, you can also learn about the rather off-the-beaten-path vegetable while reading about them, and recipes to prepare them, on the Whole Foods blog. So the idea of Amazon’s acquisition of Whole Foods raised some concerns that this experience would be lost to the on-line selling behemoth that Amazon has become. I suppose the fear is that getting your fiddleheads delivered by drone (a method of delivery that Amazon is very keen to perfect and expand) is very different from strolling the aisles and smelling their freshness and learning about healthy food options – including and beyond fiddleheads.

Jeff Bezos, Amazon's CEO, is no dummy, so he has no interest in destroying the Whole Foods business model. But the fact remains that Amazon is an *internet* retailer, not a brick & mortar retailer, and so some have worries about the fate of Whole Foods – which now has some 470 stores in the United States and the United Kingdom.¹²⁵ The complaint by many brick & mortar retailers is that Amazon, and other on-line retail stores, will destroy the brick & mortar retail experience altogether, as people seek increasingly greater convenience. Why spend time in traffic driving to a neighborhood store or mall when you can order your tree fertilizer and umbrella with a few key strokes, items which I must say (in the interests of full disclosure) I recently ordered on Amazon in precisely this way. The response to those who worry is “You can't stop progress.”

But is it progress? Is it best to have our lives made increasingly more convenient, to the point that virtually anything that we want or need can be purchased with a device we carry around in our pockets – from baseball tickets to chicken coops? Is ever-increasing choice healthy, or is it causing spiritual and environmental harm and replacing real interpersonal contact with digital communities of consumers? These questions have been asked many times during the past hundred years or so, as consumerism was taking hold as the dominant ideology of our culture (we can recall Thorstein Veblen's notion of “conspicuous consumption,” and the critiques by Max Horkheimer, Theodor Adorno, and Herbert Marcuse, among many others). Even so, these days the questions “How much convenience is enough?” and “How much choice is enough?” and, simply, “How *much* is enough?” need to be asked anew, as the demand for immediate gratification of wants and so-called “needs” grows – and not only in rich North Atlantic countries, but in China, India, and Brazil, which have huge populations eager for the level of consumption that they have witnessed in the rich North Atlantic countries. We need to think about what all of this convenience and choice is doing to us, as well as to the environment, as I discussed previously.¹²⁶

At the same time, we should ask new questions about our fixation on “efficiency.” We take creating more efficient ways of doing things to be always, and *tout court*, good. Why expend energy or resources that you don't have to expend? Why move a log with your back when you can use a lever? Of course, novel arguments can be made about the inefficiencies of old ways of doing things. Nick Hanauer, the billionaire who made a killing as an early investor in Amazon, makes a point of the inefficiencies of brick & mortar stores in the Robert Reich documentary *Inequality for All* (2011).

But could it be that we have come to *fetishize* efficiency as we have come to *fetishize* convenience, another word for which is, perhaps, “incontinence?” Is the distaste with the idea of a sky filled with thousands of drones delivering cookies, condoms, and condiments akin to the distaste that many once had for the thought of telephone poles being erected down the bucolic byways of early 20th century towns, or to motorized vehicles noisily carrying people into the country’s wilderness areas, scaring the cattle and chickens? Is that distaste not merely what some ethicists call a “yuck response,” like the negative emotional response to the idea that commercial exchanges for human organs might be a better way to distribute them (better for matching need and supply), or to cloning the stem cells of aborted fetuses? In the cases of both organ exchanges and the cloning of fetal stem cells, good arguments have been made to further the idea that if you really care about human beings they are precisely the way to go. But the hunches, intuitions, and arguments that *something is lost* when we go down the paths of commercial exchanges for organs and fetal stem cells, remain and have some force, despite the argument from efficiency. These arguments must be considered, even if not always heeded, for they are attempting to remind us of something to which the marketers and technocrats have become blind or insensitive – that there are things worth waiting for, things worth dying for, and things that should never be done, whatever the utilitarian calculus.

Under the dominant theory of economics in the West, which is often referred to as “neo-liberal economics,” economic growth is closely monitored and prodded. For growth translates into more corporate profits, more business and consumer spending, more tax revenues, and more jobs – *ceteris paribus*, as the economists like to say. The idea of the benefit of continual growth is rooted in what Jeremy Bentham told us about some 228 years ago, in his *An Introduction to the Principles of Morals and Legislation* (1789):

Nature has placed mankind under the governance of two sovereign masters, pain and pleasure. It is for them alone to point out what we ought to do, as well as to determine what we shall do. On the one hand the standard of right and wrong, on the other the chain of causes and effects, are fastened to their throne. They govern us in all we do, in all we say, in all we think: every effort we can make to throw off our subjection, will serve but to demonstrate and confirm it. In words a man may pretend to abjure their empire: but in reality he will remain subject to it all the while.¹²⁷

Economic growth is attached to the demands of the referenced “sovereign masters.” Growth and happiness are perennially linked, with no exception admitted. We seek economic growth fastidiously and feverishly, and politicians, in their rhetoric, often reduce all politics to this principle. It is “Growth *Über Alles!*” Yet it was a man who knew Bentham well – John Stuart Mill – who told us, that he “cannot . . . regard the stationary state of capital and wealth with the unaffected aversion so generally manifested towards it by political economists of the old school . . . If the earth must lose that great portion of its pleasantness which it owes to things that the unlimited increase of wealth and population would extirpate from it, for the mere purpose of enabling it to support a larger, but not a better or a happier population, I sincerely hope, for the sake of posterity, that they will be content to be stationary, long before necessity compels them to it.”¹²⁸

Because of the ideology of consumerism that is the driver of market forces in late capitalism, little thought is ever given to the benefits of *reduction* in consumption, of *limiting* growth for the sake of other important values. I do not agree with those who would minimize the role of capitalism in creating the current consumerist obsessions and the impact of those obsessions on the environment in general and on climate in particular. For example, Amitav Ghosh tells us:

. . . I differ with those who identify capitalism as the principal fault line on the landscape of climate change. It seems to me that this landscape is riven by two interconnected but equally important rifts, each of which follows a trajectory of its own: these are capitalism and empire (the latter being understood as an aspiration to dominance on the part of some of the most important structures of the world’s most powerful states). In short, even if capitalism were to be magically transformed tomorrow, the imperatives of political and military dominance would remain a significant obstacle to progress on mitigation.¹²⁹

It is true, as I discuss in Chapter 3, that geopolitics, including hard sovereignty, is a serious impediment to climate mitigation and adaptation efforts (there is a common Prisoners’ Dilemma problem, among others), but the aspiration to state power (and to empire) is made more *acute* because of the wealth-generating power of capitalism. The United States does not have a near \$19 trillion

GDP, currently, because of aspirations to empire alone, but because it is fueled by and facilitates market processes for the purpose of generating ever greater wealth, understood in material terms. That is, the state, in this case, has come to serve the interests of commerce and capital, *primarily*. The projection of US power abroad isn't merely for the sake of conserving something called "the nation," but rather it is also for conserving the mechanisms that generate economic growth. So significant is this contributor to the current climate crisis that some refer to the current geological period as the "Capitalocene" rather than as the "Anthropocene."¹³⁰

It is no accident that the savings rate of US households is so low.^{vii} Market libertarians will tell us that the reason for this is that taxes are too high.^{viii} But I don't think that is the reason at all. To the contrary, I believe the reason is that the developed world is dominated by the ideology of consumerism which sees citizens as, *primarily*, nodes of consumption and of borrowing. Buying ever increasing quantities of goods and services, and coming to convince yourself that what you buy is necessary (not optional or a luxury), is part of the game – and make no mistake, it *is* a game, a very serious game in which business firms and the owners of capital are the winners. Were middle class American households, for example, to become content with less (heaven forbid!), the economy would constrict, and so would growth. When we hear about the "need" for greater and faster growth argued for in business media (which translates into greater consumption and more environmental waste) it is as though the consumer is not also a human being and a citizen, with a soul and values that have little to do with the market and "stuff." For the most part, this is precisely how adherents to neoliberalism want things. For these adherents, this is the only "rational" way to understand economy – that is, by excising all or most non-market values, for which econometric models have no place other than as variables that help to explain demand and supply curves. Discussion of human and citizen values

^{vii} Notwithstanding recommendations from financial professionals that people should have three to six months saved for emergencies (at a minimum), a GOBankingRates survey found that 57 percent of respondents have less than \$1,000 saved. That's an improvement over 2016, when we found in a similar survey that 69 percent of respondents had less than \$1,000 set aside. However, the percentage of people with \$0 in savings has climbed to 39 percent from 34 percent in 2016. The survey included 8,131 respondents among all 50 states and Washington, DC. Responses were collected through a Google Consumer Survey conducted from Aug. 15, 2017, to Aug. 17, 2017, and the responses are claimed to be representative of the U.S. online population.

^{viii} Taxes can be construed as saving toward a pooled social safety net and menu of services of which the taxpayer will and does avail herself, and so taxes are another way of *saving, at least in respect of that safety net and those services*. Put differently, taxes are, at least in advanced welfare states, a commitment device.

creates messiness, and the models don't know what to do with such messiness. What neoliberalism does know is that if an economy can stimulate spending – especially from the middle out – growth will (*ceteris paribus*) take place, and if it stimulates a lot more spending, growth will proceed at an even more robust pace.

There have been many criticisms of neoliberal assumptions and the advice of neoliberal economists (and, to be fair, some economists have been listening). Of late, we are beginning to see that consumer choice has proliferated to such a degree that people have become paralyzed at facing such a vast range of products and services, from loaves of bread to cell phones.¹³¹ The market place has become extremely complicated, and has even placed a drain on the public culture, in spite of its many benefits. Though having consumer choices is not a bad thing, we are beginning to see that there may be a limit. The result of this proliferation of choice has been rising rates of anxiety and depression, stemming from mental overload and the constant second-guessing of consumer decisions and, of course, the constant comparisons of what one possesses with what others possess. The need to keep up with the Joneses has trickled down to even modest consumer choices. The social theorist Barry Schwarz examines this in his recent book *The Paradox of Choice – Why More Is Less: How the Culture of Abundance Robs Us of Satisfaction*.¹³² Thus, people are pulled ever more deeply into market-mania and materialism, and away from a form of autonomy and freedom which is now rare: The autonomy and freedom to reject the siren's calls of what Vance Packard called "the hidden persuaders" whose goal is to create in and among us "the 'custom-made' man ready to help build a greater tomorrow."

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Well, the "customization" of human beings by powerful market forces has been improved and perfected since Packard's book, *The Hidden Persuaders* (1957), which was an explication, lamentation, and warning. It is not only what the fetishization of things has done to our souls that is apposite, it is also what the fetishization of things has done to the Earth itself that is apposite. For all things wear out and, when they do, must find their resting place. So now we have mountains of quickly "outdated" electronic components – laptop computers, flat-screen televisions, audio components etc., leaching toxic chemicals and heavy metals into the soil and water table, from the Maquiladoras of Mexico to China. We have landfills engorged with everything from dirty diapers to extremely toxic chemicals, the full contents of which will take thousands of years to decompose fully,

if they ever do (Styrofoam, which is still widely in use, takes 500 years or more to decompose). We have vast expanses of plastic in the Earth's oceans – some of which has been adrift for decades – which kills incalculable numbers of marine organisms as well as sea birds that ingest small pieces of indigestible plastic, taking it for food. Our lives are filled with commerce-driven holidays: Christmas, Thanksgiving, Halloween, Valentine's Day, the Fourth of July (in the United States), etc. For all of these holidays, businesses have found a way to make the wares they sell "indispensable." What would the factory farms of the country do without Independence Day and Thanksgiving, days on which hundreds of thousands of animals are slaughtered in order to meet consumer demand for the flesh of other animals? What would brick & mortar retailers do without Christmas?

There is a soul-cost to all of this consumption, though perhaps not to any specific act of consumption. While there may be no harm in a single purchase, the *aggregate* of manic purchases in a consumerist society creates the *emergent* soul-cost. And, again, there is also a terrible emergent environmental cost, one that could not have been predicted in advance. The problem is that it is hard to see how we will reverse course, given that, for all "practical" purposes, consumerism is the state religion, depended upon by almost all and defended by its high priests in business and government, because most of us have reduced our identities, to a great degree, to that of "consumer," whether we are aware of it or not (this is how ideology works). To speak of less spending on goods and services, to speak of doubling or even tripling the savings rate, is to break with the orthodoxy of the time – is to become a *heretic*. We are far from ready to have a conversation about what lives we might live were we to abandon consumerism, spend less time with some of our gadgets, lessen our time in the malls, and reclaim the simpler pleasures of strolls in the park alone with our thoughts, stargazing at night, long conversations around the dinner table with friends and family, unplugged, and time spent in simple manual tasks such as gardening, sewing, woodworking, and swimming in lakes, rather than glued to game consoles, smart phones, and lost behind virtual reality goggles and the narcotic-like distractions of *Pokémon Go* and other forms of self-stimulation which arrest our development and fitness to engage the challenges of life and to enjoy, face to face, the Earth of which we are a part. My criticism, to be clear, is not about the existence of such things, or even the employment of such things, but rather it concerns our unreflective attachment to them, our assumption that they are "inevitable." Of course, much of what I am saying here is not new. Marx critiqued our materialist fetishizations a long time ago, as did John Kenneth Galbraith and, more recently, Amitai Etzioni and others (see Neil Gilbert's

Never Enough – Capitalism and the Progressive Spirit). What is new is our keener awareness of what consumerism and materialism have done to the Earth itself, and to our souls.

The only answer that the market libertarian is programmed to give to the question, “Why not, in principle, reach for GDP growth of ten percent per year?” is: “Why not, indeed?!” Such a response would only underscore my point. Well, now we see the damage that irresponsible growth, based on rampant and myopic consumerism, can do. Of course, the market libertarian believes the answer to that problem is, simply, the market itself. The market cures all, is all, is God. But markets don’t choose. We do. The market will be what we decide it will be. But we believe the converse, like the elephant, tethered only by a thin rope that it can easily break, believes it is captive. It believes it because it is conditioned to believe it.

2:12 The Rehabilitation Challenge: What We’re Up Against

Rehabilitating ourselves to consume less raises significant challenges. On the macro level, it will be opposed with vigor by producers and sellers of goods and services of every type, who have spent hundreds of billions of dollars (really, *trillions* of dollars, if you consider all of the spending that must have taken place since the beginning of the twentieth century) conditioning us to buy what they are making and selling, using every means of psychological manipulation at their disposal, including, now, tracking our every move on the internet (and, if you consider location apps, in real space) so that they can micro-tailor their pitches (or, as they put it, provide us with uniquely tailored buying opportunities). Vance Packard discussed how “biophysicists” would be tempted to move past mere persuasion, in what was his future (the year 2000):

Eventually – say [by] A.D. 2000 – perhaps all this depth manipulation of the psychological variety will seem amusingly old-fashioned. By then perhaps the biophysicists will take over with “biocontrol,” which is depth persuasion carried to its ultimate. Biocontrol is the new science of controlling mental processes, emotional reactions, and sense perceptions by bioelectrical signals. The National Electronics Conference meeting in Chicago in 1956 heard electrical engineer Curtiss R. Schafer,

of the Norden-Ketay Corporation, explore the startling possibilities of biocontrol. As he envisioned it, electronics could take over the control of unruly humans. This could save the indoctrinators and thought controllers a lot of fuss and bother. He made it sound relatively simple.

Planes, missiles, and machine tools already are guided by electronics, and the human brain – being essentially a digital computer – can be, too. Already, through biocontrol, scientists have changed people’s sense of balance. And they have made animals with full bellies feel hunger, and made them feel fearful when they have nothing to fear. Time magazine quoted him as explaining: The ultimate achievement of biocontrol may be the control of man himself . . . The controlled subjects would never be permitted to think as individuals. A few months after birth, a surgeon would equip each child with a socket mounted under the scalp and electrodes reaching selected areas of brain tissue . . . The child’s sensory perceptions and muscular activity could be either modified or completely controlled by bioelectric signals radiating from state-controlled transmitters.

He added the reassuring thought that the electrodes “cause no discomfort.”

I am sure that the psycho-persuaders of today would be appalled at the prospect of such indignity being committed on man. They are mostly decent, likable people, products of our relentlessly progressive era. Most of them want to control us just a little bit, in order to sell us some product we may find useful or disseminate with us a viewpoint that may be entirely worthy. But when you are manipulating, where do you stop? Who is to fix the point at which manipulative attempts become socially undesirable? ¹³⁴

As it turns out, the assurance that the “psycho-persuaders” would recoil at the idea of body implants for the purposes of controlling consumer choices, in one way or another, was misplaced – and naïve. Today, Radio Frequency Identifier (“RFID”) chips are being implanted under the skin, and not only for the purpose of tracking lost pets or missing children or demented (or kidnapped) billionaires:

“You can inject one under your skin and no one will ever notice. Using short-range radio frequency identification . . . signals, it can transmit your identity as you pass through a security checkpoint or walk into a football stadium. It can help you buy groceries at Wal-Mart.”¹³⁵ As in the movie *Minority Report* (2002), in which retinal scans by sellers of goods and services were common in public spaces in order to personalize and refine pitches, an RFID reader can trigger instant and specifically targeted ads as we walk through a mall or along the paths of public parks, to the point that our days are filled with incessant micro-targeted pitches – and to some degree this is already happening. So, can we be far away from chips wired directly to certain control centers in the brain to, for example, enhance the pleasure of purchasing experiences or to enhance the use of certain products and services, or allow sellers to read “cookies” uploaded into them, as internet sites now read them in our computers? Some worry about the broad range of possibilities, such as for payment for purchases, as “it is in [sellers’] interests to lead the push towards a cashless society, where ease of transactions and detachment from money encourage impulse spending - and everyone's spending habits are dutifully logged.”¹³⁶ Are we far from the day in which rejecting RFID or similar chip implants would gain one the label, luddite – or worse, make it impossible to participate fully in society? I don’t think so, although thankfully it hasn’t happened yet.

The negative impacts on the environment are directly related to everything just discussed. We are destroying or stressing the environment due to our *insatiable and often manufactured appetite for ever increasing quantities and ever-changing qualities*. To reverse that, we must make a concerted effort, in our secular and religious lives, to revalorize simplicity, simple pleasures, the concept of contentment and adequacy as opposed to excess and immediate gratification. When I said we must make a *concerted* effort to do this, I meant just that. Joining with and learning from likeminded people also aware of the soul-killing and environment stressing effects of mass consumption and mass production, we will be able to get assistance in our own efforts, while, in turn, lending assistance to others who are trying to do the same thing. We can start by looking at communities who make choices that are outside of the mainstream, to learn their strategies to stay on the path of personal re-habitation – resistance communities. Vegans, for example, are bombarded relentlessly, every day, with offers and occasions to eat meat and use animal parts as instruments. Being vegan is difficult under such circumstances, and so vegans band together into actual and virtual communities, such as Direct Action Everywhere, or DXE, and others. Just search the internet for “vegan communities” and

you will see that there are, indeed, many. Within these communities, vegans support each other in the face of the daily pressures from family, from friends, from colleagues, and from advertisers to eat meat and use animal products. Such communities provide moral support, give a sense of mission and moral clarity, and are sources of information on public engagement and political action on behalf of animals. The point is that solidarity in the face of the commercial onslaught is critical to fighting back against it, so powerful are consumerism's forces. If we want to reduce the number of instances of our injury to the environment, we must reverse a good number of our current practices, and re-habituate. Solidarity will be key. The commercial forces arrayed and deployed against change are powerful.

2:13 Religious Insights and Language, Not Just Philosophical Arguments

In Chapter 1 I brought the voices of religious figures into my discussion of climate change, most notably that of Pope Francis. It is said that religion and its influence are receding. This is not the place to examine in any detail whether that claim is true. There is much evidence to suggest that it is not true, despite the ardent desire of hard secularists to the contrary.¹³⁷ It is my view that religious insights and religious language, such as those of Pope Francis, are exceedingly useful in discussions of the need to rethink our relationship with the Earth. Just a few pages back, I referred to religious and quasi-religious language to convey the message that the sickness that we suffer – our objectification of other creatures in the biosphere and of the Earth itself – can only be cured by an “inward morning,” by “faith,” by the “holy refusal of diminishment.” These words and phrases carry a different kind of charge than does the language of philosophical argument and technical discussions, a charge that can create the sorts of “seductions and shocks” that Wilshire wrote about and which are now, in my view, necessary for our survival. I respect this language, not because I look at things only from a particular religious perspective (I respect and gain from many religious traditions, just as I respect and gain from different philosophical approaches), but because of its great utility *in leading us toward the salvation to which I referred*. And given the number of people in the world who are religious, religious language and vocabularies of reverence speak directly to their experiences in ways that the technical philosophical language of John Dewey, Jürgen Habermas, and A.J. Ayer (among others) never will. Also, I respect it because it opens up a wider field of truths – phenomenological truths.

The Bible, as an example, is no deeply ecological text. It is, in many ways, highly anthropocentric and its plain language shows little regard for the non-human world *per se* (this is also true of other religious scripture, such as the *Adi Granth* (Sikhism) and the *Qur'an* (Islam), though less true of some, such as the pithy *Dao De Jing* (Daoism) and the expansive *Vedas* (Hinduism), which more often address the limits and importance of human beings in nature and cosmologically). Of course, the need for what we today call “ecology” and “conservationism” would never have even occurred to someone living in the ancient world or, for that matter, in pre-industrial societies, and for good reason – the idea that human beings could despoil it was inconceivable. Nonetheless, the biblical notion of “stewardship” is a reminder (even if that explicit reminder is parsimoniously distributed in biblical writing) that human beings do not *own* the planet, that we share it with other living beings, and that, because of our powers of reason and our moral capacity, we have a special obligation to nurture and protect the natural environment and the forms of life living in it. The notion conveyed in biblical religion is not of human beings as keepers of a vast menagerie, but rather of the constant gardener who must maintain the balance for the benefit of all within the “garden.” The constant gardener has a special obligation that no other creature has, i.e. to observe, survey, and attend to all of the garden’s needs, not instinctively but rather by means of the use of reason. In the creation story of “Genesis,” the words used to indicate human beings’ relationship to the natural world and the other life forms that dwell in it are “subdue” and “dominion.” This smacks of a kind of bio-colonialism and just the sort of objectification that strikes many as odious. But as some commentators have made clear, the intent of the writer or writers of “Genesis” was not to suggest bio-colonialism or the utilization of the world in perverse ways, or to see its abundance and diversity as a mere standing reserve, for this would be *irreverent*:

To “subdue” the earth meant to exercise wise control of it in such a way that it will produce useful goods for the people who “subdued” it. This command therefore implied an expectation that Adam and Eve, and their descendants, as God’s image-bearers, would investigate, understand, develop, and enjoy the resources of the earth, with thanksgiving to God who had entrusted such a responsibility to them. This implied not merely harvesting food from the vines and fruit trees in the garden of Eden but also domesticating animals . . . , developing the mineral resources of the earth . . .

and eventually developing dwelling places and means of transportation, learning artistry and craftsmanship, and so forth . . .

The responsibility to be stewards of God's creation does not mean that humans have a right to *abuse or destroy* his material creation, for wisdom dictates that they should take appropriate steps to protect this gift of God from unwarranted defilement and inappropriate use. Nor does stewardship mean that people are to *ignore* God's material creation, either through passive neglect or through a philosophical decision to leave nature in its "natural state" . . . Wise stewardship involves active steps to "subdue" and "have dominion" over such factors, with thoughtful development of the world's resources, in gratitude to God and in accord with his moral laws.¹³⁸

The tradition's evolving interpretation of the creation story found in "Genesis" is not to be taken as a substitute for the geological, paleontological, zoological and botanical records as provided by detailed and rigorous scientific study. Heaven forbid (so to speak)! The point of this religious language (at least for non-literalists) is not to substitute, but rather to cultivate human beings' *right relationship* with the other species and ecosystems of the Earth, given the religious perspectives and religious vocabularies that adherents already maintain, and to cultivate a sense of *reverence*. Also, its purpose is to evoke a sense of *obligation*. I think that to suggest that the ancient writers of "Genesis" had such a sense of obligation in mind would be pure revisionism; but Jewish and Christian *traditions* are not static and have evolved to arrive at this richer and more apt understanding of what the biblical text conveys given humanity's growing scientific knowledge of the physical world.

Islam, as well, refers to human beings having a special obligation to take care of the Earth. The *Qur'an* even refers to human beings as "vice-regents" of the earth, and places human beings and all species within a common *ummah*, or earthly *community*.¹³⁹ In the Islamic *Hadith*, or sayings/traditions of the Prophet Muhammad, there are many references to concern, even tenderness toward, animals.¹⁴⁰ Again, in Islam as in Judaism and Christianity, the ancient writings did not contemplate what we consider ecology or conservation, but the traditions do, in view of the information about the world gleaned over hundreds or thousands of years, depending upon the religion.

Daoism (alternatively, Taoism), which emerged from the philosophy of Lao-Tzu (alternatively, Lozi and Lao-Tze), expounded in the *Dao De Jing* (alternatively, *Tao Te Ching*), lauds balance and restraint, and asks us to cultivate an ethics that revolves around these central tenets, avoiding hyper-aggression, hyper-acquisitiveness, and imbalance. It does this by, among other things, reminding us of the many pyrrhic victories that we celebrate without any clue of the implications or costs that attend the “achievement.” The *Dao De Jing* counsels a “light touch” when it comes to organizing the world around us. It counsels that we ought not to force nature, but to assist it along the direction of its own internal logics and propensities. If our efforts to organize our societies and personal lives are too willful and vigorous, we may be planting the seeds of the pyrrhic victory, of the unintended consequence. What we have done in our bio-colonialism and in our industrialization is precisely what the *Dao De Jing* has counselled against – from strip mining to overfishing to the use of the atmosphere as a carbon sink with gigatons of carbon poured into it annually. Alas, as with other religious approaches, there is little in the way of specific recommendations; but the point, at least often, is to grasp the principles.

Jainism, another religious tradition arising out of India, lays stress on the religious notion of *ahimsa*, made more widely known in “the West” by Mahatma Gandhi. *Ahimsa* is also an important principle in Hinduism. *Ahimsa* captures the need to avoid harming other creatures, especially sentient ones, and to avoid all forms of violence, to the fullest extent practicable. Certain Jains even go so far as to wear face screens (called *Muhapatti*) to assure that they do not inadvertently breathe in (and so cause the death of) insects. For Jains, non-violence and “doing no harm” are the most critical commitments of the religious life, captured in the Sanskrit slogan “*Ahimsa Paramo Dharma*,” which translates as “Non-violence is the highest (religious) duty.”¹⁴¹ Dr. L. M. Singhvi, President of the Jain Institute, writes: “Jainism is fundamentally a religion of ecology and has turned ecology into a religion. It has enabled Jains to create an environment-friendly value system and code of conduct. Because of the insistence on rationality in the Jain tradition, Jains are always ready and willing to look positively and with enthusiasm upon environmental causes.”¹⁴²

Other religious traditions speak to the need to “do no harm” to the Earth or its denizens. Where the sacred texts themselves have little to say or are parsimonious concerning just *how* to unpack this commitment in modern times, theologies and hermeneutics have filled-in the gaps. Many members

of the Southern Baptist Convention (in the United States), for example, parted from a previous organizational resolution that took a skeptical view of climate change and opted for an interpretation of scripture that emphasized the notion of stewardship.¹⁴³ Catholic commitments and interpretations, as expressed in *Laudato Si'*, have already been discussed. Likewise, world Judaism, under such principles as *tikkun olam* (“to heal/repair the world”) has also found in its various branches religious language that galvanizes for action concerning climate change and, more broadly, environmental preservation. Indeed, there are commitments to address climate change by just about all of the world’s religious traditions.¹⁴⁴

Religions can bring to the “war mode” discussed in Chapter 1 a rich vocabulary and affect that are useful to spur the world’s peoples to action. Most of the world’s peoples adhere to some religious tradition. There are over two billion Christians, some one and a half billion Muslims, some one billion Hindus, half a billion Buddhists, and some quarter of a billion people who adhere to other religious traditions.¹⁴⁵ To leave-out or marginalize religious voices, insights, and language, focusing only on the scientific, the managerial, and the technological, would be a serious if not grave error. To ardent secularists who see religion as the cause of many of the world’s woes, this is an unwelcome perspective. That is what it is, I suppose. For many ardent secularists, the motto will always be that of Lucretius: “*Tantum religio potuit suadere malorum*” (“So great is the power of religion to lead us to evil”).¹⁴⁶ But just as they are wrong about their assumptions that religion, as such (and there is no such thing, really, as religion “as such” or religion *simpliciter*), is the cause of most violence in the world and is a standing impediment to science and rational thought, they are wrong about the utility of religious perspectives in helping to foster ethicology and a global environmentalist ethic.^{ix} Let us remember that it was secular logics – especially the logics of commerce and of politics – that are most responsible for our approaching the precipice, that are most responsible for our need to consider the possibility of our own extinction.

^{ix} William T. Cavanaugh in his book *The Myth of Religious Violence: Secular Ideology and the Roots and Modern Conflict* rebuts the notion that religion is the cause of violence and woe in the world. Karen Armstrong, likewise, rebuts such views throughout her writings and lectures.

2:14 The Ethicology Economy: Fully-Cognizant Action ^x

The economies of the world are learning to adopt the perspective that ethicology demands. They are moving away from the classical economics or neo-liberal economic models, albeit not quickly enough. Many governments and businesses around the world now understand the concept of sustainability and are utilizing that concept as regards commercial activities. The International Organization for Standardization (“ISO”), based in Geneva, Switzerland, garners international agreement on a range of commercial activities, including regarding social responsibility, risk management, food safety management, energy management, occupational health and safety, and the environment (in the ISO 14000 standards):

ISO has a multi-faceted approach to meeting the needs of all stakeholders from business, industry, governmental authorities and nongovernmental organizations, as well as consumers, in the field of the environment. ISO has developed 1. standards that help organizations to take a proactive approach to managing environmental issues: the ISO 14000 family of environmental management standards which can be implemented in any type of organization in either public or private sectors – from companies to administrations to public utilities. 2. ISO is helping to meet the challenge of climate change with standards for greenhouse gas accounting, verification and emissions trading, and for measuring the carbon footprint of products. 3. ISO develops normative documents to facilitate the fusion of business and environmental goals by encouraging the inclusion of environmental aspects in product design. 4. ISO offers a wide-ranging portfolio of standards for sampling and test methods to deal with specific environmental challenges. It has developed some 570 International Standards for the monitoring of such aspects as the quality of air, water and the soil, as well as noise, radiation, and for controlling the transport of dangerous goods. They also serve in a number of countries as the technical basis for environmental regulations. ¹⁴⁷

^x Some of the discussion under this heading is taken from my book, *Wall Street, Reforming the Unreformable: An Ethical Perspective* (Routledge, 2015).

Many businesses now have sustainability statements in their annual reports and discuss issues of environmental impact and sustainability on their public web sites (though some must be taken with a grain of salt, as they are, just as many corporate codes of ethics are, mere window dressing). Given the power of certain commercial actors to do enormous damage to the environment, a new consciousness is emerging. This new consciousness does not require managers and executives to operate in a supererogatory manner (in a manner more rigorous than what ethics demands). Rather, it spurs them to what I call *fully-cognizant corporate conduct*. This is conduct based upon a *social imaginary* in which stewardship of the firm is a central guiding principle, and upon the idea of social and economic *ecology* in which social institutions, including commercial institutions, are seen as interlocking, as part of an ecosystem that permits the members of society to flourish. Fully-cognizant corporate conduct entails constant *recollection* of the *fact* that the corporation/firm is a part of civil society and the natural world has the power to harm as well as to deliver benefits. The executives and other managers who operate with full cognizance come to feel the weight of that seemingly banal fact, produced by civic mindfulness and civic reflection, and by a sense of the place of the firm in the natural world. They possess what I have called elsewhere *third-wave economic imagination*¹⁴⁸ by which they understand that:

- (i) The firm is embedded in society and is a creature of it (i.e., is part of an ecosystem of commercial and noncommercial actors and institutions);
- (ii) “Economics” should not be limited to a grasp of merely macro-economic data – facts and figures about productivity, unemployment and the like, but should also be concerned with “social ecology” (i.e., the maintenance of critical non-monetary values (stable families, clean natural spaces, etc.) and non-commercial institutions); and
- (iii) A proper commercial social imaginary is affectively and intellectually sensitive to the fact that the firm is a *key agent of social welfare* (even though that is not its primary mission) that is linked with other key agents of social welfare, such as governments and nongovernmental organizations.

All of this is to be kept in mind as the plastic bottles, cans of hair spray, rolls of tissue, and flasks of oil careen down the conveyer belts of manufacturing plants, or as shares of equity are sold by and corporate analysis is issued from Wall Street's banks. All of this *can* be kept in mind where the executive manager is *properly initiated* into his or her role. I call this third-wave economic imagination as compared to what I have called *first-wave economic imagination*, which persisted in the early days of the industrial revolution and in which firms were assumed to be run expressly and solely for the *financial* enrichment of the owners of capital, with little or no regard for employees or the community at large, and *second-wave economic imagination*, which was ushered in after the *Lochner Era* (1897-1937), a period of deregulation and pro-business adjudication in the United States, and which evolved in response to a number of high profile and socially impactful events (among them, the Triangle Shirtwaist Factory fire of 1911) and in response to the development of more sophisticated and holistic management theories (such as those developed by Mary P. Follett and Peter Drucker) that arose along with a wave of social reforms that began or came to maturity in the Progressive Era. There was a burgeoning recognition that while firms produce useful and valuable goods and services they can also do substantial harm, and those harms can rebound on the firms themselves. The typology – first-wave, second-wave, and third-wave – is rough, admittedly, but I use it as a heuristic to plot out a growing awareness of and appreciation for *just what a business firm is* as a unit of civil society, and how it and the rest of civil society and the natural environment play off of one another. The trajectory has been away from conceptualization of the firm as insular and self-referential, toward the ecological conceptualization sketched above.

If you think that many executives already possess third-wave economic imagination and take decisions that may be characterized as fully-cognizant, you are right. But while many executives are or at least endeavor to be fully-cognizant, there are things that undermine them and force back-sliding to occur. Take the financial crisis of 2007-2009 that led to the insolvency of US and European banks. Bank executives operated without due consideration of what would happen if their banks failed. A review of the failures of several large US banks, and the near-failure of others, led to policy proposals that called for the banks to adopt “living wills,” i.e. prescribed and preapproved remedies that would lead to their proper unwinding if they found themselves in a catastrophic situation, so that taxpayer money would not have to be used to bail them out and in order to avoid a cascade of negative events through the financial system. The Dodd-Frank Wall Street Reform and Consumer Protection Act

(2010), passed by the United States Congress (and now under threat of repeal by the Trump Administration), specifically called for living wills in the case of large financial institutions.¹⁴⁹ Such legislation and proposals have, in this case, mandated what third-wave economic imagination would or could implement without legislation – that is, *thinking* about the full repercussions of the firm’s activities and existence, and what it would mean if those activities and existence ceased. The creation of a living will requires executives to think through the interests of all stakeholders, including those who may seem far-flung (such as taxpayers).

It is better to initiate corporate executives into the habits of thinking and planning that lead to third-wave economic imagination, which leads to fully-cognizant corporate conduct. The third-wave economic imagination should be seen as quotidian, i.e. not something that is only required when considering catastrophic possibilities. It can also be used to head-off the problem of free-riding, by creating robust private sector solutions to looming or extant public costs and externalities, without government having to act. It is axiomatic that commercial enterprises have an obligation to act in their own interests, but it is a superficial (yet widely held) notion of “self-interest” that leads to corporate transgressions (including the production of externalities) of one variety or another. Behind such holistic thinking must be something more: a strong sense that there are interests larger than the immediate interests of the firm and its executives. Without it being explicitly articulated, what stands behind third-wave economic imagination is *the civic sense*, which is a strong sense that, while it is not always expressed in work-a-day life, there is something that is more foundational than trade, and that something is the commonweal, and the commonweal includes *the commons* themselves. This should not sound grand or highfalutin, but to too many ears it does.

That is the problem, exactly.

To the contrary, what we need, and what third-wave economic imagination calls for, is the capacity to truly *think*. We are back to Arendt and Jonas. How do you make *thinking* part of the fiber of managerial deliberation? You tell stories and deploy rhetoric aimed at edification, and you do so via various channels and social organs: educational and governmental institutions; media; movies and novels; even well-crafted corporate communications. To shape commercial souls so that they act in

ways that are in line with the core values of the commonweal, these organs will be needed, although there is no particular algorithm that can be proffered to make it so.

Here, let's rehearse the idea of ethicology, as explicated above, and tie it into the idea of fully-cognizant corporate conduct. Recall that ethicology requires that a person, as an ethical agent with an evolved capacity for aesthetic appreciation, creation and discrimination, owing her daily survival to the Earth's resources (including the resources of diverse beauties, on which we feed our souls) and possessing the intellectual and physical capacities to (i) destroy those resources, (ii) conserve those resources, or (iii) enhance the quality of those resources for one's own and other species (of both the current and future generations), should, therefore, examine each action and plan (to the degree the context warrants) in terms of what is ethically right and in terms of what displays a high level of aesthetic mindfulness, rather than examine each such action and plan in terms of what is merely instrumentally expedient in the short-run. Given that status as an ethical agent, she must consider all actions in view of their impact (i) on the preservation, integrity, and stability of the biotic community, (ii) on the beauty that surrounds and inheres in the non-living world in which the biotic community maintains its habitats, (iii) on the elemental environment that supports it, and she must (iv) duly recognize the dignity, autonomy, preferences and rights of all other rational creatures (including human beings), and act in ways that do not contradict their status as rational creatures.

Ethicology in the *commercial* context imposes more than an ethic of "sustainability" – i.e., avoidance of the depletion of natural resources in order to maintain an ecological balance. It requires commercial actors (businesses) to consider the impact on the biotic community and the elemental environment to a far greater degree. As well, ethicology dovetails with stakeholder theory principles, but it requires a deeper and richer set of ethical considerations. Stakeholder theory overturns the notion that businesses ought to function solely for the economic benefit of their owners, as indicated above, and replaces it with the notion that they should be operated with a view to benefitting all of those who have a stake in the enterprise, including employees, customers, suppliers, and the local community. Stakeholders are generally construed as those persons, groups of persons, or entities that/who are important to the survival and success of the firm as well as those that/who can affect *or is/are affected* by the firm's objectives and operations. The concept of a stakeholder highlights the fact that a firm interacts continually with its stakeholder groups, and much of the success of a firm depends on how

well all of these stakeholder relationships are managed.¹⁵⁰ Ethicology adds a deeper and richer concern for the natural environment beyond the concerns of stakeholder theory as generally construed.

But ethicology isn't simply an ethic for private citizens and commercial actors. Policy makers must also come to see their activities through the lens of ethicology. They, too, must be initiated into this practice. Working hand-in-hand, private citizens, commercial actors, and policy makers can achieve a world in which the natural environment is enfranchised as a partner with a stake in all human activities, whether private, commercial, or governmental.

Chapter 3 ►

CLIMATE CHANGE AND APOCALYPTIC COSMOPOLITANISM: THE NEED FOR A GLOBAL AUTHORITY

Our problem is profoundly global, intergenerational, and theoretical. When these factors come together they pose a “perfect moral storm” for ethical action. This casts doubt on the adequacy of our existing institutions, and our moral and political theories. - Stephen M. Gardiner ¹⁵¹

We need our reason to teach us today that we are not, that we must not try to be, the lords of all we survey. - Margaret Thatcher, British Prime Minister (1979-1990) ¹⁵²

Abstract: The world’s states need to institute, organize, empower, and fund a central *authority* (not another “committee” or “working group”) to which a requisite amount of sovereignty is ceded by each in order to address climate change efficiently and effectively, now and for many decades to come. This notion of ceded sovereignty, often scoffed as alien to the core dogmas of political realism, can no longer be scoffed. Climate change, being a global threat, needs a coordinated response among all the world’s states, not merely an agreement to independently and voluntarily meet targets for GHG reductions, share the burdens of millions of climate refugees, create new insurance innovations, etc. This is even more clear now that we see, after President Trump pulled the United States out of the Paris Agreement, what domestic politics can do to derail serious efforts at the individual state level. Indeed, political risk looms over all climate negotiations. But is a central authority possible in the short-term, which is the only term we have left?

3:1 The Journey So Far

There have been quite a few intergovernmental meetings and conferences held to address climate change and related issues, such as the sustainable use of resources, alternative energy, and development in general. Some of the most notable (which include the annual “Conference of the Parties” of the UNFCCC, including “mandated events” and “workshops”) are: Earth Summit, held in Rio de Janeiro, Brazil in 1992, which resulted in the 1992 UNFCCC; Kyoto Conference (1997), which was the result of negotiations among many of the world’s governments to extend the UNFCCC; The Montreal Climate Change Conference (2005);¹⁵³ Bonn Climate Change Conference (2006);

Nairobi Climate Change Conference (2007); Bonn Climate Change Conference (2007); Vienna Climate Change Conference (2007); Bali Climate Change Conference (2007); Bangkok Climate Change Conference (2008); Bonn Climate Change Conference (2008); Accra Climate Change Conference (2008); Poznan Climate Change Conference (2008); Bonn Climate Change Conference (2009 – March, June and August); Bangkok Climate Change Conference (2009); Barcelona Climate Change Conference (2009); Copenhagen Climate Change Conference (2009); Bonn Climate Change Conference (2010 – April, May and August); Tianjin Climate Change Conference (2010); Cancun Climate Change Conference (2010); Bangkok Climate Change Conference (2011); Bonn Climate Change Conference (2011); Panama Climate Change Conference (2011); Durban Climate Change Conference (2011 – November/December); Bonn Climate Change Conference (2012); Bangkok Climate Change Conference (2012); Doha Climate Change Conference (2012); Bonn Climate Change Conference (2013); Warsaw Climate Change Conference (2013); Bonn Climate Change Conference (2014 – March, June and October); Lima Climate Change Conference (2014); Geneva Climate Change Conference (2015); Bonn Climate Change Conference (2015 – June, August and October); Paris Climate Change Conference (2015); Bonn Climate Change Conference (2016); COP 22 Climate Change Conference, Marrakech (2016); and several others.

In terms of significant *bi-lateral* action agreements, in 2014 the United States and China (currently one of the world's worst polluters, with China still heavily reliant on coal to satisfy its growing energy needs) entered into an agreement for substantial cuts in GHG emissions. The United States agreed to emit 26 to 28 percent less carbon in 2025 than it did in 2005, which is double the pace of reduction targeted for the period from 2005 to 2020, and China, which is a developing economy, pledged to reach peak carbon emissions by 2030 and pledged that clean energy sources would account for 20 percent of its energy production. At the moment, China is aggressively pursuing green energy technologies, largely because it has to, as its levels of pollution have not only become an ecological and health problem, but also a political problem.¹⁵⁴

Businesses also have been responding to climate change, pioneering innovations in construction, air conditioning and heating, lighting, and logistical fleet management, *inter alia*. Insurance companies have had a particularly sobering impact on decisions made by *other* businesses and by individuals seeking insurance (including flood insurance). Jason Thistlewaite of the University of Waterloo

(Ontario) writes that “In recent years, the private insurance sector has started to incorporate climate change issues into its standard business practices and even begun to lobby governments to regulate and reduce global greenhouse gas (GHG) emissions.”¹⁵⁵ The Insurance Information Institute (“III”) has discussed the concern throughout the insurance and re-insurance industry:

Any increase in damage and litigation over damage [due to climate change] is likely to raise insurance company losses. What, then, are insurance companies doing to lessen the impact of global warming?

As assumers of risk, both property and liability risk, insurers seek to mitigate potential losses every day through a process known as risk management. Since climate change could lead to losses *on a scale never before experienced*, insurers are not waiting for researchers to produce all the answers.

On the property side, they are redoubling their efforts to raise awareness of climate change and pointing out how potential damage can be limited through more prudent land use, stronger building codes and better planning. Some large companies have launched innovative projects to help developing countries adapt to climate change or have invested in renewable energy.

On the liability side, insurers are helping clients focus on risk management related to climate change, including avoiding harm to the environment. *Failure to protect against or disclose such harm may lead to lawsuits.*

Insurance industry groups are studying the effects of climate change on the industry. The Geneva Association, whose members represent the world’s largest insurers and reinsurers, agreed in May 2009 to continue its CC+I research project on climate change and its economic impact on insurance. In a comprehensive report, “The Insurance Industry and Climate Change—Contribution to the Global Debate,” the association sets out the issues and the role insurance can play in the process of adapting to the negative effects of change, particularly in developing countries [emphases added].¹⁵⁶

That said, note the III's exposition of recent developments, and the harder line the insurance industry is taking to mitigate losses:

In May 2014 subsidiaries of Farmers Insurance *filed class-action lawsuits* against a number of communities in the Chicago area, arguing that they had not done enough to prepare for last year's heavy rains and widespread flooding, *which could have been anticipated due to global warming*. The severe weather caused extensive property damage. The insurers sought to make the municipalities reimburse it for the claims it had paid for flood damage. Some two weeks later, Farmers withdrew the suits, suggesting they had had the desired effect. The lawsuits had drawn the defendants' attention to "important issues," it said, and it expected its policyholders' interests would be protected by the local governments going forward. The company also said that it "hopes to continue the constructive conversations with the cities and counties to build stronger, safer communities."

In a June 2013 report, "The Warming of the Oceans and the Implications for the (Re) Insurance Industry," the Geneva Association said there is strong evidence that the world's oceans have warmed significantly and that temperatures will continue to rise. In such an environment, the report noted, the old approach of analyzing historic data to predict future risk is inadequate. A more effective approach is to include the use of models based on various likely scenarios. *The report concluded that in some high-risk areas, ocean warming and climate change threaten the insurability of catastrophic risk more generally.*

As of February 2014, California, Connecticut, Minnesota, New York and Washington State had agreed to participate in a National Association of Insurance Commissioners climate risk disclosure survey adopted in 2009. California requires all insurance companies writing more than \$100 million in direct premiums to respond to the eight-question survey, while the other four require companies writing more than \$300 million in premium to respond. For smaller insurers, providing information on climate change risk is voluntary. Responses are available to the public.¹⁵⁷

What was once thought unthinkable, unfeasible, idealistic, and naïve (particularly in the minds of nationalists and conservatives) has become the common understanding: Climate change is real and business has a huge role to play to address it. Now, even investors are taking climate change seriously, which has led to new investor disclosure guidelines promulgated by regulators in Europe and the United States. Economic, financial and environmental considerations are no longer severable from one another:

A report released by Citigroup in 2015 estimated that not acting on the effects of climate change could cost the US economy \$44 trillion dollars in terms of lost gross domestic product (GDP) by 2060. The question that persists is how companies disclose these risks to their investors . . .

Public companies are required by the Securities and Exchange Commission to disclose risk factors in their financial filings. Traditionally, companies have included possible negative operational outcomes that could affect their risk targets – such as capital resources, net sales, revenues, and future financial conditions. However, climate change can have possible negative outcomes affecting any or all of these risk targets . . .

The industry-led Financial Stability Board’s Task Force on Climate-related Financial Disclosures (TCFD), whose purpose is to ensure “more methodical, comparable and consistent disclosure on climate-related risks and opportunities,” recommended in its June report that preparers of climate-related financial disclosures provide such disclosures in their mainstream financial filings . . .

The Task Force believes climate-related risks are often material and “disclosure in mainstream financial filings should foster shareholder engagement and broader use of climate-related financial disclosures, thus promoting a more informed understanding of climate-related risks and opportunities by investors and others.”

“Publication of climate-related financial information in mainstream financial filings will help ensure that appropriate controls govern the production and disclosure of the required information,” the Task Force also stated.¹⁵⁸

In the United States, the Securities and Exchange Commission (“SEC”) issued guidelines regarding climate change disclosures. Unfortunately, the SEC has done little to enforce those guidelines, at least as of this writing. Given the Trump Administration’s stance on environmental protection, and its view that ACC is a “hoax,” it seems unlikely that the SEC will be permitted to become more aggressive in policing and enforcing risk disclosures concerning climate change in public company filings.¹⁵⁹ That said, there are other powerful voices pushing for enhanced disclosures. On June 29, 2017, the TCFD (headed by former New York mayor, Michael Bloomberg) released three documents that serve as building blocks to describe and support implementation of the TCFD’s recommendations. The TCFD’s interests include helping investors and businesses better prepare themselves for the risks and opportunities (e.g., new green technologies) due to climate change:

It is widely recognized that continued emission of greenhouse gases will cause further warming of the Earth and that warming above 2° Celsius (2°C), relative to the pre-industrial period, could lead to catastrophic economic and social consequences. As evidence of the growing recognition of the risks posed by climate change, in December 2015, nearly 200 governments agreed to strengthen the global response to the threat of climate change by “holding the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels,” referred to as the Paris Agreement. The large-scale and long-term nature of the problem makes it uniquely challenging, especially in the context of economic decision making. Moreover, the current understanding of the potential financial risks posed by climate change—to companies, investors, and the financial system as a whole—is still at an early stage.

There is a growing demand for decision-useful, climate-related information by a range of participants in the financial markets. Creditors and investors are increasingly demanding access to risk information that is consistent, comparable, reliable, and clear. There has also been increased focus, especially since the financial crisis of 2007-2008, on the negative impact that weak corporate governance can have on shareholder value, resulting in increased demand for

transparency from organizations on their risks and risk management practices, including those related to climate change.

The growing demand for decision-useful, climate-related information has resulted in the development of several climate-related disclosure standards. Many of the existing standards, however, focus on disclosure of climate-related information, such as greenhouse gas (GHG) emissions and other sustainability metrics. Users of such climate-related disclosures commonly cite the lack of information on the financial implications around the climate-related aspects of an organization's business as a key gap. Users also cite inconsistencies in disclosure practices, a lack of context for information, use of boilerplate, and non-comparable reporting as major obstacles to incorporating climate-related risks and opportunities (collectively referred to as climate-related issues) as considerations in their investment, lending, and insurance underwriting decisions over the medium and long term. In addition, evidence suggests that the lack of consistent information hinders investors and others from considering climate-related issues in their asset valuation and allocation processes. [Note references omitted.]¹⁶⁰

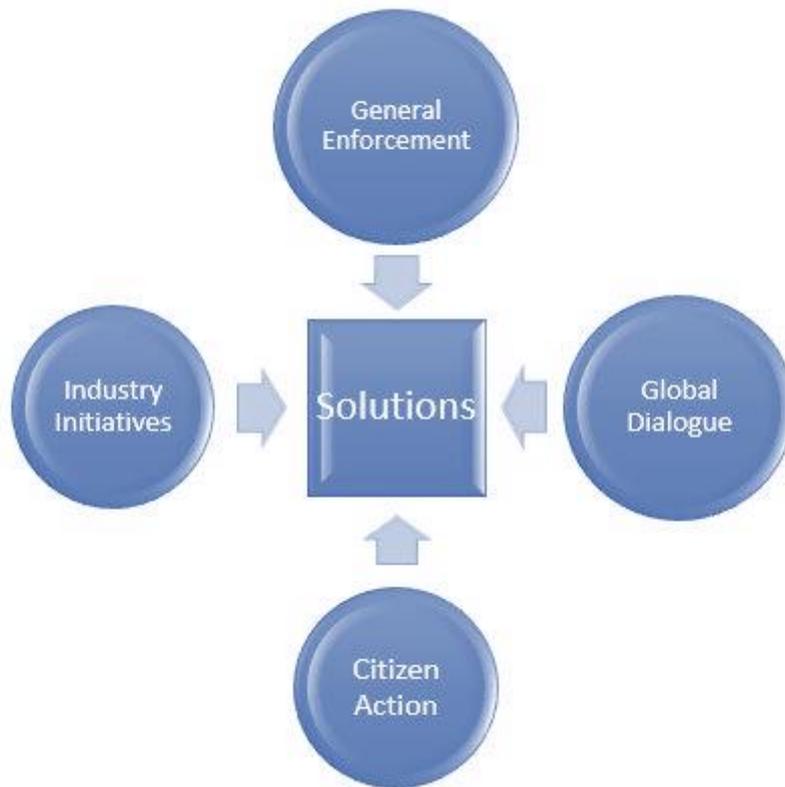
3:2 The Need for a Global Authority

While the work of NGOs, of industry, and of citizens themselves have been extremely useful in efforts to mitigate and prepare for the effects of climate change, the United States' decision to pull out of the Paris Agreement, as well as waffling by other countries, suggests that a stronger hand needs to be added to the mix, and it is up to the world's citizens to bring this about.^{xi} This is not a casual suggestion, it is a moral imperative. As Gardiner puts it:

^{xi} In September of 2017, Trump Administration officials were suggesting that withdrawal from the Paris Agreement may not be inevitable, as long as terms were renegotiated to the Administration's satisfaction. Other parties to the agreement continue to indicate that there will be no renegotiation. The Administration seemed to be bending to pressure in suggesting that exit is not inevitable, which contradicts earlier statements. The other Parties to the Paris Agreement would be pleased if the United States remained a party, but whether or not it does the various governors, mayors, and business leaders in the United States are accepting the obligation to meet or improve upon the agreements targets.

Suppose that it is true that humanity currently lacks the appropriate institutions to deal with global environmental change. What follows? If political institutions normally operate under delegated authority from citizens, the answer seems clear. This is a case where the delegation has either not happened, or else has failed to be successful. How do we think about this? Again, there is a natural answer. If the attempt to delegate effectively has failed, then the responsibility falls back on the citizens again – either to solve the problems themselves, or else, if this is not possible, to create new institutions to do the job. If they fail to do so, then they are subject to moral criticism, for having failed to discharge their original responsibilities.¹⁶¹

Indeed, as has been made very clear (and what is very clear by the terms themselves), the Paris Agreement is a non-binding instrument, with provisions that were desiderative and velleitous at best (See Appendix, “The Paris Agreement”). Given what is at stake, *reliance* on voluntary compliance is grossly insufficient, and that would be the case even if all parties did precisely as they promised. The reliance on voluntary compliance, given the stakes, is itself highly morally problematic, especially when all parties are aware of the wildly different agendas and capabilities that are distributed among the world’s states, and the political pressures that can work to mitigate against voluntary compliance – and here I am not considering the example of the United States alone. There are at least four vectors for solutions to the various problems ahead: 1. Citizen action (individually or through civil society organizations); 2. Industry initiatives (e.g., the creation of new green energy sources, carbon sequestration technology, and flood mitigation technology, *inter alia*); 3. Global accord (including and leading to international non-binding commitments and memoranda of understanding); and 4. Global enforcement mechanisms. The first three have been in play, in a coordinated way, since Earth Summit, in Rio. But because there is no global enforcement mechanism, non-compliance with past agreements or covenants can present from any party at any time, without any substantive price to pay on the part of the party in breach. It is too easy, for example, for a state to point to domestic reasons – including political ones – for non-compliance.



This won't do.

No state relies solely upon *voluntary* tax compliance for the raising of revenue. Given the importance of tax revenue for the very survival of the state, each state imposes a range of penalties for lack of compliance, including asset seizure, fines and incarceration. No state relies on voluntary compliance to assure that internal *private* commercial contracts (critical for economic activity) are honored, but rather arranges for a range of civil remedies for breaches. I could go on and on. The point is this: Where things *vital to the functioning of the state* are concerned, forms of *coercion* and not mere voluntary compliance are employed. Indeed, it is often the fear of the penalties for non-compliance that keeps people and institutions in line, even though there will always be a few audacious risk takers

who aggressively game the system or viciously evade their legal and moral obligations (e.g., some of those persons disclosed in the “Panama Papers” and “Paradise Papers”).^{xii}

Given these considerations, the world’s states need to institute, organize, empower, and fund a central *authority* (not another “committee” or “working group”) to which a requisite amount of sovereignty is ceded by each in order to address climate change efficiently and effectively, now and for many decades to come. This notion of ceded sovereignty, often scoffed at as alien to the core dogmas of political realism, can no longer be scoffed at. Climate change, being a global threat, needs a coordinated response among all the world’s states, not merely an agreement to independently and voluntarily meet targets for GHG reduction, share the burdens of millions of climate refugees, create new insurance innovations, etc. This is even more clear now that we see, after President Trump pulled the United States out of the Paris Agreement, what domestic politics can do to derail serious efforts at the individual state level. Indeed, political risk looms over all climate negotiations. But is a central authority possible in the short-term, which is the only term we have left?

There is something about standing at the precipice which allows into the range of options notions that would not have been given a moment’s thought in less exigent circumstances. We recall Hannah Arendt’s notion of *thinking*, of *thinking* without banisters when confronted with circumstances that explode the categories of our institutions and possibilities. We must think anew; we must think, as Arendt suggested for times like these, without preconceived categories and the customary norms. We must bring our judgment to bear on the current crisis and not cleave to the typical constraints or to old solutions.

Pope Francis wrote in *Laudato Si*’:

The twenty-first century, while maintaining systems of governance inherited from the past, is witnessing a weakening of the power of nation states, chiefly because the economic and financial sectors, being transnational, tends to prevail over the political. Given this situation, it is essential to devise stronger and more efficiently organized

^{xii} The International Consortium of Investigative Journalists (“ICIJ”) broke two different stories regarding tax evasion and the hiding of assets by wealthy individuals and business entities, dubbed, respectively, “The Panama Papers” (2016) and “The Paradise Papers” (2017). See ICIJ.org.

international institutions, with functionaries who are appointed fairly by agreement among national governments, *and empowered to impose sanctions*. As Benedict XVI has affirmed in continuity with the social teaching of the Church: “To manage the global economy; to revive economies hit by the crisis; to avoid any deterioration of the present crisis and the greater imbalances that would result; to bring about integral and timely disarmament, food security and peace; to guarantee the protection of the environment and to regulate migration: for all this, there is urgent need of a true world political *authority*, as my predecessor Blessed John XXIII indicated some years ago.” Diplomacy also takes on new importance in the work of developing international strategies which can anticipate serious problems affecting us all [emphasis added].¹⁶²

Pope Francis also recognizes the fragility of governments. Governments can make abrupt course changes in policy. As we have seen with the election of Trump, a radical shift in policy has taken place – so radical as to abjure and undo nearly all of the policies and goals of his predecessor, Barack Obama. Understanding this, Pope Francis tells us:

[C]ontinuity is essential, because policies related to climate change and environmental protection cannot be altered with every change of government. Results take time and demand immediate outlays which may not produce tangible effects within any one government’s term.¹⁶³

In Francis’s (and his predecessors) insights one finds Arendt’s banisterless thinking. If a true world political authority was thought by former Popes to be required in order to address relatively quotidian international crises (and they were certainly not alone in this, as they were joined by the ranks of hundreds of thinkers in governments, universities, and NGOs operating around the world), such an authority is, *a fortiori*, required to address the devastation that climate change will cause – devastation that will make the financial crisis of 2007-9 look like a mild shock.

Sovereignty is still an important and even critical political concept and lodestar of self-determination and international relations, just as is autonomy for individual persons. Sovereign borders do not only create *problems* for necessary and robust action when such action is required (to address famines,

floods, and to assist refugees, as but a few examples), as critics frequently charge; they also serve to make the administration of the needs of limited numbers of people more rational and efficient, and they serve to protect people in times of crisis so that they do not become stateless. As we have seen in recent history, made crystal clear in the recent writings of Timothy Snyder and other historians, stateless peoples – that is, people not protected within or behind the ramparts of state sovereignty – are too often the first to become the victims of political scapegoating and tyranny.¹⁶⁴ Further, we need sovereign states to bring markets (firms, exchanges, bankers, etc.) to heel, lest they get out of hand and threaten the stability of the very economic opportunities they themselves create. Only sovereign states, because of the authority to tax and to write the rules of the road for their own citizens and their own institutions (i.e., they wield police power), have what it takes, ultimately, to check markets and market institutions, self-regulatory activities notwithstanding. So, in what follows I do not call for “world government” or the gelding of sovereignty. What I do call for is the *rational* ceding of sovereignty *to the degree needed to address a global, not merely a state, threat*. The international relations and climate scholar Henry Shue has called for the same, and for mostly the same reasons.^{xiii} The logic is simple: It is in the interest of each state to do so, and this interest overrides other interests that each state does or may maintain. Regardless of our political borders, we exist on one planet, and the changes in Earth’s dynamic systems that we will face (are facing) respect no borders. Physics overrides political lines of demarcation, just as it does human timetables for action. The winds and rains of hurricanes “Eugene” (August 2017), “Irma” (September 2017), “Maria” (September 2017), and Ophelia (October 2017), which caused hundreds of billions of dollars of damage, in the aggregate, and immeasurable emotional trauma and displacement, originated beyond the borders of the United States and Ireland and the other countries impacted.

In a world in which resources are contested, ceding sovereignty is not simple. It is said that it takes several nautical miles to stop a fully loaded oil tanker on the open sea, and then to turn it around (an apt analogy, when you stop to think). The current understanding of state sovereignty is like that oil tanker. Large corporate interests and governments invested in the philosophy of political realism are difficult things upon which to force a course change, especially when nativist winds are blowing. But difficult or not, that is precisely what they must do if we are to address the predicted damages that

^{xiii} Henry Shue, *Climate Justice – Vulnerability and Protection* (Oxford: Oxford University Press, 2014).

will result from climate change, which include the deaths of tens of millions of human beings. Critics of the UNFCCC and the IPCC often point out that the pace of progress is too slow, that the agreements reached are mostly non-binding, and that there is insufficient attention being paid to the poor countries that will be impacted by climate change, despite the minimum \$100 billion per year to be paid (supposedly) to the poorer countries by the rich countries in order to help them prepare for necessary changes and to mitigate the damage caused by climate change, as called for in the “Adoption” section of the Paris Agreement by the Conference of the Parties.¹⁶⁵ Yes, the Paris Agreement itself calls for compliance mechanisms:

1. A mechanism to facilitate implementation of and promote compliance with the provisions of this Agreement is hereby established.
2. The mechanism referred to in paragraph 1 of this Article shall consist of a committee that shall be expert-based and facilitative in nature and function in a manner that is transparent, non-adversarial and non-punitive. The committee shall pay particular attention to the respective national capabilities and circumstances of Parties.
3. The committee shall operate under the modalities and procedures adopted by the Conference of the Parties serving as the meeting of the Parties to this Agreement at its first session and report annually to the Conference of the Parties serving as the meeting of the Parties to this Agreement.¹⁶⁶

But mechanisms to “promote” compliance are like “mechanisms” to “promote” good conduct during blackouts. They are insufficient. The world’s governments should lay the foundations for more robust joint efforts (bilateral, regional, and international), with enforcement mechanisms that cannot be easily resisted by assertions of Westphalian sovereignty, even if many of the burdens can be assumed by local authorities (mayors, governors, and local legislators). Given recent events, most notably the official and foolish climate change denial of the Trump Administration in the United States, and Brexit in the UK, it is clearer than ever that we cannot rely on typical state mechanisms to bring about the needed action. What is required is movement in the opposite direction than that contemplated by nationalists in the United States, the United Kingdom, France and other countries. What is required

is the creation of a robust international *authority* to *police compliance* with multinational climate change agreements (and subsidiary agreements). What is required is a bold step toward creating new organs of/global regulation, at least as regards this issue and issues ancillary to it (such as, as mentioned, the handling of the millions of climate refugees that are expected). Nationalist worries about a slippery slope leading to a multi-tentacled world authority that rides roughshod over the peoples of various states (not entirely baseless) can be addressed with such devices as hard sunset provisions, limited veto power, notification requirements, courts of adjudication, and built-in mediation and arbitration mechanisms deemed fair to all parties. So those worries can be transformed into straw men, relatively easily.

The call for an international authority is not new, though it has always been considered rather fanciful in a world that understands international relations to be effected through a mixture of *Realpolitik*, *Machtpolitik*, and hard diplomacy. But the idea for more robust organs of world governance have persisted, and not only because of romantic or utopian visions. We can look back to Diogenes the Cynic, Epictetus, Immanuel Kant (I've just traversed more than two millennia) and others who also called, implicitly or explicitly, for more robust international agreement on critical matters, especially in order to avoid wars. In a 1946 essay by Albert Einstein, published in *The New York Times*, Einstein contended, as regards the threat that nuclear weapons pose to the world, that we must undergo a *metanoia*, that is, engage in a new kind of *thinking* if we are to survive:

Often in evolutionary processes a species must adapt to new conditions in order to survive. Today the atomic bomb has altered profoundly the nature of the world as we knew it, and the human race consequently finds itself in a new habitat to which it must adapt its thinking. In the light of new knowledge, a world authority and an eventual world state are not just *desirable* in the name of brotherhood, they are *necessary* for survival.”^{xiv}

While Einstein might have been wrong about a world *state*, he was surely right about the need for a world *authority*. They are, for certain, not the same sorts of thing. If he lived into the present moment

^{xiv} Albert Einstein, “The Real Problem Is in the Hearts of Men.” *The New York Times*, June 23, 1946.

and could see the threats that attend climate change, he would undoubtedly rend his garments and chastise us for not establishing such an authority years ago. But here is the important point, in view of Einstein's plea: A global authority isn't merely a liberal political idea, but rather it is a mechanism of adaptation in the face of a new reality, a new "habitat" in which old political paradigms and personal mindsets have not only lost a considerable measure of their utility, they have actually become a threat to survival. A politics that increases threats to survival isn't politics any longer; it has become a menace.

We are now not only threatened by the possibility of nuclear war (a possibility heightened given new tensions between Russia and the United States and its allies, as well as by other tensions in the world, such as those in the Middle East and the Korean Peninsula), we are also threatened by the enormous challenges that will be posed by a changing Earth. (It should be noted that the disruptions and political and social breakdown that will attend climate change, as I discussed elsewhere, will themselves increase the probability of nuclear war.) The need for more robust organs of international compliance (that is, actual *authorities*) is more urgent than during Einstein's lifetime, even though at the present time the likelihood of their creation seems, *ceteris paribus*, appallingly low. That, however, does not change the need. The vast majority of the world's governments have taken climate change extremely seriously, looking at it as a serious – indeed, the most serious – *national* security threat. This is simply a fact, a fact that is at odds with the resources being made available to mitigate the damage that will be done, and a fact that is at odds with the absence of a global authority.

3:3 Challenges to the Creation of a Global Authority: Nationalism and Anti-Globalism

Yet, the world's states, rightly wary of tight alliances and agreements for cooperation with parties with significantly different cultures and at varying states of economic and technological development, continue to air their reticence. The Russian Federation has turned hard nationalist. To a lesser degree, so has the United States. In January of 2017, a bill was introduced in the United States House of Representatives. It was titled the "American Sovereignty Restoration Act of 2017" and it was tailored after similar bills introduced by that legislative body in prior years. The bill, if passed (in some form), would repeal the United Nations Participation Act of 1945 and other specified and related laws. The bill requires that: (1) the President terminate U.S. membership in the United Nations, including any

organ, specialized agency, commission, or other formally affiliated body; and (2) the closure of the U.S. Mission to the United Nations. Further, the bill prohibits: (1) the authorization of funds for the U.S. assessed or voluntary contribution to the U.N., (2) the authorization of funds for any U.S. contribution to any U.N. military or peacekeeping operation, (3) the expenditure of funds to support the participation of U.S. Armed Forces as part of any U.N. military or peacekeeping operation, (4) U.S. Armed Forces from serving under U.N. command, and (5) diplomatic immunity for U.N. officers or employees.¹⁶⁷ In years past, I would have bet such a bill could not ever become law. I am not so certain anymore, although given the robustness and rationality of American government institutions (i.e., their ability to stand up to political pressures) passage into law is still not very likely, and such bills are often just stunts by conservative legislators.

However, sometimes the dog catches the car. For years, Nigel Farage, a Member of Parliament in Britain, pushed hard to get the UK out of the European Union, seeking to reclaim sovereignty that was ceded to Brussels. Said Farage, “Should we continue to run our economic affairs or be managed by people in Brussels?”¹⁶⁸ Farage got his way, at least so far (exploration is afoot, as of this writing, regarding ways to rescind the Brexit decision).¹⁶⁹ The Brexit vote in 2016 shocked not only the British people, but the world. It was a vote driven by nativism and nationalism, despite the evidence that a break with the European Union would have serious economic and political consequences. The economists all weighed-in on Brexit, as had debt and equity markets in the UK and just about everywhere else. For years, I have been debating colleagues in academia and in the financial services industry about the “impending disintegration” of the European Union. In the years just after the financial crisis, colleagues warned that Spain's banking industry would collapse, that Italy's would be next, and that Greece would opt either to exit the EU or be shown the door. I argued that, though more pain would be more likely than not, those predictions would not pan out, and I based my conclusions not on the panic of traders or the middle-brow commentary of talking heads on cable news (of which there is a far too ample supply), but on three things: (1) World War I; (2) World War II; and (3) that there are enough people in power who remember (1) and (2) and who know that World War III is possible and must be prevented. These would prevent the disintegration of the EU – a multi-decade project to avoid war and strengthen inter-state bonds. Short-term (though painful) economic and financial woes would not be enough to cause the disintegration of the EU. Up until the Brexit vote, I had been correct.

The various nationalists (there is more than one flavor of nationalism holding forth) who sought and seek Brexit recall that the last time a neighbor determined to become a super-state (Germany) things went very badly indeed. British fears are understandable, although the parallels between the rise of Hitler and the creation of the EU are, to put it mildly, overstated. Also understandable is the *eros* of long-held traditions, ways of life, and national identity (which British conservatives such as fellow philosopher Roger Scruton are quick to remind us). And then there is the impulse to sovereignty and self-determination, an impulse that cannot and should not be dismissed. The original lyrics of “*Rule, Britannia!*” set out the sentiment of national sovereignty *cum* national pride:

When Britain first, at Heaven's command
Arose from out the azure main;
This was the charter of the land,
And guardian angels sang this strain:
"Rule, Britannia! rule the waves:
Britons never will be slaves" . . .

The Muses, still with freedom found,
Shall to thy happy coast repair;
Blest Isle! With matchless beauty crown'd,
And manly hearts to guard the fair.
"Rule, Britannia! rule the waves:
Britons never will be slaves." ¹⁷⁰

This song captures the sentiments of most of the peoples of the world toward their respective countries (and many have a similar element of sovereign “trash talk” and mythological imagery). But talk of enslavement seems more than a bit over the top when considering the goals of the EU, and the very democratic manner in which Britain became a member, although listening to Farage one might conclude that a band of brigands had charged north-west from Brussels to lay siege to the island nation. The EU was established to prevent just the sorts of threats that the nationalists fear, leaving nations’ standing armies in place. The whole point of the EU, when conceived, was to create mechanisms by and through which inter-state democratic consensus might more easily be achieved, for the larger goals of stability, growth, security, and peace *within* each member state as well as

among all member states – a goal that would take time to achieve as various European states get integrated and as the kinks in the systems of EU governance and regulation get worked through.

The history of Europe in the 20th century is the history of serious political miscalculations at the nation-state level, imperial aggression, demagoguery and, ultimately, military conflict, largely (but not only) fought on European soil, soil soaked with the blood of European men and women. What is to be remembered is that the threat of war in Europe has not gone away. Russia, still smarting over the disintegration of the Soviet Union and its loss of “superpower” status, seeking to reassert itself on the "global stage," is saber-rattling and playing a dangerous game of chicken with its neighbors and with various states outside of Europe, including but not only the United States. As a “petrol state” its reliance on fossil fuel exports (both to feed its people and the bank accounts of its ruling kleptomaniacs) will only make it more desperate and so much more dangerous in the coming years, as the world shifts to clean energy. A strong EU, a part of which Great Britain could have been able to play a key role (and might again one day), is a force for peace and stability in the face of Russian bluster and bad behavior.

Political and cultural nationalists, such as Farage, worry about the demise of traditions and prized cultural achievements. But it is hard to see just who wants a culturally homogenized Europe or to force Britain into some pre-fabricated European cultural mold. Indeed, a homogenized Europe is unlikely, as Europe's strength (or one of its strengths) is precisely its diversity of languages, traditions, and sensibilities. Britons need not fear the loss of their heritage and cultural identity, although borrowings and exportations of cultural values and practices are inevitable in a shrinking world. But that's true for every country.

As far as the various and recent refugee crises are concerned, factors in the Yes-vote on Brexit, they won't go away through Brexit and, as should be clear by now, the number of refugees that will be created by climate change will dwarf the numbers of refugees coming out of Syria and Africa. It should be known by now that there is no way to inoculate, fully, against the spill-over from regional problems. Were borders to be closed altogether (which they cannot be without serious repercussions) – the troubles would still find their way in, directly or indirectly. Whether as a member of the EU or not, the refugee crisis will still wind up on Britain's doorstep. (A solution, of course, to the problem

of massive numbers of refugees is to, among other things, cease foolish policies and conflicts that displace people and lead them to seek sanctuary in other states.)

At a time when countries will need increasing cooperation with one another in order to coordinate and enforce responses to what will be the most significant threat to world peace and stability ever to be faced by human beings, nationalisms of all types must take a back-seat, and hard sovereignty will have to soften. The fact is that if we are to survive the disasters climate change will create or worsen, the future will have to be more politically cosmopolitan, not more politically nationalist. ACC is a scientific fact and those who doubt it can no longer be consulted or taken seriously, as they have no sensible arguments left.¹⁷¹ Given this, stronger rather than weaker ties between the world's states, democratic and other, are needed, and the old rivalries must be laid to rest for the sake of humanity and future civilization and for the sake of thousands of species that climate change will put at risk in the Anthropocene. Climate change is a moral and political game changer. It requires tighter bonds between states, not weaker ones; more trust, not less. What Britain shares with the rest of Europe (and with Canada, the United States, New Zealand, etc.) already makes it a world-center of deliberation, ideas, talent, and resources. A form of nationalism (let's call it "national pride") can have a place (so long as it is not expressed as xenophobia, nativism, racism, or in pursuit of *Lebensraum*). Old forms of nationalism have to be replaced with new ones that fit with a world riddled with global crises, and global opportunities. In a manner of speaking and given where we are in terms of the threats, the only real competition that ought to obtain between states *as such* should concern the creation and production of climate change *solutions*, from the best forms of CCS and albedo replacement, to the best models for refugee relocation, management, and integration.

I suggested that the world must become more politically cosmopolitan. A spokesman for the Trump Administration recently "accused" a journalist of showing his "cosmopolitan bias." This showed the administration's hyper-nationalism and xenophobia, both of which are now far more dangerous than they usually are. We are having a clash between (hyper-) nationalism and cosmopolitanism at precisely the wrong time. The worry that populism could lead nations down the wrong path has plagued adroit political leaders for years. Populism has various meanings and various forms of expression, but at its root it is based upon and driven by emotional reactions to troubling and often fleeting circumstances, and sometimes imagined ones. In democratic settings, operating upon foundations of representative government, populism can lead to unwise courses of action and bad

policy. When populist heat is on the rise, it is the job of the informed representative to cool hot public emotions, but the conundrum is that the need for the cooling comes at precisely the time when things are hottest.

There is a long and deep literature regarding the meaning of "representation" in a democracy. Edmund Burke helped to set the stage for the analysis of what representation ought to and ought not to mean, as did the Founding Fathers in the United States, who, in *The Federalist Papers*, tackled that and many other questions concerning government's role and activities. Burke, who in his 1774 *Speech to the Electors at Bristol at the Conclusion of the Poll*, declared famously:

It ought to be the happiness and glory of a representative to live in the strictest union, the closest correspondence, and the most unreserved communication with his constituents. Their wishes ought to have great weight with him; their opinion, high respect; their business, unremitting attention. It is his duty to sacrifice his repose, his pleasures, his satisfactions, to theirs; and above all, ever, and in all cases, to prefer their interest to his own. *But his unbiased opinion, his mature judgment, his enlightened conscience, he ought not to sacrifice to you, to any man, or to any set of men living. These he does not derive from your pleasure; no, nor from the law and the constitution . . . Your representative owes you, not his industry only, but his judgment; and he betrays, instead of serving you, if he sacrifices it to your opinion* [emphasis added].¹⁷²

In *The Federalist Papers*, No. 10, James Madison argued for a representative form of government as opposed to a direct democracy, especially in larger societies, because of his awareness of the *dangers* of direct democracy. Direct democracy can work well in small populations that seek to govern themselves, just as communism can work well in monasteries, but in larger heteronomous populations with a wide array of competing interests and needs the representative form of government tamps down the inflamed and often fleeting emotions that attend them, whether those interests and needs are religious or secular. Madison wrote:

It is in vain to say, that enlightened statesmen will be able to adjust these clashing interests, and render them all subservient to the public good. Enlightened statesmen

will not always be at the helm: *nor, in many cases, can such an adjustment be made at all, without taking into view indirect and remote considerations, which will rarely prevail over the immediate interest which one party may find in disregarding the rights of another, or the good of the whole* [emphasis added].¹⁷³

The danger of direct democracy as a general form of self-governance is that the flames of high and passing emotion can supplant long-term thinking and leave the ship of state listing and off course. Certain times may call for referenda and plebiscites, but such times should be rare.

Back to Brexit. Suppose, in the coming months, it becomes far less dubious than it may be today that Brexit will lead to a very weak currency (say on parity with the dollar, or worse), and incredible uncertainty that makes it impossible for UK businesses to plan for future growth or for businesses outside of the UK to plan investments and operations inside the UK. Suppose all of this lasts for five, seven or ten years (or more). Then it seems likely that there will be a serious contraction of the UK economy, and even further downgrades of its debt (though it might enjoy a temporary improvement in its current account balance). That could very well mean high and sustained periods of unemployment, a decline of real estate values, higher interest rates (in order to attract needed capital), and a diminished ability to raise funds on the world's capital markets. And suppose Scotland does go through with another referendum concerning its own independence, so that it can remain in the EU. Suppose that the UK (including, as well, a newly independent Scotland) faces years of economic and political pain, pain that would be the result of what can only be described as a self-inflicted wound. And suppose it becomes clearer over the next few months, as the British prime minister attempts to lead the country through the thicket that is Brexit, that this is indeed the UK's future. Would it still be arguable that the gains in sovereignty and "national pride" outweigh all of the preceding and likely many more unfortunate scenarios?

Those are the questions that citizens of the UK are asking themselves even now that Article 50 of the Lisbon Treaty has been triggered. Is there a way out? It is hard to say. But Britain's case is instructive for the rest of the world, which is why I am highlighting it. Edmund Burke's understanding of representation is one that the world's politicians need to revisit. Government exists, in part, to corral the passing passions of tribalism, nationalism, sectarianism, and factionalism. The notion of "mirroring" the will of a population at any given time, where the stakes can be serious harm to political

minorities and long-term national interests, is the very reason we have representative forms of democracy. Burke, I have always believed, was right when he counseled that elected representatives, who must handle extremely complicated questions (and far more complicated now than in Burke's day), owe their constituents not their industry and obedience only, but also the benefit of their *judgment*, derived from greater access to facts, and they betray their constituents when that judgment is sacrificed to ill-informed passions and opinions that lead the ship of state into the shoals or to shipwreck upon the rocks of emotion and faction. This is not a paean to democratic elitism, but rather it is a call to statesmanship.

The UK isn't the only worrying example of nationalism. In the United States, on January 20, 2017, Donald J. Trump took office as 45th President of the United States. Mr. Trump has no experience in public office or even public service (*of any kind*), and has emerged after several decades of demagoguery on the far right and an almost total descent into incoherence on the part of American conservatism, as argued eloquently in a recent book by Arizona Senator Jeff Flake.¹⁷⁴ Like all conservatisms, American conservatism is, facially, more nationalist than American liberalism, but after the rise of the neo-conservatives during years of the George W. Bush presidency (2001-2009), American conservatism broke loose from its intellectual moorings to become something quite unrecognizable to traditional "small government/fiscal responsibility/culture preservation" conservatives of past generations. The slide into vulgar populism, efforts to fan the emotional flames of nativism and feelings of disaffection or alienation by some across the country, delivered the White House to Mr. Trump. Mr. Trump's performance as president – so far – is about as was predicted by many millions of people (the majority as it turns out) who did *not* vote for him. From the very first, his presidency has been in disarray, exemplified by botched executive orders and the resignation, just weeks in, of his National Security Adviser, the firing of the Director of the FBI, and many other troubling actions that were still mounting at the time of this writing.

The election of Mr. Trump has millions of thoughtful Americans engaging in various discussions about the rather appalling tone and character of his presidency, which include discussions of his mental health and fitness for office. One of those discussions must also concern the meaning of conservatism itself. For it is clear that his adopted (or it might be better to say, *seized*) party, the Republican Party or GOP (acronym for "Grand Old Party"), due to the rise of the so-called "tea party" and of neo-conservative elements, has abandoned the basic principles and ideas of conservatism,

allowing itself to spiral into confusion such that every radical slur (“Barack Obama is the founder of ISIS”) and nativist/racist belch (“We’re taking our country back!”) is embraced as an expression of conservative “thought.” This spiral into confusion has led, directly, to Mr. Trump’s nomination, a fact lamented by many Republicans as well as the vast majority of Democrats.

Even political spectators who consider themselves left-of-center miss sane and capable conservative interlocutors and representatives, despite policy disagreements with them. In my own case, when I was a much younger man (from my early teens into my early twenties), my eyes would sparkle as I watched *Firing Line*, which was broadcast on public television, with its calm, erudite debates about how best to deal with the Soviet Union, the pros-and-cons of the so-called “Reagan Revolution,” and the best way to beat “the inflation monster.” William F. Buckley, Jr., the show’s founder and host (and founder, in 1955, of the conservative magazine *National Review*), no paragon of multicultural sensitivity for sure, was gracious to his guests, and they to him, and more light than heat was produced – usually. When Buckley, on the right, debated Senator George McGovern, on the left, there were, to be sure, some forensic barbs, but the debate was maintained at a high level of thoughtfulness, as both men knew the other was a decent person who loved his country, and was an intellectual equal. The Buckley-[Gore]Vidal debates were an aberration, but both men seemed to come to regret their lapses of civility and decorum (especially Buckley) and the forgetfulness of their highest resolves over the course of their exchanges.

Every country will have its conservatives, as it will have its liberals, though in each they will be styled somewhat differently. As for American-styled conservatism, it would be an act of personal edification were American conservatives to recall the basic elements that once gave conservatism its intellectual shape, and to consider how far American conservatives have moved away from them and toward a version that looks more like vulgar tribalism than as an attempt to proffer a thoughtful set of guidelines for furthering the interests of the republic. (The far left has its own problems, which usually come in the forms of flights of fancy, obscurantism, and abstraction, very little of which is apposite to or for the formation of policy.) The ten principles of conservatism, listed below, would sit well with serious conservative thinkers from Edmund Burke to Ronald Reagan. Unfortunately, the current waves of nativism, ethno-nationalism, and populism, as well as the break from conservatism’s intellectual roots, have trampled these ten principles into mush:

1. Restraint on the power and opposition to the profligacy of government (*not* belief that government itself is “The Problem,” which leads many (including our youth) away from the idea that government’s mission is noble, and toward cynicism regarding public institutions and service);
2. Concern regarding unintended consequences in policy formation (*not* fearful recoil in the face of change that is needed to improve the lives of fellow citizens);
3. Humility and caution in international engagements (*not* swagger, delusions of nation-building abroad, and international adventurism);
4. Suspicion regarding the perfectibility of human beings (*not* a lack of concern for the improvement of characters and lives wherever possible);
5. Caretaking valued, tenable, and important American traditions (*not* ethnocentrism, jingoism, regionalism, tribalism and xenophobia);
6. Insistence on personal agency and personal responsibility (*not* sanctimony and the browbeating of others for human weakness or withholding help where needed);
7. Fraternity and sorority among and between all citizens (*not* Balkanization and the creation of tribal enclaves along racial, gender, ethnic and religious lines);
8. Commitment to civics and civics education and public service (*not* hyper-nationalism, anti-immigrant resistance, hyper-valorization of military service, and militarism);
9. Social stability (*not* “law and order” at the price of justice, fairness and equal concern for all citizens); and
10. Fiscal responsibility (*not* just efforts to reduce *taxes*, but also prudence in incurring public indebtedness, and *not* shortsightedness but farsightedness in expenditures on youth and the nation’s infrastructure for the sake of future generations).

As we, in the United States, begin our reflections on this moment in our history – a particularly nasty and concerning one – we need to consider the place and importance of probity in our political commitments and discourse, the dangers of ideology, and the benefits of pragmatism, meliorism, and sagacity. That is, we must consider what has become *maladaptive behaviors* in view of the present realities of climate change and other global threats. What has happened in the United States may be instructive for others and, I believe, has been. In the case of contemporary conservatism, it has, by many accounts, been run off the rails by tribal impulses, extreme and thought-blocking fear of

terrorism, and national arrogance, all of which, taken together, has led to a countervailing response by the left and by liberals. It would do the country good if true, traditional conservative statesmen and stateswomen could, somehow, retake the field from the imposters that have emerged in their midst, as Jeff Flake argues must happen. As we will note concerning Margaret Thatcher, in the pages that follow, conservative thinking need not be devoid of careful deliberation or plagued by premature epistemic closure. It can rest upon facts and concern for good public policy, as well as upon an awareness of the need to pull one's weight within the community of nations. "America First" is a hollow – even senseless – slogan in a globalized world, especially for a superpower with entanglements and interests around the globe.

Thus, conservatism must reform to allow for a reimagining of state sovereignty and national identity. State sovereignty pursuant to the Westphalian idea is a significant impediment to dealing with the problem of climate change. Sovereignty suggests autonomy and freedom, and we generally associate both with the capabilities needed to construct good lives. Of course, these are not ordinary times. Under states of emergency, where threats do not respect borders, the assertions of sovereignty must take a back-seat to the need for increased and decisive international cooperation. So far, we have handled the threat of climate change as collections of sovereign states (notwithstanding various international accords and mechanisms of comity), and this has slowed progress dangerously, and has led to weak, toothless, agreements, as already indicated. What is needed is the shedding of sovereignty for the limited and specific purpose of addressing the threat, which, in my view, entails creating a new international organization. Mitigating the destruction that climate change will bring cannot be left to plebiscites and referenda within individual states, which are rife with special interests, cronyism, and a plethora of ethnic agendas. The model I am proposing is one that cedes some measure of authority to pass international laws and impose international timetables upon all the Cooperating States ("CS"), *compelling* action as prescribed by what I shall call a Central Climate Change Authority ("CCCA"), which will be governed by the heads of state (or their designees) of each CS member.



The CCCA could be created by action of the United Nations Security Council (“UNSC”). Creating a new global authority on climate change from within the UNSC does fit, I would argue, within the UNSC’s existing mandate. Article 29 of the United Nations Charter gives the UNSC the power to establish subsidiary bodies as needed for the performance of its functions – i.e., maintaining the security of member states. All existing committees and working groups of the UNSC are comprised of its fifteen members. While standing committees are chaired by the President of the UNSC, rotating on a monthly basis, other committees and working groups are chaired or co-chaired by designated members of the UNSC who are announced on an annual basis by a “Note of the President of the Security Council.” The mandate of subsidiary organs, whether they are committees or working groups, can range from procedural matters (e.g. documentation and procedures, and meetings away from headquarters) to substantive issues (e.g. sanctions regimes, counter-terrorism, and peacekeeping operations). The administrative mechanisms are all in place for a new authority to police and enforce climate change obligations.¹⁷⁵

It seems wrong to suggest that the UN cannot tackle the creation of this new institution. The UNSC birthed The International Criminal Tribunal for the former Yugoslavia and the International Criminal Tribunal for Rwanda pursuant to its charter powers, and these are dependent on the UN for their

operation, though independent adjudicatory bodies. It also appoints the judges of the International Court of Justice, in The Hague (Netherlands). The UNSC established a Counter-Terrorism Committee, which works to bolster the ability of member states to prevent terrorist acts both within their borders and across regions. It was established in the wake of the September 11, 2001 terrorist attacks in the United States. The Counter-Terrorism Committee is assisted by the Counter-Terrorism Committee Executive Directorate, which carries out the policy decisions of the Committee, conducts expert assessments of each Member State, and facilitates counter-terrorism technical assistance to countries. The UNSC has also established a Non-Proliferation Committee and a Military Staff Committee, which helps plan UN military measures and regulate armaments. There are Sanctions Committees, used to apply pressure on a state or entity to comply with the objectives set by the UNSC without resorting to the use of force. Sanctions thus offer the UNSC an important instrument to *enforce* its decisions. The universal character of the UN makes it an especially appropriate body to establish and monitor such measures. The UNSC has resorted to mandatory sanctions as an enforcement tool when peace has been threatened and diplomatic efforts have failed. The range of sanctions has included comprehensive economic and trade sanctions and/or more targeted measures such as arms embargoes, travel bans, and financial or diplomatic restrictions.¹⁷⁶ In summary, coercion is not foreign to the UNSC.

The CCCA could, if made a reality, enforce an international agreement along the lines of the Paris Agreement (call it the “General Agreement on Climate Change” (“GACC”). As an enforcement (regulatory) entity, it would monitor agreement compliance with reporting and GHG-reduction obligations and targets, among other obligations. It would do this by using the same compliance mechanisms that the UNSC already employs, as sketched above. The CCCA would impose fines, seize funds escrowed as performance guarantees in cases of serious non-compliance, call for and impose sanctions for serious non-compliance, collect dues from various states to support its operation (and impose fines for delinquency), pass condemnatory resolutions, use hard diplomacy, adjudicate conflicts of laws, enforce richer CS financial obligations to poorer members, and require complying CSs to assist non-complying CSs to comply, where such non-compliance is the result of limited resources or significant internal disruptions and dislocations that were unforeseen and not orchestrated for the purposes of non-compliance. It would also serve as a dispute arbiter between the various CSs subject to the GACC.

While I have many other ideas as to how the CCCA could function (rotating chairs, veto authority of CSs, mechanisms to maintain states' rights, etc.), they cannot be discussed here. It is the *idea* for both the GACC and CCCA that I want to introduce, and that is my sole purpose. Indeed, much more is beyond my expertise, in any event. But it is my belief that the GACC and CCCA would enhance greatly the types and speed of our efforts to address climate change while existing and established organizations for international cooperation are yet in place, more or less healthy, and functioning (which, if major climate-related events cause worldwide catastrophes that draw on the attention and resources of these organizations, may not remain the case). Were the GACC and CCCA to become realities, the state parties would address the details of institution and operation. What is hoped, in that case, is that the executives (heads of state) of the various CSs be given broad binding authority so that popular ratification of the GACC and CCCA would not be required. The ratification process takes too long, and the world is out of time.

At the same time, it is important that states that could achieve CS status less quickly than others not be permitted to game the process. In that regard, some new negotiation facility for contingent commitments among the aspiring CS parties should be utilized. A contingent commitment mechanism or algorithm that allowed the CS parties to bind themselves contingently, while their concerns were being addressed by and among other aspiring CS parties, would be quite useful. Precisely such a contingent commitment facility for climate change has been proposed by Marc Groz, an American inventor and capital markets expert. As he explained it to me in correspondence:

Humanity's efforts to mitigate damage from climate change are mired in a troubling paradox: Everyone knows that a strong communal good comes from cooperative action, but many are afraid that their cooperative behavior will be taken advantage of by one or more parties that withhold their cooperation. This type of situation, modeled by mathematicians and psychologists as "the prisoners' dilemma," arises whenever people lack adequate information about the intentions of others and are forced to choose between cooperation and competition. It is an acute problem in the context of encouraging people and entities toward actions to mitigate climate change.

I am working to create a Contingent Commitment Facility (“CCF”) for climate change. A CCF is an information technology platform that facilitates decentralized, bottom-up solutions to otherwise intractable problems. Acting as a neutral third party, a CCF transforms messy real-world problems into opportunities for breakthrough solutions. By offering parties the ability to say "Yes, if," specifying the conditions under which parties are willing to commit to action, CCFs will dramatically reduce or even eliminate the fear factor that undermines cooperation in so many contexts. CCFs allow parties to map out secure contingent commitments, which may be public, selectively disclosed, or completely confidential. These contingent commitments specify the circumstances under which each of the parties would agree to one or more binding commitments. Each CCF analyzes the full set of contingent commitments and informs the parties whether any binding commitments have been created through satisfaction of all relevant contingencies.¹⁷⁷

3:4 Anti-Globalism and the Attack on the UN

The main impediments to the GACC and CCCA have already been discussed. They are nationalism and hard sovereignty. In the United States, suspicion of the UN itself is constantly fueled by the far right, and has been for a long time. The far right remains reticent to have the United States be a member of any international organization, especially one that has as members states that are known to thwart international law and sponsor terrorism. So, as discussed, there have been legislative attempts to remove the United States from the UN. This old reticence has been hitched to a new wave of “anti-globalism” and “anti-globalist” propaganda by Steve Bannon (former Chief Political Strategist for President Trump) and others, and certain fringe media outlets, such as Breitbart News. “Globalism” and “globalists” are repeated targets at Breitbart. My search of the word “globalist” on the Breitbart website Breitbart.com, in August 2017, resulted in 23,000 hits.

Aside from Bannon, among the most vocal critics of the UN are conservatives Rich Lowry, editor of *National Review*, and John Bolton, former UN Ambassador. Of the United States’ ongoing membership in the UN, Lowry has advocated retrenchment, though acknowledging that the likelihood

for such retrenchment is low.¹⁷⁸ John Bolton, a vicious critic of the UN, though appointed as United States Ambassador to the UN by President George W. Bush, sees the UN as no more than a sink for taxpayer money:

After 70 years, the United Nations has become a vast, sprawling conglomerate, overwhelmed by unsustainable ambitions, inadequate capacities, and plain reality. Characterized by speeches, meetings, reports, resolutions, and endless ways to spend money, the UN has managed to construct a large carbon footprint. What else it actually accomplishes is a different issue.

None of this is new. In his Oct. 22, 1961, diary entry, Arthur Schlesinger, close adviser to President John Kennedy and good friend of then UN Ambassador Adlai Stevenson, wrote, “I cannot resist the feeling that the UN world is really an immense and picturesque form of make-believe and that its problems and crises are remote from the serious issues of the day.” Although Schlesinger hoped he was mistaken in the long run, that day is not yet in sight . . .

Staying in, of course, brings its own share of trouble, thanks to the feckless decisions by one UN governing body after another and the attendant financial consequences for American taxpayers. If UN agencies and councils merely adopted resolutions filled with rhetoric, we would be irritated, but those authorizing treaties, programs, and conferences with budget implications irritate us more tangibly. Given the UN Charter’s “one nation, one vote” principle, we are basically guaranteed to be permanently irritated.¹⁷⁹

The views of Lowry and Bolton are shared by many others on the political right and far right in the United States, including by Frank Gaffney and pretty much everyone at The Heritage Foundation, a right wing think tank and policy advocacy group. Does the UN need reform? Certainly. But it is as much misused (and ignored) by the United States as the United States complains that it is misused (and ignored) by other member states. Conservatives, by nature, tend toward insularity, toward a focus on the homeland and its people. But it is not true that conservatism requires insularity or is fated to indomitable suspicion of other states under a rigid version of political realism. One of the most

eloquent appeals for the world's states to address climate change was delivered to the UN General Assembly (and things don't get more "globalist" than the UN) by none other than Margaret Thatcher, the Conservative Party Prime Minister of Britain (1979-1990), on November 8, 1989. I have opted to include that speech, in its entirety, as the final document in the Appendix. Here I will simply provide an excerpt, and highlight Thatcher's superlative expression concerning the UN:

. . . Mr President, the environmental challenge which confronts the whole world demands an equivalent response from the whole world. Every country will be affected and no one can opt out.

We should work through *this great organisation and its agencies* to secure world-wide agreements on ways to cope with the effects of climate change, the thinning of the Ozone Layer, and the loss of precious species.

We need a realistic programme of action and an equally realistic timetable.

Each country has to contribute, and those countries who are industrialised must contribute more to help those who are not.

The work ahead will be long and exacting. We should embark on it hopeful of success, not fearful of failure.

I began with Charles Darwin and his work on the theory of evolution and the origin of species. Darwin's voyages were among the high-points of scientific discovery. They were undertaken at a time when men and women felt growing confidence that we could not only understand the natural world but we could master it, too.

Today, we have learned rather more humility and respect for the balance of nature. But another of the beliefs of Darwin's era should help to see us through—the belief in reason and the scientific method.

Reason is humanity's special gift. It allows us to understand the structure of the nucleus. It enables us to explore the heavens. It helps us to conquer disease. Now we must use our reason to find a way in which we can live with nature, and not dominate nature.

At the end of a book which has helped many young people to shape their own sense of stewardship for our planet, its American author quotes one of our greatest English poems, Milton's "Paradise Lost".

When Adam in that poem asks about the movements of the heavens, Raphael the Archangel refuses to answer. "Let it speak", he says,

"The Maker's high magnificence, who built
So spacious, and his line stretcht out so far,
That Man may know he dwells not in his own; An edifice too large for him to fill,
Lodg'd in a small partition, and the rest
Ordain'd for uses to his Lord best known."

We need our reason to teach us today that we are not, that we must not try to be, the lords of all we survey.

We are not the lords, we are the Lord's creatures, the trustees of this planet, charged today with preserving life itself—preserving life with all its mystery and all its wonder.

May we all be equal to that task.

Thank you Mr President. [Emphasis added.]¹⁸⁰

Conservatism need not buy into the blinkered and maladaptive nationalism and anti-globalism of Bannon, Bolton, Gaffney, Lowry, and The Heritage Foundation. It is precisely the wrong set of ideas to maintain in a world that is not only shrinking, but that very much requires and seeks-out the guidance and wisdom of countries like the United States.

In 2013, Bobby Jindal, then the Governor of Louisiana, pleaded to his party, the Republican Party:

We must stop being the stupid party. I'm serious. It's time for a new Republican party that talks like adults. It's time for us to articulate our plans and visions for America in real terms. We had a number of Republicans damage the brand this year with offensive and bizarre comments. We've had enough of that.¹⁸¹

But the party, it seems, did not have “enough of that.” It did not take Jindal’s advice, but rather it doubled down on being the ground zero of “offensive and bizarre comments” in American politics. Many of those “offensive and bizarre” comments (some of which are set forth in Chapter 1) have to do with climate change. For the sake of the country, indeed for the sake of the world, this must cease. If it does not cease, and cease soon, the Republican Party will be remembered in the history books as one of the most corrupting and pernicious organizations that the world has ever known, whatever its members may think of it, or themselves, presently. That indictment won’t be made by me, or by Democrats, but by future generations whose world may be filled with conflict and misery that could have been avoided. To recall, one last time, the words of Strobe Talbot:

[I]f we take the steps necessary to fend off specific, imminent, and potentially cataclysmic threats, we will be giving ourselves time and useful experience for lifting global governance in general to a higher level. By solving problems that are truly urgent, we can increase the chances that eventually . . . the world will be able to ameliorate or even solve other problems that are merely very important. Whether future generations make the most of such a world, and whether they think of it as a global nation or just a well-governed community of nations, is up to them. Whether they have the choice is up to us.¹⁸²

Chapter 4 ►

EPISTLE TO THE EXCEPTIONAL GENERATION

I would like to return, for a moment, to the images I started with: of apparently inanimate things coming suddenly alive. This . . . is one of the uncanniest effects of the Anthropocene, this renewed awareness of the elements of agency and consciousness that humans share with many other beings, and even perhaps the planet itself. But such truth as this statement has is only partial: for the fact is that a great number of human beings had never lost this awareness in the first place . . . So the real mystery in relation to the agency of nonhumans lies not in the renewed recognition of it, but rather in how this awareness came to be suppressed in the first place, at least within the modes of thought and expression that have become dominant over the last couple of centuries. - Amitav Ghosh ¹⁸³

Watchman, what of the night? Watchman, what of the night? - Isaiah 21:11 (KJV)

Abstract: This chapter is composed entirely of a letter to peoples all over the world, whom I term “The Exceptional Generation,” concerning their need to address the threat of climate change. Among other things, it urges them to press their own governments to act to address the threat.

Dear Fellow Global Citizens:

There is no longer any point to reiterating the urgency of the hour. I must plead to you, fellow global citizens, friends: We must do the *metanoic* and *teshuvic* work (that is, the work of transforming our minds and of turning toward the good works that yield love for the fellow denizens of our planet) necessary in order to avoid destruction on an unprecedented scale – the destruction that will come, and has come, due to climate change. You must do this work not only for yourselves but for the generations that will follow, for the thousands of other species that are at risk, and for the Earth itself, the generator of life as we know it.

By now you know that there is a difference between weather and climate, and that global warming due to climate change does not mean that the Earth will no longer be cold anywhere or have cold winters. By now you have heard that climate change is a phenomenon that is global and that has many “moving parts,” from changes in soil and ocean evaporation rates, to changes in ocean currents, to

changes in storm activity and intensity. All of these things are linked in one way or another, but the root cause is a mean temperature increase on a global scale, due to, in large part, humanity's use of fossil fuels. On average, the temperature increase that is expected will be slight, but significant enough to cause major disruptions, and in certain parts of the world the temperature increase will be anything but slight, leading to abnormally hot summers, abnormally warm winters, and many changes in plant and animal life, some of which will become extinct because of their inability to adapt to the relatively rapid alterations in habitat that will result.

You are right to think that human beings and other species could, in many cases, adapt to these changes, but if you think that we can *easily* adapt to these changes in a short period of time (and decades is a short period of time) you are mistaken. Take human beings. We have built our entire world around numerous assumptions – the assumption that great rivers will always flow as they have, the assumption that the sea levels near which our cities are built will remain about where they are, and the assumption that the great ocean currents will not change. Our cities – New York, Amsterdam, Miami, and dozens more (not to mention hundreds of towns, hamlets, and villages) – will soon be inundated by sea water, blotting out trillions of (US) dollars of financial value, which in turn will plunge the world into an economic catastrophe, *unless* we can find a way to save them or to peacefully address the consequences of their loss.

Certain currents in the Atlantic Ocean that help to keep Europe in agreeable temperatures may soon be severely weakened by both rising ocean temperatures and by the collapse of the Greenland ice sheet. Droughts in Africa and the Middle-East are expected to worsen, and in some cases to worsen severely, leading to millions of “climate refugees” – who will stress limited resources and their host countries' tolerances and, given the history of humanity's hospitality to the stranger, could quickly become scapegoated and branded as “enemies” or “parasites.” There will be wars and skirmishes, even, some worry, among the world's richer and most militarily powerful countries. Some think that the stresses of climate change raise the possibility of unconventional war, including nuclear war, as nuclear nations compete for new croplands, for energy reserves, to control new travel routes, and as tensions rise over the new and uncertain geopolitical landscape.

All of this seems daunting, I know – even surreal. But, fellow citizens and friends, we are where we are. A journalist in my country, the United States, refers to what he calls “The Greatest Generation.” The reference is to the generation of Americans, Canadians, British and men and women of other countries who fought Hitler and the Axis Powers in World War II. We are – and must accept the fact that we are – “The Exceptional Generation,” the generation that has it in its power to both recognize the challenges and to do something about them, and the window of time for us to act will soon close. It may be that all of the things I mentioned above will come to pass, and many more things than these, things which cannot now be predicted. Though we may not be able to stop them, we must try. We still have choices that we can make – both in our individual lives as well as in our lives as citizens and subjects of various states. We can choose to arrange the world’s institutions in ways that will allow us to address the catastrophes, large and small, without viciously turning on one another. We can choose to prepare our own souls to be peaceable and ministerial, rather than violent and competitive. Indeed, we must do both. The worst damage caused by climate change will likely come from our own responses to the changing conditions that it will cause, not from the physical changes themselves – as bad as many of them are predicted to be.

The stresses caused by refugees is one example. It is hard to say just how many climate refugees there will be as we move deeper into and beyond this century. Some estimate over seven hundred million, and some say that number is far too high, that it may be a much smaller number. Because there are so many variables to consider, and unknowns, and because this human mobility will not happen all at once (there are *already* climate refugees), it is hard to say. Sea level rise will be one cause of human mobility but, as I mentioned, people may become mobile because of drought, too, as well as because storms where they live have grown too intense and too frequent to bear, or because access to food or water (or both) has become problematic, or because of new epidemics and pandemics. But whatever the number – say it’s three hundred million people – the nations of the world will have to find a way to accommodate them, whether the mobility in question is from within the national border or from outside. Preparing to meet the challenge will take enormous resources and government action, as well as enormous resolve, patience, and magnanimity.

Can we expect governments to rise to the challenge if we ourselves don’t tell them that that is exactly what we expect them to do? But how will we tell our governments to be hospitable to these refugees

if we ourselves are not prepared to make sacrifices in our own personal lives, and then to teach our children and grandchildren to prepare to do the same? I urge you to give that question some thought, while there is still some time. Our politicians tend to pander to us by appealing to what they think we want, but to meet the coming Great Challenge we must make it safe for our governments to make certain demands of us, not merely pander to us. Our governments must no longer be our governments alone, but also must be hubs in a world-wide web of saving authorities and conduits, each one leaning on and calling upon the other to meet the waves of challenges that are sure to come.

We no longer live in ordinary times. And, of course, even in ordinary times we fail to live up to our highest resolves. When asked that we “not oppress the widow, the orphan, the stranger, and the poor,”¹⁸⁴ we let many “widows,” orphans, strangers and the poor languish in lives that leveled all of their concerns to meager subsistence, to live from day to day, while many of their fellow citizens, of the world and of their own states, flew over their heads in jets, or sailed away on ships, to lavish vacations or to destinations that would broaden their experiences and horizons. We have taken great strides to help lift people out of poverty, but we have also done far too little, far too often. With this record, how can anyone expect sacrifice and magnanimity from ordinary people in the face of the enormous stresses induced by climate change? Don’t people tend to behave worse, not better, under severe stress? How can anyone expect that our governments will call on us to sacrifice for the millions of refugees I mentioned, rather than encourage us to turn inward and to “barricade the doors” so that no one will make large demands of us, demands to house them, clothe them, feed them, and heal them?

The biblical prophet, Ezekiel, has God promising his people a *metanoia*, a *teshuvah*:

I will give you a new heart, and put new breath into you: I will remove the heart of stone from your body, and give you a heart of flesh. (Ezekiel 36:26-28)

But that was a very long time ago, and since those words were written we have had generation upon generation of “old hearts,” not just among Ezekiel’s own people, but *all* people. After Ezekiel came prophets, seers, and moral teachers from many cultures and traditions, trying to lead us onto the pathways to a “new heart.” Very often they failed. We have had war after war, conflict after conflict.

Tribal honor has taken precedence, time and again, over love and hospitality. Is our capacity to live up to our highest resolves limited? Is there a “ceiling” of “rubber,” “glass,” or “steel” that limits our upward ascent to true hospitality, to a principled love of the stranger simply because he or she is human? If there is, then we will not pressure our governments that they may pressure us in turn, and we will tell them to concern themselves with the affairs of their citizens and subjects only, rather than make room for the stranger to the fullest extent that resources permit. As we look back to those times in which our governments should have acted with magnanimity rather than parochialism, knowing what the right thing to do was, we find time and again that they remained too blinkered, and shrunk back in the face of the challenges they faced – whether in Rwanda or Cambodia or Wounded Knee or Soweto or – well, the list is long indeed.

The philosopher Jonathan Glover wrote:

There are features of our time which make it particularly important to build up moral defences against barbarism. Most obviously, there is the way technology hugely increases the scale of atrocities. But there is the increasing awareness of the fading of the moral law. As authority-based morality retreats, it can be replaced by a morality which is deliberately created. The best hope of this is to work with the grain of human nature, making use of the resources of moral identity and the human responses. But changes and additions to common-sense attitudes will be needed. Many of these involve the social and personal cultivation of the moral imagination. To advocate this may sound like vague uplift with little content. The truth is the opposite. Real cultivation of the moral imagination is a threat to many comforting conventional attitudes. It is likely, for instance, to destroy the conventional explanations of why what the computer engineer does is so different from the stoning. If a humanized version of ethics is developed, people later will see the end of belief in the moral law as just a stage in the evolution of morality.¹⁸⁵

And he goes on to say, in the same book:

To avoid further disasters, we need political restraints on a world scale. But politics is not the whole story. We have experienced the results of technology in the service of the destructive side of human psychology. Something needs to be done about this fatal combination. The means for expressing cruelty and carrying out mass killing have been fully developed. It is too late to stop the technology. It is to the psychology that we should now turn.¹⁸⁶

And so it is to your and my own psychologies and moral imaginations that I now appeal (indeed, as I have been addressing “you” in this letter, I am also addressing myself). Perhaps it is more apt to say that the appeal is to the heart. We must learn to imagine ourselves as brothers and sisters and as neighbors, or disaster awaits – the disaster of social breakdown due to the natural forces that are just over the horizon. I make that appeal because we are not just made of flesh and blood, but we have another nature, and it is in that nature that what it means to be human is most pronounced and has its deepest roots. We are physical beings, yes, but that is only part of our identities. Out of that physicality has emerged our intangible morality, which is the best part of us. We are moral beings, and also we are spiritual beings, with aspirations that transcend our need for food and shelter and creature comforts; we are moral beings and spiritual beings with the capacity to sacrifice and to work for objectives beyond our own, even to suffer and to die for them. We suffer and die for them not merely to pass on our genes, but for our hope that a way of life greater than we can imagine awaits our descendants, even when we ourselves are long gone from the scene. Our love for them, who now have no existence, moves our hands and our feet, in some way that can only be called a mystery. It is the same love that compelled the actions of generations past and which allowed us to be. It is the cord of love that connects the past, the present, and the future.

Those who are educators, movie producers, recording artists, and novelists – it is up to you to work to bring about the spirit of global citizenship and the global love ethic that the hour demands. By “educators” I mean educators in the humanities and the social sciences, those whose training and learning give them a grasp of historical events and of other cultures and religions and sensibilities. But there is plenty of work for the producers, recording artists and novelists, too, as these have a more direct access to the persons in the streets and byways of the world’s societies and civilizations.

Through forms of art we have the power to place on display lives that one never imagined could be lived, let alone are being lived.

Imams, priests, ministers and rabbis have a large role to play as well, as these speak to “captive” audiences ready to hear the call to their highest resolves. The house of worship, by whatever name it goes, is one of the few places wherein calls to live up to one’s highest resolves are made on a regular basis. There, the best fields of the humanity within our breasts are cultivated, are seeded with stories and with exhortations. It is true that many have little use for houses of worship, other than for weddings and funerals and other transitional rituals, but most of the world takes a different view, and so it is in them that religious leaders must prepare their people to become more magnanimous and steeled for the moral challenges ahead.

What more can I say? The hour is late. The future of our species and of many others is in our hands. Do not hear these words as high drama or exaggeration. They regard hard facts, not fancy. If the words of the prophets are not soon written on *our* hearts, they will be written on our graves. The choice is ours.

Sincerely,

Dr. David E. McClean

A Fellow Global Citizen

Chapter 5 ►

A GLOBAL CITIZEN'S DISPATCH

Abstract: This chapter is composed entirely of a letter to the world's heads of state. Among other things, it reminds them that robust international cooperation is urgent, as is a global authority to enforce climate agreements, and that weaker or smaller states cannot assign their responsibility to act to the stronger and larger states.

To the World's Heads of State:

I would not presume to lecture you on the dangers of climate change. Your work to address the dangers is well known, and you are to be commended for your efforts. The peoples of the world are thankful for what you have done so far. The challenge of climate change is a great challenge indeed, especially when you, as heads of state, are charged with keeping the peace, providing for economic growth, running your governments, and so many other obligations.

Yet, climate change is no ordinary matter or problem of governance. It is an existential threat that can render pointless all of the concerns and obligations of normal governance that were just referenced. This idea of climate change as an existential threat seems odd for powerful states (some more powerful than others) with fixed borders and long histories. But borders are meaningless in the face of this threat, as are armies and as is financial wealth, other than as tools to be exhausted in a final and futile effort to stave off, briefly, global economic collapse, food insecurity, and the spate of other maladies that will become realities if the causes of climate change are not addressed without delay and if mitigation planning is inadequate.

I am reminded of something that the well-known Indian business leader, N. R. Narayana Murthy, wrote: "When you run a part of the relay and pass on the baton, there is no sense of unfinished business in your mind. There is just the sense of having done your part to the best of your ability. That is it.

The hope is to pass on the baton to somebody who will run faster and run a better marathon.’^{xv} But as you address climate change, the facts demand that a different kind of race be run, for all states, collectively, are both baton passer and baton receiver. There is no handing-off the problem, or the solutions, to someone else who will advance the runners’ collective purposes. While some states have more resources than others, suffering or the threat of suffering will render states more or less equal, at last. The government of Jamaica has as much responsibility as the government of Spain; the government of North Korea as much responsibility as the government of the United States. Despite the nature of the relations between states, and despite differences in power, the responsibility among all states and so all governments, is equal. Each has *ideas* to bring to bear to address the crisis, if not vast material resources. Each has a *voice* that can be used to compel the others to hear, if not the ability to set the agenda, alone. Each has people who will die, or be displaced, or both. Those governments who believe they have little to offer in terms of solutions are mistaken. The resources needed to address climate change include ideas, innovations, and will. The poorest state can generate all of these; it is not from the richest states alone that all of the solutions will flow.

As well, I urge you to look beyond the threat. The new technologies, new solidarity, new relationships, new opportunities for just trade, and the new peace that can be forged by working on the problem of climate change, together, may yield yet unimagined benefits and, to some extent, already have. There is much to be gained by universal recognition that this challenge must be met by and through cross-collaborations of a breadth and depth unimagined in the past. In every crisis there are opportunities. The opportunities to better understand our world and the peoples of all cultures and outlooks are great. The bigger the crisis, the bigger the opportunities – at least, this is often the case. As there has never been a crisis as large as climate change, the opportunities for humanity to forge a future peace among nations and peoples, improved security of all types, and shared prosperity are without precedent. Of course, so are the dangers.

Great collaborative efforts require a ceding of some sovereignty, just as a team or a platoon requires the deflation of individual egos. It is time to cede sovereignty to the extent necessary to create a global authority for climate change that will act to enforce compliance with agreements forged between

^{xv} Venkatesha Babu and Sridhar Chari. (2011). Infosys is an absolute meritocracy, says Narayana Murthy. Live Mint, April 15, <http://www.livemint.com/Companies/VZeNKaAj1L1qNG07dl2ZzO/Infosys-is-an-absolute-meritocracy-says-Narayana-Murthy.html>. Accessed September 12, 2017.

governments. The time of desiderata and voluntary compliance is over. I believe a global authority can be birthed from the United Nations Security Council, which already has a structure and mechanisms that can be used to assure that such a global authority would function as intended. No state seeks to voluntarily cede sovereignty – under normal circumstances. But it is important to remember two things. The first is that sovereignty, as we understand it today, is a human construction that serves human purposes, and so it is malleable in the face of exigent human needs. The second is that great challenges require extraordinary measures in order to meet them. A global climate authority would be one such extraordinary measure.

Quite literally, the world is in your hands, as is, in many important ways, the Earth. They are not the same thing, but you are charged with the stewardship of each. You must not fail. If you are successful, perhaps the time will come when our descendants will say, “That was the day, that was the hour, when it all started.”

Sincerely,

Dr. David E. McClean

Global Citizen

GLOSSARY ►

2C – “2C” or two degrees Celsius is believed to be the limit of global mean temperature increase (over pre-industrial temperatures) such that a cascade of irreversible effects will ensue. There is no certainty, however, whether the upper limit is just above or just below two degrees Celsius of temperature increase.

Adaptation – An adaptation helps organisms to survive in their ecological niche or habitat. They can be anatomical, behavioral, or physiological.

Albedo – The capacity of the Earth to reflect solar radiation out into space. The effect is to prevent absorption such that the radiation does not serve to increase global temperatures.

Anthropocentrism/Anthropocentrist – Broadly, the idea that all human actions and plans should have the interests and well-being of human beings as the central concern, rather than other life forms, species, ecosystems, or the non-living world.

Anthropocene – The term for the current geological period, following the Holocene (see below). The significance of this term is that it expresses the notion that, for the first time in geological history, the geological record itself clearly reflects the impact of human activity, rather than only or primarily non-human natural causes, as mark other geological periods. The term has been recommended for official acceptance by the Working Group on the Anthropocene.

Atlantic Meridional Overturning Circulation (“AMOC” or just “MOC”) – Refers to Atlantic ocean currents (part of the planet’s “thermohaline circulation”) that have a major impact on the maintenance of climate – in particular, the atmospheric temperatures of much of Europe. The MOC brings a substantial amount of heat energy from the tropics and the Southern Hemisphere into the North Atlantic, which in turn warms the air. The desalination of ocean water caused by fresh water runoff from melting land and sea ice is threatening these currents. The consequences of “shutting off” these currents would be – scientists believe – devastating.

Anthropogenic Climate Change – Climate change caused by the activity of human beings, primarily through the emission of Green House Gases into the atmosphere.

Biosphere – The “layer” of the Earth (atmosphere, land, and oceans) that contains life.

Biota – The various forms of life on Earth.

Carbon Capture and Sequestration (“CCS”) – The capture of carbon emissions to prevent its introduction into the atmosphere or oceans.

Carbon Dioxide (CO₂) – Carbon Dioxide is a common atmospheric gas, and the primary Green House Gas. The massive increase of this gas in the atmosphere has supercharged the Greenhouse Effect.

Central Climate Change Authority (CCCA) – The suggested moniker of a new climate change authority to be formed by the United Nations Security Council, as proposed in Chapter 3.

Conference of the Parties (COP) – The Conference of the Parties acts as the governing authority of various conferences of the United Nations Framework Convention on Climate Change (UNFCCC).

Coral Bleaching – Due to acidic rains (rain made acidic by increases of CO₂ in the atmosphere. The increased acidity introduced into the oceans deteriorates the coral structures, as they are made out of calcium carbonate. Once the corals are destroyed, the animals that make them their home die and ecosystem collapse ensues. Coral reefs around the world are succumbing to bleaching.

Coral Reef – Ecosystems that support a vast array of marine life, based on calcium carbonate structure built up by small sea organisms.

Derecho – A derecho is a land-based wind storm that moves in a straight line, as compared to a tornado which is a weather phenomenon in which wind is twisted, moving in a more or less isolated circular pattern.

Forcing – Forcing, or climate forcing, refers to the different factors that affect the Earth's climate. These "forcings" drive or "force" the climate system to change. There are natural forcings and anthropogenic (human induced) forcings. Some examples of climate forcings include changes in the sun's radiative output (one way or another), changes in the atmospheric concentration of GHGs, volcanic eruptions, and the build-up of aerosols in the atmosphere.

Fully-Cognizant Corporate Conduct – Conduct based upon a *social imaginary* in which stewardship of the firm is a central guiding principle, and upon the idea of social and economic *ecology* in which social institutions, including commercial institutions, are seen as interlocking, as part of an ecosystem that permits the members of society to flourish. Fully-cognizant corporate conduct is effected on the basis of constant *recollection* that the corporation/firm is a part of civil society and the natural world has the power to harm as well as to deliver benefits.

Global Warming – Increasing global mean temperatures due to the increase of Green House Gases in the atmosphere.

Greenhouse Effect – The trapping of heat by a barrier to its dissipation. In a floral greenhouse, glass or plastic panels form a barrier that allows solar radiation in, but does not allow the heat it generates within the greenhouse to escape. In the case of the Earth, the barrier is composed of atmospheric gases, such as carbon dioxide (CO₂) and methane (CH₄).

Green House Gases (GHGs) – The gases that create the Earth's Greenhouse Effect, most notably Carbon Dioxide and Methane.

Hadley Cell – A large-scale atmospheric convection cell in which air rises at the equator and sinks at medium latitudes, typically about 30° north or south.

Hadley Cell Expansion – As global temperatures rise, the temperature difference between the poles and the equator is likely to decrease, expanding the cell of air circulation adjacent to the equator known as the Hadley Cell. One effect this has is that mid-latitude regions like the Mediterranean and the Southwestern US are likely to see an increase in sea level pressure—which corresponds to drier weather.

Holocene – Geological *epoch* starting about 11,700 years ago. It encompasses the Tarantian, Ionian, Calabrian, and Gelasian *ages*. Almost all significant human developments took place during the Holocene epoch. Some scientists believe that we have entered a new epoch, referred to as the "Anthropocene" (see above).

Ice Sheet – According to the National Snow and Ice Data Center, an ice sheet is a mass of glacial land ice extending more than 50,000 square kilometers (20,000 square miles). The two ice sheets on Earth today cover most of Greenland and Antarctica. Ice sheets contain enormous quantities of frozen water. If the Greenland Ice Sheet melted, scientists estimate that sea level would rise about 6 meters (20 feet). If the Antarctic Ice Sheet melted, sea level would rise by about 60 meters (200 feet).

Intergovernmental Panel on Climate Change ("IPCC") – The principal scientific intergovernmental body that was established and works under the auspices of the United Nations.

James Hansen – Climatologist. His 1988 Congressional testimony on climate change was instrumental in raising awareness of the phenomenon, though many discounted his remarks until other scientists began to corroborate his testimony. He believes that climate change could make the world ungovernable, as the physical changes that climate change will produce begin to stress societies around the world.

Kyoto Protocol – The Kyoto Protocol is an international agreement linked to the UNFCCC, which **commits** its parties by setting internationally binding emission reduction targets. The Protocol placed a heavier burden on developed nations to reduce emissions of GHGs. The Protocol was adopted in Kyoto, Japan, on December 11, 1997 and became effective on February 16, 2005. The detailed rules for the implementation were adopted in Marrakesh in 2001, and so are called

the "Marrakesh Accords." The United States Senate never ratified the Protocol, even though signed by President Bill Clinton. In 2012, Canada pulled out of the Protocol.

Maxim of Practical Intrinsicism: As conceived here in, the Maxim of Practical Intrinsicism holds that one should desire the Earth to continue as a generator and preserver of life even if it became clear that human beings would no longer be members of the biotic community; and were one forced to choose between the survival of human beings and the survival of the Earth, one should choose the Earth. It is intended to serve as an ethical heuristic concerning human beings' relationship with the Earth itself.

Metanoia – A complete transformation of the mind, leading to a new outlook, actions, and habits. The notion of metanoia is used in the epistles of St. Paul. Its cognate is the Hebrew term, *Teshuvah*.

Methane (CH₄) – Methane is a Green House Gas, with a heat-trapping capacity significantly more robust than carbon dioxide.

Ocean Acidification – Turning the oceans more acidic (on the PH scale), largely due to acid rain which itself is due to increase carbon in the atmosphere. Ocean acidification has a deleterious impact on ocean coral (creating coral bleaching), and impacts a range of marine organisms.

Paris Agreement – Agreement within the United Nations Framework Convention on Climate Change, ratified at COP 21 or the 21st Conference of the Parties, on December 12, 2015. The Paris Agreement address GHG emissions, financing of GHG reduction efforts, and compliance. The agreement was negotiated by representatives of 196 parties. As of August 2017, 195 UNFCCC members have signed the agreement and 160 have ratified it.

Parts Per Million (ppm) – Refers to “parts per million” of atmospheric CO₂ in discussions of climate change. Over the past one million years, atmospheric CO₂ ranged from 172 to 300 parts per million (ppm). It recently broke 410 ppm, which is a significant threshold level.¹⁸⁷

Permafrost – Frozen soil in the polar regions. The frozen soil contains undecomposed organisms. Due to thawing that is expected due to climate change, the decomposition process will commence, releasing large quantities of methane into the atmosphere.

Precautionary Principle – A principle of risk management that allows policy makers the freedom to act to prevent substantial harm to the public, even in cases in which absolute certainty of the potential harm has not been achieved.

Sixth Extinction (or Holocene Extinction) – A widespread extinction of species occurring in the present geological epoch referred to as the “Holocene.” It’s called the sixth extinction because there appears to have been five other mass extinctions in the geological record. The marker is a rate of extinction of species estimated at 100 to 1,000 times higher than natural background rates or extinction. Scientists believe that the main cause of the Sixth Extinction, is human activity (the destruction of habitats of other species, pollution, agriculture, etc.).

Teshuvah – Hebrew: To turn around. Most often, this relates to a return to righteousness or justice after an acknowledgement of error.

Third-Wave Economic Imagination – An understanding of economy such that the executive or manager is aware that:

- (i) The firm is embedded in society and is a creature of it (i.e., is part of an ecosystem of commercial and noncommercial actors and institutions);
- (ii) “Economics” should not be limited to a grasp of merely macro-economic data – facts and figures about productivity, unemployment and the like, but should also be concerned with “social ecology” (i.e., the maintenance of critical non-monetary values (stable families, clean natural spaces, etc.) and non-commercial institutions); and
- (iii) A proper commercial *social imaginary* is affectively and intellectually sensitive to the fact that the firm is a key agent of social welfare that is linked with other key agents of social welfare, such as governments and nongovernmental organizations.

United Nations Framework Convention on Climate Change (“UNFCCC”) – The UNFCCC became effective on March 21, 1994 and has near-universal membership, with 197 countries that have ratified the Convention (these countries are called “Parties to the Convention”). The ultimate objective of the Convention is to stabilize greenhouse gas concentrations at a level that would prevent dangerous anthropogenic (human induced) interference with the climate system.

Westphalia (Peace of, or Treaty of) – The 1648 treaty that ended the European wars of religion and established (or more firmly established) the legal concept of state sovereignty in international law, which includes the principle of noninterference with the internal, domestic affairs of a state by another state.

~ APPENDIX ~

1. The Paris Agreement

Comment: As discussed in this book, the Paris Agreement, while being a significant step toward addressing climate change, is in many ways quite inadequate. The language used to indicate the required action is desiderative, not imperative. The Agreement employs words such as “decides,” “welcomes,” and “requests” instead of “will,” “undertakes,” and “must.” (See, in particular, Article 15, the text of which I have underscored.) Though the reasons for this have been explained (they have to do with the delicacies of international diplomacy and the different economic and political situations of states, which certainly are real enough, any future agreements must, nevertheless, use the language of binding contracts and, of course, there must be enforcement mechanisms, such as my proposed CCCA, and clear penalties for breaches – *or for unilateral withdrawal*. Note: Portions of adoption preamble (paragraphs 71 through 139) have been omitted for reasons of space, but the Paris Agreement itself is included in full. The omitted sections may be found at the IPCC web site.

Adoption of the Paris Agreement

The Conference of the Parties,

Recalling decision 1/CP.17 on the establishment of the Ad Hoc Working Group on the Durban Platform for Enhanced Action,

Also recalling Articles 2, 3 and 4 of the Convention,

Further recalling relevant decisions of the Conference of the Parties, including decisions 1/CP.16, 2/CP.18, 1/CP.19 and 1/CP.20,

Welcoming the adoption of United Nations General Assembly resolution A/RES/70/1, “Transforming our world: the 2030 Agenda for Sustainable Development”, in particular its goal 13, and the adoption of the Addis Ababa Action Agenda of the third International Conference on Financing for Development and the adoption of the Sendai Framework for Disaster Risk Reduction,

Recognizing that climate change represents an urgent and potentially irreversible threat to human societies and the planet and thus requires the widest possible cooperation by all countries, and their participation in an effective and appropriate international response, with a view to accelerating the reduction of global greenhouse gas emissions,

Also recognizing that deep reductions in global emissions will be required in order to achieve the ultimate objective of the Convention and *emphasizing* the need for urgency in addressing climate change,

Acknowledging that climate change is a common concern of humankind, Parties should, when taking action to address climate change, respect, promote and consider their respective obligations on human rights, the right to health, the rights of indigenous peoples, local communities, migrants, children, persons with disabilities and people in vulnerable situations and the right to development, as well as gender equality, empowerment of women and intergenerational equity,

Also acknowledging the specific needs and concerns of developing country Parties arising from the impact of the implementation of response measures and, in this regard, decisions 5/CP.7, 1/CP.10, 1/CP.16 and 8/CP.17,

Emphasizing with serious concern the urgent need to address the significant gap between the aggregate effect of Parties’ mitigation pledges in terms of global annual

emissions of greenhouse gases by 2020 and aggregate emission pathways consistent with holding the increase in the global average temperature to well below 2 °C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5 °C above pre-industrial levels,

Also emphasizing that enhanced pre-2020 ambition can lay a solid foundation for enhanced post-2020 ambition,

Stressing the urgency of accelerating the implementation of the Convention and its Kyoto Protocol in order to enhance pre-2020 ambition,

Recognizing the urgent need to enhance the provision of finance, technology and capacity-building support by developed country Parties, in a predictable manner, to enable enhanced pre-2020 action by developing country Parties,

Emphasizing the enduring benefits of ambitious and early action, including major reductions in the cost of future mitigation and adaptation efforts,

Acknowledging the need to promote universal access to sustainable energy in developing countries, in particular in Africa, through the enhanced deployment of renewable energy,

Agreeing to uphold and promote regional and international cooperation in order to mobilize stronger and more ambitious climate action by all Parties and non-Party stakeholders, including civil society, the private sector, financial institutions, cities and other subnational authorities, local communities and indigenous peoples,

I. Adoption

1. *Decides* to adopt the Paris Agreement under the United Nations Framework Convention on Climate Change (hereinafter referred to as “the Agreement”) as contained in the annex;
2. *Requests* the Secretary-General of the United Nations to be the Depositary of the Agreement and to have it open for signature in New York, United States of America, from 22 April 2016 to 21 April 2017;
3. *Invites* the Secretary-General to convene a high-level signature ceremony for the Agreement on 22 April 2016;
4. *Also invites* all Parties to the Convention to sign the Agreement at the ceremony to be convened by the Secretary-General, or at their earliest opportunity, and to deposit their respective instruments of ratification, acceptance, approval or accession, where appropriate, as soon as possible;
5. *Recognizes* that Parties to the Convention may provisionally apply all of the provisions of the Agreement pending its entry into force, and *requests* Parties to provide notification of any such provisional application to the Depositary;
6. *Notes* that the work of the Ad Hoc Working Group on the Durban Platform for Enhanced Action, in accordance with decision 1/CP.17, paragraph 4, has been completed;
7. *Decides* to establish the Ad Hoc Working Group on the Paris Agreement under the same arrangement, mutatis mutandis, as those concerning the election of officers to the Bureau of the Ad Hoc Working Group on the Durban Platform for Enhanced Action;^{xvi}
8. *Also decides* that the Ad Hoc Working Group on the Paris Agreement shall prepare for the entry into force of the Agreement and for the convening of the first session of the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement;

^{xvi} Endorsed by decision 2/CP.18, paragraph 2.

9. *Further decides* to oversee the implementation of the work programme resulting from the relevant requests contained in this decision;

10. *Requests* the Ad Hoc Working Group on the Paris Agreement to report regularly to the Conference of the Parties on the progress of its work and to complete its work by the first session of the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement;

11. *Decides* that the Ad Hoc Working Group on the Paris Agreement shall hold its sessions starting in 2016 in conjunction with the sessions of the Convention subsidiary bodies and shall prepare draft decisions to be recommended through the Conference of the Parties to the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement for consideration and adoption at its first session;

II. Intended nationally determined contributions

12. *Welcomes* the intended nationally determined contributions that have been communicated by Parties in accordance with decision 1/CP.19, paragraph 2(b);

13. *Reiterates* its invitation to all Parties that have not yet done so to communicate to the secretariat their intended nationally determined contributions towards achieving the objective of the Convention as set out in its Article 2 as soon as possible and well in advance of the twenty-second session of the Conference of the Parties (November 2016) and in a manner that facilitates the clarity, transparency and understanding of the intended nationally determined contributions;

14. *Requests* the secretariat to continue to publish the intended nationally determined contributions communicated by Parties on the UNFCCC website;

15. *Reiterates* its call to developed country Parties, the operating entities of the Financial Mechanism and any other organizations in a position to do so to provide support for the preparation and communication of the intended nationally determined contributions of Parties that may need such support;

16. *Takes note* of the synthesis report on the aggregate effect of intended nationally determined contributions communicated by Parties by 1 October 2015, contained in document FCCC/CP/2015/7;

17. *Notes with concern* that the estimated aggregate greenhouse gas emission levels in 2025 and 2030 resulting from the intended nationally determined contributions do not fall within least-cost 2 °C scenarios but rather lead to a projected level of 55 gigatonnes in 2030, and *also notes* that much greater emission reduction efforts will be required than those associated with the intended nationally determined contributions in order to hold the increase in the global average temperature to below 2 °C above pre-industrial levels by reducing emissions to 40 gigatonnes or to 1.5 °C above pre-industrial levels by reducing to a level to be identified in the special report referred to in paragraph 21 below;

18. *Further notes, in this context*, the adaptation needs expressed by many developing country Parties in their intended nationally determined contributions;

19. *Requests* the secretariat to update the synthesis report referred to in paragraph 16 above so as to cover all the information in the intended nationally determined contributions communicated by Parties pursuant to decision 1/CP.20 by 4 April 2016 and to make it available by 2 May 2016;

20. *Decides* to convene a facilitative dialogue among Parties in 2018 to take stock of the collective efforts of Parties in relation to progress towards the long-term goal referred to in Article 4, paragraph 1, of the Agreement and to inform the preparation of nationally determined contributions pursuant to Article 4, paragraph 8, of the Agreement;

21. *Invites* the Intergovernmental Panel on Climate Change to provide a special report in 2018 on the impacts of global warming of 1.5 °C above pre-industrial levels and related global greenhouse gas emission pathways;

III. Decisions to give effect to the Agreement

Mitigation

22. *Also invites* Parties to communicate their first nationally determined contribution no later than when the Party submits its respective instrument of ratification, acceptance, approval or accession of the Paris Agreement; if a Party has communicated an intended nationally determined contribution prior to joining the Agreement, that Party shall be considered to have satisfied this provision unless that Party decides otherwise;

23. *Requests* those Parties whose intended nationally determined contribution pursuant to decision 1/CP.20 contains a time frame up to 2025 to communicate by 2020 a new nationally determined contribution and to do so every five years thereafter pursuant to Article 4, paragraph 9, of the Agreement;

24. *Also requests* those Parties whose intended nationally determined contribution pursuant to decision 1/CP.20 contains a time frame up to 2030 to communicate or update by 2020 these contributions and to do so every five years thereafter pursuant to Article 4, paragraph 9, of the Agreement;

25. *Decides* that Parties shall submit to the secretariat their nationally determined contributions referred to in Article 4 of the Agreement at least 9 to 12 months in advance of the relevant session of the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement with a view to facilitating the clarity, transparency and understanding of these contributions, including through a synthesis report prepared by the secretariat;

26. *Requests* the Ad Hoc Working Group on the Paris Agreement to develop further guidance on features of the nationally determined contributions for consideration and adoption by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement at its first session;

27. *Agrees* that the information to be provided by Parties communicating their nationally determined contributions, in order to facilitate clarity, transparency and understanding, may include, as appropriate, inter alia, quantifiable information on the reference point (including, as appropriate, a base year), time frames and/or periods for implementation, scope and coverage, planning processes, assumptions and methodological approaches including those for estimating and accounting for anthropogenic greenhouse gas emissions and, as appropriate, removals, and how the Party considers that its nationally determined contribution is fair and ambitious, in the light of its national circumstances, and how it contributes towards achieving the objective of the Convention as set out in its Article 2;

28. *Requests* the Ad Hoc Working Group on the Paris Agreement to develop further guidance for the information to be provided by Parties in order to facilitate clarity, transparency and understanding of nationally determined contributions for consideration and adoption by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement at its first session;

29. *Also requests* the Subsidiary Body for Implementation to develop modalities and procedures for the operation and use of the public registry referred to in Article 4, paragraph 12, of the Agreement, for consideration and adoption by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement at its first session;

30. *Further requests* the secretariat to make available an interim public registry in the first half of 2016 for the recording of nationally determined contributions submitted in accordance with Article 4 of the Agreement, pending the adoption by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement of the modalities and procedures referred to in paragraph 29 above;

31. *Requests* the Ad Hoc Working Group on the Paris Agreement to elaborate, drawing from approaches established under the Convention and its related legal instruments as appropriate, guidance for accounting for Parties' nationally determined contributions, as referred to in Article 4, paragraph 13, of the Agreement, for consideration and adoption by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement at its first session, which ensures that:

(a) Parties account for anthropogenic emissions and removals in accordance with methodologies and common metrics assessed by the Intergovernmental Panel on Climate Change and adopted by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement;

(b) Parties ensure methodological consistency, including on baselines, between the communication and implementation of nationally determined contributions;

(c) Parties strive to include all categories of anthropogenic emissions or removals in their nationally determined contributions and, once a source, sink or activity is included, continue to include it;

(d) Parties shall provide an explanation of why any categories of anthropogenic emissions or removals are excluded;

32. *Decides* that Parties shall apply the guidance referred to in paragraph 31 above to the second and subsequent nationally determined contributions and that Parties may elect to apply such guidance to their first nationally determined contribution;

33. *Also decides that the forum on the impact of the implementation of response measures, under the subsidiary bodies, shall continue, and shall serve the Agreement;*

34. *Further decides that the Subsidiary Body for Scientific and Technological Advice and the Subsidiary Body for Implementation shall recommend, for consideration and adoption by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement at its first session, the modalities, work programme and functions of the forum on the impact of the implementation of response measures to address the effects of the implementation of response measures under the Agreement by enhancing cooperation amongst Parties on understanding the impacts of mitigation actions under the Agreement and the exchange of information, experiences, and best practices amongst Parties to raise their resilience to these impacts;*

35. *Invites* Parties to communicate, by 2020, to the secretariat mid-century, long-term low greenhouse gas emission development strategies in accordance with Article 4, paragraph 19, of the Agreement, and *requests* the secretariat to publish on the UNFCCC website Parties' low greenhouse gas emission development strategies as communicated;

36. *Requests* the Subsidiary Body for Scientific and Technological Advice to develop and recommend the guidance referred to under Article 6, paragraph 2, of the Agreement for consideration and adoption by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement at its first session, including guidance to ensure that double counting is avoided on the basis of a corresponding adjustment by Parties for both anthropogenic emissions by sources and removals by sinks covered by their nationally determined contributions under the Agreement;

37. *Recommends* that the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement adopt rules, modalities and procedures for the mechanism established by Article 6, paragraph 4, of the Agreement on the basis of:

- (a) Voluntary participation authorized by each Party involved;
- (b) Real, measurable, and long-term benefits related to the mitigation of climate change;
- (c) Specific scopes of activities;
- (d) Reductions in emissions that are additional to any that would otherwise occur;
- (e) Verification and certification of emission reductions resulting from mitigation activities by designated operational entities;
- (f) Experience gained with and lessons learned from existing mechanisms and approaches adopted under the Convention and its related legal instruments;

38. *Requests* the Subsidiary Body for Scientific and Technological Advice to develop and recommend rules, modalities and procedures for the mechanism referred to in paragraph 37 above for consideration and adoption by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement at its first session;

39. *Also requests* the Subsidiary Body for Scientific and Technological Advice to undertake a work programme under the framework for non-market approaches to sustainable development referred to in Article 6, paragraph 8, of the Agreement, with the objective of considering how to enhance linkages and create synergy between, inter alia, mitigation, adaptation, finance, technology transfer and capacity-building, and how to facilitate the implementation and coordination of non-market approaches;

40. *Further requests* the Subsidiary Body for Scientific and Technological Advice to recommend a draft decision on the work programme referred to in paragraph 39 above, taking into account the views of Parties, for consideration and adoption by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement at its first session;

Adaptation

41. *Requests* the Adaptation Committee and the Least Developed Countries Expert Group to jointly develop modalities to recognize the adaptation efforts of developing country Parties, as referred to in Article 7, paragraph 3, of the Agreement, and make recommendations for consideration and adoption by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement at its first session;

42. *Also requests* the Adaptation Committee, taking into account its mandate and its second three-year workplan, and with a view to preparing recommendations for consideration and adoption by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement at its first session:

- (a) To review, in 2017, the work of adaptation-related institutional arrangements under the Convention, with a view to identifying ways to enhance the coherence of their work, as appropriate, in order to respond adequately to the needs of Parties;
- (b) To consider methodologies for assessing adaptation needs with a view to assisting developing country Parties, without placing an undue burden on them;

43. *Invites* all relevant United Nations agencies and international, regional and national financial institutions to provide information to Parties through the secretariat on how their development assistance and climate finance programmes incorporate climate-proofing and climate resilience measures;

44. *Requests* Parties to strengthen regional cooperation on adaptation where appropriate and, where necessary, establish regional centres and networks, in particular in developing countries, taking into account decision 1/CP.16, paragraph 30;

45. *Also requests* the Adaptation Committee and the Least Developed Countries Expert Group, in collaboration with the Standing Committee on Finance and other relevant institutions, to develop methodologies, and make recommendations for consideration and adoption by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement at its first session on:

(a) Taking the necessary steps to facilitate the mobilization of support for adaptation in developing countries in the context of the limit to global average temperature increase referred to in Article 2 of the Agreement;

(b) Reviewing the adequacy and effectiveness of adaptation and support referred to in Article 7, paragraph 14(c), of the Agreement;

46. *Further requests* the Green Climate Fund to expedite support for the least developed countries and other developing country Parties for the formulation of national adaptation plans, consistent with decisions 1/CP.16 and 5/CP.17, and for the subsequent implementation of policies, projects and programmes identified by them;

Loss and damage

47. *Decides* on the continuation of the Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts, following the review in 2016;

48. *Requests* the Executive Committee of the Warsaw International Mechanism to establish a clearing house for risk transfer that serves as a repository for information on insurance and risk transfer, in order to facilitate the efforts of Parties to develop and implement comprehensive risk management strategies;

49. *Also requests* the Executive Committee of the Warsaw International Mechanism to establish, according to its procedures and mandate, a task force to complement, draw upon the work of and involve, as appropriate, existing bodies and expert groups under the Convention including the Adaptation Committee and the Least Developed Countries Expert Group, as well as relevant organizations and expert bodies outside the Convention, to develop recommendations for integrated approaches to avert, minimize and address displacement related to the adverse impacts of climate change;

50. *Further requests* the Executive Committee of the Warsaw International Mechanism to initiate its work, at its next meeting, to operationalize the provisions referred to in paragraphs 48 and 49 above, and to report on progress thereon in its annual report;

51. *Agrees* that Article 8 of the Agreement does not involve or provide a basis for any liability or compensation;

Finance

52. *Decides* that, in the implementation of the Agreement, financial resources provided to developing country Parties should enhance the implementation of their policies, strategies, regulations and action plans and their climate change actions with respect to both mitigation and adaptation to contribute to the achievement of the purpose of the Agreement as defined in its Article 2;

53. *Also decides* that, in accordance with Article 9, paragraph 3, of the Agreement, developed countries intend to continue their existing collective mobilization goal through 2025 in the context of meaningful mitigation actions and transparency on implementation; prior to 2025 the Conference of the Parties serving as the meeting of the Parties to the Paris

Agreement shall set a new collective quantified goal from a floor of USD 100 billion per year, taking into account the needs and priorities of developing countries;

54. *Recognizes* the importance of adequate and predictable financial resources, including for results-based payments, as appropriate, for the implementation of policy approaches and positive incentives for reducing emissions from deforestation and forest degradation, and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks; as well as alternative policy approaches, such as joint mitigation and adaptation approaches for the integral and sustainable management of forests; while reaffirming the importance of non-carbon benefits associated with such approaches; encouraging the coordination of support from, inter alia, public and private, bilateral and multilateral sources, such as the Green Climate Fund, and alternative sources in accordance with relevant decisions by the Conference of the Parties;

55. *Decides* to initiate, at its twenty-second session, a process to identify the information to be provided by Parties, in accordance with Article 9, paragraph 5, of the Agreement with a view to providing a recommendation for consideration and adoption by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement at its first session;

56. *Also decides* to ensure that the provision of information in accordance with Article 9, paragraph 7, of the Agreement shall be undertaken in accordance with the modalities, procedures and guidelines referred to in paragraph 91 below;

57. *Requests* the Subsidiary Body for Scientific and Technological Advice to develop modalities for the accounting of financial resources provided and mobilized through public interventions in accordance with Article 9, paragraph 7, of the Agreement for consideration by the Conference of the Parties at its twenty-fourth session (November 2018), with a view to making a recommendation for consideration and adoption by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement at its first session;

58. *Decides* that the Green Climate Fund and the Global Environment Facility, the entities entrusted with the operation of the Financial Mechanism of the Convention, as well as the Least Developed Countries Fund and the Special Climate Change Fund, administered by the Global Environment Facility, shall serve the Agreement;

59. *Recognizes* that the Adaptation Fund may serve the Agreement, subject to relevant decisions by the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol and the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement;

60. *Invites* the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol to consider the issue referred to in paragraph 59 above and make a recommendation to the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement at its first session;

61. *Recommends* that the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement shall provide guidance to the entities entrusted with the operation of the Financial Mechanism of the Convention on the policies, programme priorities and eligibility criteria related to the Agreement for transmission by the Conference of the Parties;

62. *Decides* that the guidance to the entities entrusted with the operations of the Financial Mechanism of the Convention in relevant decisions of the Conference of the Parties, including those agreed before adoption of the Agreement, shall apply *mutatis mutandis* to the Agreement;

63. *Also decides* that the Standing Committee on Finance shall serve the Agreement in line with its functions and responsibilities established under the Conference of the Parties;

64. *Urges* the institutions serving the Agreement to enhance the coordination and delivery of resources to support country-driven strategies through simplified and efficient application and approval procedures, and through continued readiness support to developing country Parties, including the least developed countries and small island developing States, as appropriate;

Technology development and transfer

65. *Takes note of* the interim report of the Technology Executive Committee on guidance on enhanced implementation of the results of technology needs assessments as contained in document FCCC/SB/2015/INF.3;

66. *Decides* to strengthen the Technology Mechanism and *requests* the Technology Executive Committee and the Climate Technology Centre and Network, in supporting the implementation of the Agreement, to undertake further work relating to, inter alia:

- (a) Technology research, development and demonstration;
- (b) The development and enhancement of endogenous capacities and technologies;

67. *Requests the Subsidiary Body for Scientific and Technological Advice to initiate, at its forty-fourth session (May 2016), the elaboration of the technology framework established under Article 10, paragraph 4, of the Agreement and to report on its findings to the Conference of the Parties, with a view to the Conference of the Parties making a recommendation on the framework to the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement for consideration and adoption at its first session, taking into consideration that the framework should facilitate, inter alia:*

- (a) *The undertaking and updating of technology needs assessments, as well as the enhanced implementation of their results, particularly technology action plans and project ideas, through the preparation of bankable projects;*
- (b) *The provision of enhanced financial and technical support for the implementation of the results of the technology needs assessments;*
- (c) *The assessment of technologies that are ready for transfer;*
- (d) *The enhancement of enabling environments for and the addressing of barriers to the development and transfer of socially and environmentally sound technologies;*

68. *Decides* that the Technology Executive Committee and the Climate Technology Centre and Network shall report to the *Conference of the Parties serving as the meeting of the Parties to the Paris Agreement*, through the subsidiary bodies, on their activities to support the implementation of the Agreement;

69. *Also decides* to undertake a periodic assessment of the effectiveness and adequacy of the support provided to the Technology Mechanism in supporting the implementation of the Agreement on matters relating to technology development and transfer;

70. *Requests the Subsidiary Body for Implementation to initiate, at its forty-fourth session, the elaboration of the scope of and modalities for the periodic assessment referred to in paragraph 69 above, taking into account the review of the Climate Technology Centre and Network as referred to in decision 2/CP.17, annex VII, paragraph 20, and the modalities for the global stocktake referred to in Article 14 of the Agreement, for consideration and adoption by the Conference of the Parties at its twenty-fifth session (November 2019) . . .*

Annex

Paris Agreement

The Parties to this Agreement,

Being Parties to the United Nations Framework Convention on Climate Change, hereinafter referred to as “the Convention”,

Pursuant to the Durban Platform for Enhanced Action established by decision 1/CP.17 of the Conference of the Parties to the Convention at its seventeenth session,

In pursuit of the objective of the Convention, and being guided by its principles, including the principle of equity and common but differentiated responsibilities and respective capabilities, in the light of different national circumstances,

Recognizing the need for an effective and progressive response to the urgent threat of climate change on the basis of the best available scientific knowledge,

Also recognizing the specific needs and special circumstances of developing country Parties, especially those that are particularly vulnerable to the adverse effects of climate change, as provided for in the Convention,

Taking full account of the specific needs and special situations of the least developed countries with regard to funding and transfer of technology,

Recognizing that Parties may be affected not only by climate change, but also by the impacts of the measures taken in response to it,

Emphasizing the intrinsic relationship that climate change actions, responses and impacts have with equitable access to sustainable development and eradication of poverty,

Recognizing the fundamental priority of safeguarding food security and ending hunger, and the particular vulnerabilities of food production systems to the adverse impacts of climate change,

Taking into account the imperatives of a just transition of the workforce and the creation of decent work and quality jobs in accordance with nationally defined development priorities,

Acknowledging that climate change is a common concern of humankind, Parties should, when taking action to address climate change, respect, promote and consider their respective obligations on human rights, the right to health, the rights of indigenous peoples, local communities, migrants, children, persons with disabilities and people in vulnerable situations and the right to development, as well as gender equality, empowerment of women and intergenerational equity,

Recognizing the importance of the conservation and enhancement, as appropriate, of sinks and reservoirs of the greenhouse gases referred to in the Convention,

Noting the importance of ensuring the integrity of all ecosystems, including oceans, and the protection of biodiversity, recognized by some cultures as Mother Earth, and noting the importance for some of the concept of “climate justice”, when taking action to address climate change,

Affirming the importance of education, training, public awareness, public participation, public access to information and cooperation at all levels on the matters addressed in this Agreement,

Recognizing the importance of the engagements of all levels of government and various actors, in accordance with respective national legislations of Parties, in addressing climate change,

Also recognizing that sustainable lifestyles and sustainable patterns of consumption and production, with developed country Parties taking the lead, play an important role in addressing climate change,

Have agreed as follows:

Article 1

For the purpose of this Agreement, the definitions contained in Article 1 of the Convention shall apply. In addition:

- (a) “Convention” means the United Nations Framework Convention on Climate Change, adopted in New York on 9 May 1992;
- (b) “Conference of the Parties” means the Conference of the Parties to the Convention;
- (c) “Party” means a Party to this Agreement.

Article 2

1. This Agreement, in enhancing the implementation of the Convention, including its objective, aims to strengthen the global response to the threat of climate change, in the context of sustainable development and efforts to eradicate poverty, including by:

- (a) Holding the increase in the global average temperature to well below 2 °C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5 °C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change;
- (b) Increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development, in a manner that does not threaten food production; and
- (c) Making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development.

2. This Agreement will be implemented to reflect equity and the principle of common but differentiated responsibilities and respective capabilities, in the light of different national circumstances.

Article 3

As nationally determined contributions to the global response to climate change, all Parties are to undertake and communicate ambitious efforts as defined in Articles 4, 7, 9, 10, 11 and 13 with the view to achieving the purpose of this Agreement as set out in Article 2. The efforts of all Parties will represent a progression over time, while recognizing the need to support developing country Parties for the effective implementation of this Agreement.

Article 4

1. In order to achieve the long-term temperature goal set out in Article 2, Parties aim to reach global peaking of greenhouse gas emissions as soon as possible, recognizing that peaking will take longer for developing country Parties, and to undertake rapid reductions thereafter in accordance with best available science, so as to achieve a balance between anthropogenic emissions by sources

and removals by sinks of greenhouse gases in the second half of this century, on the basis of equity, and in the context of sustainable development and efforts to eradicate poverty.

2. Each Party shall prepare, communicate and maintain successive nationally determined contributions that it intends to achieve. Parties shall pursue domestic mitigation measures, with the aim of achieving the objectives of such contributions.

3. Each Party's successive nationally determined contribution will represent a progression beyond the Party's then current nationally determined contribution and reflect its highest possible ambition, reflecting its common but differentiated responsibilities and respective capabilities, in the light of different national circumstances.

4. Developed country Parties should continue taking the lead by undertaking economy-wide absolute emission reduction targets. Developing country Parties should continue enhancing their mitigation efforts, and are encouraged to move over time towards economy-wide emission reduction or limitation targets in the light of different national circumstances.

5. *Support shall be provided to developing country Parties for the implementation of this Article, in accordance with Articles 9, 10 and 11, recognizing that enhanced support for developing country Parties will allow for higher ambition in their actions.*

6. The least developed countries and small island developing States may prepare and communicate strategies, plans and actions for low greenhouse gas emissions development reflecting their special circumstances.

7. Mitigation co-benefits resulting from Parties' adaptation actions and/or economic diversification plans can contribute to mitigation outcomes under this Article.

8. In communicating their nationally determined contributions, all Parties shall provide the information necessary for clarity, transparency and understanding in accordance with decision 1/CP.21 and any relevant decisions of the Conference of the Parties serving as the meeting of the Parties to this Agreement.

9. Each Party shall communicate a nationally determined contribution every five years in accordance with decision 1/CP.21 and any relevant decisions of the Conference of the Parties serving as the meeting of the Parties to this Agreement and be informed by the outcomes of the global stocktake referred to in Article 14.

10. The Conference of the Parties serving as the meeting of the Parties to this Agreement shall consider common time frames for nationally determined contributions at its first session.

11. A Party may at any time adjust its existing nationally determined contribution with a view to enhancing its level of ambition, in accordance with guidance adopted by the Conference of the Parties serving as the meeting of the Parties to this Agreement.

12. Nationally determined contributions communicated by Parties shall be recorded in a public registry maintained by the secretariat.

13. Parties shall account for their nationally determined contributions. In accounting for anthropogenic emissions and removals corresponding to their nationally determined contributions, Parties shall promote environmental integrity, transparency, accuracy, completeness, comparability and consistency, and ensure the avoidance of double counting, in accordance with guidance adopted by the Conference of the Parties serving as the meeting of the Parties to this Agreement.

14. In the context of their nationally determined contributions, when recognizing and implementing mitigation actions with respect to anthropogenic emissions and removals, Parties should take into account, as appropriate, existing methods and guidance under the Convention, in the light of the provisions of paragraph 13 of this Article.

15. Parties shall take into consideration in the implementation of this Agreement the concerns of Parties with economies most affected by the impacts of response measures, particularly developing country Parties.

16. Parties, including regional economic integration organizations and their member States, that have reached an agreement to act jointly under paragraph 2 of this Article shall notify the secretariat of the terms of that agreement, including the emission level allocated to each Party within the relevant time period, when they communicate their nationally determined contributions. The secretariat shall in turn inform the Parties and signatories to the Convention of the terms of that agreement.

17. Each party to such an agreement shall be responsible for its emission level as set out in the agreement referred to in paragraph 16 of this Article in accordance with paragraphs 13 and 14 of this Article and Articles 13 and 15.

18. If Parties acting jointly do so in the framework of, and together with, a regional economic integration organization which is itself a Party to this Agreement, each member State of that regional economic integration organization individually, and together with the regional economic integration organization, shall be responsible for its emission level as set out in the agreement communicated under paragraph 16 of this Article in accordance with paragraphs 13 and 14 of this Article and Articles 13 and 15.

19. *All Parties should strive to formulate and communicate long-term low greenhouse gas emission development strategies, mindful of Article 2 taking into account their common but differentiated responsibilities and respective capabilities, in the light of different national circumstances.*

Article 5

20. Parties should take action to conserve and enhance, as appropriate, sinks and reservoirs of greenhouse gases as referred to in Article 4, *paragraph 1(d)*, of the Convention, including forests.

21. Parties are encouraged to take action to implement and support, including through results-based payments, the existing framework as set out in related guidance and decisions already agreed under the Convention for: policy approaches and positive incentives for activities relating to reducing emissions from deforestation and forest degradation, and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries; and alternative policy approaches, such as joint mitigation and adaptation approaches for the integral and sustainable management of forests, while reaffirming the importance of incentivizing, as appropriate, non-carbon benefits associated with such approaches.

Article 6

22. Parties recognize that some Parties choose to pursue voluntary cooperation in the implementation of their nationally determined contributions to allow for higher ambition in their mitigation and adaptation actions and to promote sustainable development and environmental integrity.

23. Parties shall, where engaging on a voluntary basis in cooperative approaches that involve the use of internationally transferred mitigation outcomes towards nationally determined contributions, promote sustainable development and ensure environmental integrity and transparency, including in governance, and shall apply robust accounting to ensure, inter alia, the avoidance of double counting, consistent with guidance adopted by the Conference of the Parties serving as the meeting of the Parties to this Agreement.
24. The use of internationally transferred mitigation outcomes to achieve nationally determined contributions under this Agreement shall be voluntary and authorized by participating Parties.
25. A mechanism to contribute to the mitigation of greenhouse gas emissions and support sustainable development is hereby established under the authority and guidance of the Conference of the Parties serving as the meeting of the Parties to this Agreement for use by Parties on a voluntary basis. It shall be supervised by a body designated by the Conference of the Parties serving as the meeting of the Parties to this Agreement, and shall aim:
- (a) To promote the mitigation of greenhouse gas emissions while fostering sustainable development;
 - (b) To incentivize and facilitate participation in the mitigation of greenhouse gas emissions by public and private entities authorized by a Party;
 - (c) To contribute to the reduction of emission levels in the host Party, which will benefit from mitigation activities resulting in emission reductions that can also be used by another Party to fulfil its nationally determined contribution; and
 - (d) To deliver an overall mitigation in global emissions.
26. Emission reductions resulting from the mechanism referred to in paragraph 4 of this Article shall not be used to demonstrate achievement of the host Party's nationally determined contribution if used by another Party to demonstrate achievement of its nationally determined contribution.
27. The Conference of the Parties serving as the meeting of the Parties to this Agreement shall ensure that a share of the proceeds from activities under the mechanism referred to in paragraph 4 of this Article is used to cover administrative expenses as well as to assist developing country Parties that are particularly vulnerable to the adverse effects of climate change to meet the costs of adaptation.
28. The Conference of the Parties serving as the meeting of the Parties to this Agreement shall adopt rules, modalities and procedures for the mechanism referred to in paragraph 4 of this Article at its first session.
29. Parties recognize the importance of integrated, holistic and balanced non-market approaches being available to Parties to assist in the implementation of their nationally determined contributions, in the context of sustainable development and poverty eradication, in a coordinated and effective manner, including through, inter alia, mitigation, adaptation, finance, technology transfer and capacity-building, as appropriate. These approaches shall aim to:
- (a) Promote mitigation and adaptation ambition;
 - (b) Enhance public and private sector participation in the implementation of nationally determined contributions; and
 - (c) Enable opportunities for coordination across instruments and relevant institutional arrangements.

30. A framework for non-market approaches to sustainable development is hereby defined to promote the non-market approaches referred to in paragraph 8 of this Article.

Article 7

31. Parties hereby establish the global goal on adaptation of enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change, with a view to contributing to sustainable development and ensuring an adequate adaptation response in the context of the temperature goal referred to in Article 2.

32. Parties recognize that adaptation is a global challenge faced by all with local, subnational, national, regional and international dimensions, and that it is a key component of and makes a contribution to the long-term global response to climate change to protect people, livelihoods and ecosystems, taking into account the urgent and immediate needs of those developing country Parties that are particularly vulnerable to the adverse effects of climate change.

33. The adaptation efforts of developing country Parties shall be recognized, in accordance with the modalities to be adopted by the Conference of the Parties serving as the meeting of the Parties to this Agreement at its first session.

34. Parties recognize that the current need for adaptation is significant and that greater levels of mitigation can reduce the need for additional adaptation efforts, and that greater adaptation needs can involve greater adaptation costs.

35. Parties acknowledge that adaptation action should follow a country-driven, gender-responsive, participatory and fully transparent approach, taking into consideration vulnerable groups, communities and ecosystems, and should be based on and guided by the best available science and, as appropriate, traditional knowledge, knowledge of indigenous peoples and local knowledge systems, with a view to integrating adaptation into relevant socioeconomic and environmental policies and actions, where appropriate.

36. Parties recognize the importance of support for and international cooperation on adaptation efforts and the importance of taking into account the needs of developing country Parties, especially those that are particularly vulnerable to the adverse effects of climate change.

37. Parties should strengthen their cooperation on enhancing action on adaptation, taking into account the Cancun Adaptation Framework, including with regard to:

(a) Sharing information, good practices, experiences and lessons learned, including, as appropriate, as these relate to science, planning, policies and implementation in relation to adaptation actions;

(b) Strengthening institutional arrangements, including those under the Convention that serve this Agreement, to support the synthesis of relevant information and knowledge, and the provision of technical support and guidance to Parties;

(c) Strengthening scientific knowledge on climate, including research, systematic observation of the climate system and early warning systems, in a manner that informs climate services and supports decision-making;

(d) Assisting developing country Parties in identifying effective adaptation practices, adaptation needs, priorities, support provided and received for adaptation actions and efforts, and challenges and gaps, in a manner consistent with encouraging good practices; and

(e) Improving the effectiveness and durability of adaptation actions.

38. United Nations specialized organizations and agencies are encouraged to support the efforts of Parties to implement the actions referred to in paragraph 7 of this Article, taking into account the provisions of paragraph 5 of this Article.

39. Each Party shall, as appropriate, engage in adaptation planning processes and the implementation of actions, including the development or enhancement of relevant plans, policies and/or contributions, which may include:

- (a) The implementation of adaptation actions, undertakings and/or efforts;
- (b) The process to formulate and implement national adaptation plans;
- (c) The assessment of climate change impacts and vulnerability, with a view to formulating nationally determined prioritized actions, taking into account vulnerable people, places and ecosystems;
- (d) Monitoring and evaluating and learning from adaptation plans, policies, programmes and actions; and
- (e) Building the resilience of socioeconomic and ecological systems, including through economic diversification and sustainable management of natural resources.

40. Each Party should, as appropriate, submit and update periodically an adaptation communication, which may include its priorities, implementation and support needs, plans and actions, without creating any additional burden for developing country Parties.

41. The adaptation communication referred to in paragraph 10 of this Article shall be, as appropriate, submitted and updated periodically, as a component of or in conjunction with other communications or documents, including a national adaptation plan, a nationally determined contribution as referred to in Article 4, paragraph 2, and/or a national communication.

42. The adaptation communications referred to in paragraph 10 of this Article shall be recorded in a public registry maintained by the secretariat.

43. Continuous and enhanced international support shall be provided to developing country Parties for the implementation of paragraphs 7, 9, 10 and 11 of this Article, in accordance with the provisions of Articles 9, 10 and 11.

44. The global stocktake referred to in Article 14 shall, inter alia:

- (a) Recognize adaptation efforts of developing country Parties;
- (b) Enhance the implementation of adaptation action taking into account the adaptation communication referred to in paragraph 10 of this Article;
- (c) Review the adequacy and effectiveness of adaptation and support provided for adaptation; and
- (d) Review the overall progress made in achieving the global goal on adaptation referred to in paragraph 1 of this Article.

Article 8

45. Parties recognize the importance of averting, minimizing and addressing loss and damage associated with the adverse effects of climate change, including extreme weather events and slow onset events, and the role of sustainable development in reducing the risk of loss and damage.

46. The Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts shall be subject to the authority and guidance of the Conference of the Parties serving as the meeting of the Parties to this Agreement and may be enhanced and strengthened, as determined by the Conference of the Parties serving as the meeting of the Parties to this Agreement.

47. Parties should enhance understanding, action and support, including through the Warsaw International Mechanism, as appropriate, on a cooperative and facilitative basis with respect to loss and damage associated with the adverse effects of climate change.

48. Accordingly, areas of cooperation and facilitation to enhance understanding, action and support may include:

- (a) Early warning systems;
- (b) Emergency preparedness;
- (c) Slow onset events;
- (d) Events that may involve irreversible and permanent loss and damage;
- (e) Comprehensive risk assessment and management;
- (f) Risk insurance facilities, climate risk pooling and other insurance solutions;
- (g) Non-economic losses; and
- (h) Resilience of communities, livelihoods and ecosystems.

49. The Warsaw International Mechanism shall collaborate with existing bodies and expert groups under the Agreement, as well as relevant organizations and expert bodies outside the Agreement.

Article 9

50. Developed country Parties shall provide financial resources to assist developing country Parties with respect to both mitigation and adaptation in continuation of their existing obligations under the Convention.

51. Other Parties are encouraged to provide or continue to provide such support voluntarily.

52. As part of a global effort, developed country Parties should continue to take the lead in mobilizing climate finance from a wide variety of sources, instruments and channels, noting the significant role of public funds, through a variety of actions, including supporting country-driven strategies, and taking into account the needs and priorities of developing country Parties. Such mobilization of climate finance should represent a progression beyond previous efforts.

53. The provision of scaled-up financial resources should aim to achieve a balance between adaptation and mitigation, taking into account country-driven strategies, and the priorities and needs of developing country Parties, especially those that are particularly vulnerable to the adverse effects of climate change and have significant capacity constraints, such as the least developed countries and small island developing States, considering the need for public and grant-based resources for adaptation.

54. Developed country Parties shall biennially communicate indicative quantitative and qualitative information related to paragraphs 1 and 3 of this Article, as applicable, including, as available, projected levels of public financial resources to be provided to developing country

Parties. Other Parties providing resources are encouraged to communicate biennially such information on a voluntary basis.

55. The global stocktake referred to in Article 14 shall take into account the relevant information provided by developed country Parties and/or Agreement bodies on efforts related to climate finance.

56. Developed country Parties shall provide transparent and consistent information on support for developing country Parties provided and mobilized through public interventions biennially in accordance with the modalities, procedures and guidelines to be adopted by the Conference of the Parties serving as the meeting of the Parties to this Agreement, at its first session, as stipulated in Article 13, paragraph 13. Other Parties are encouraged to do so.

57. The Financial Mechanism of the Convention, including its operating entities, shall serve as the financial mechanism of this Agreement.

58. The institutions serving this Agreement, including the operating entities of the Financial Mechanism of the Convention, shall aim to ensure efficient access to financial resources through simplified approval procedures and enhanced readiness support for developing country Parties, in particular for the least developed countries and small island developing States, in the context of their national climate strategies and plans.

Article 10

59. Parties share a long-term vision on the importance of fully realizing technology development and transfer in order to improve resilience to climate change and to reduce greenhouse gas emissions.

60. Parties, noting the importance of technology for the implementation of mitigation and adaptation actions under this Agreement and recognizing existing technology deployment and dissemination efforts, shall strengthen cooperative action on technology development and transfer.

61. The Technology Mechanism established under the Convention shall serve this Agreement.

62. A technology framework is hereby established to provide overarching guidance to the work of the Technology Mechanism in promoting and facilitating enhanced action on technology development and transfer in order to support the implementation of this Agreement, in pursuit of the long-term vision referred to in paragraph 1 of this Article.

63. Accelerating, encouraging and enabling innovation is critical for an effective, long-term global response to climate change and promoting economic growth and sustainable development. Such effort shall be, as appropriate, supported, including by the Technology Mechanism and, through financial means, by the Financial Mechanism of the Convention, for collaborative approaches to research and development, and facilitating access to technology, in particular for early stages of the technology cycle, to developing country Parties.

64. Support, including financial support, shall be provided to developing country Parties for the implementation of this Article, including for strengthening cooperative action on technology development and transfer at different stages of the technology cycle, with a view to achieving a balance between support for mitigation and adaptation. The global stocktake referred to in Article 14 shall take into account available information on efforts related to support on technology development and transfer for developing country Parties.

Article 11

65. Capacity-building under this Agreement should enhance the capacity and ability of developing country Parties, in particular countries with the least capacity, such as the least developed countries, and those that are particularly vulnerable to the adverse effects of climate change, such as small island developing States, to take effective climate change action, including, inter alia, to implement adaptation and mitigation actions, and should facilitate technology development, dissemination and deployment, access to climate finance, relevant aspects of education, training and public awareness, and the transparent, timely and accurate communication of information.

66. Capacity-building should be country-driven, based on and responsive to national needs, and foster country ownership of Parties, in particular, for developing country Parties, including at the national, subnational and local levels. Capacity-building should be guided by lessons learned, including those from capacity-building activities under the Convention, and should be an effective, iterative process that is participatory, cross-cutting and gender-responsive.

67. All Parties should cooperate to enhance the capacity of developing country Parties to implement this Agreement. Developed country Parties should enhance support for capacity-building actions in developing country Parties.

68. All Parties enhancing the capacity of developing country Parties to implement this Agreement, including through regional, bilateral and multilateral approaches, shall regularly communicate on these actions or measures on capacity-building. Developing country Parties should regularly communicate progress made on implementing capacity-building plans, policies, actions or measures to implement this Agreement.

69. Capacity-building activities shall be enhanced through appropriate institutional arrangements to support the implementation of this Agreement, including the appropriate institutional arrangements established under the Convention that serve this Agreement. The Conference of the Parties serving as the meeting of the Parties to this Agreement shall, at its first session, consider and adopt a decision on the initial institutional arrangements for capacity-building.

Article 12

Parties shall cooperate in taking measures, as appropriate, to enhance climate change education, training, public awareness, public participation and public access to information, recognizing the importance of these steps with respect to enhancing actions under this Agreement.

Article 13

70. In order to build mutual trust and confidence and to promote effective implementation, an enhanced transparency framework for action and support, with built-in flexibility which takes into account Parties' different capacities and builds upon collective experience is hereby established.

71. The transparency framework shall provide flexibility in the implementation of the provisions of this Article to those developing country Parties that need it in the light of their capacities. The modalities, procedures and guidelines referred to in paragraph 13 of this Article shall reflect such flexibility.

72. The transparency framework shall build on and enhance the transparency arrangements under the Convention, recognizing the special circumstances of the least developed countries and

small island developing States, and be implemented in a facilitative, non-intrusive, non-punitive manner, respectful of national sovereignty, and avoid placing undue burden on Parties.

73. The transparency arrangements under the Convention, including national communications, biennial reports and biennial update reports, international assessment and review and international consultation and analysis, shall form part of the experience drawn upon for the development of the modalities, procedures and guidelines under paragraph 13 of this Article.

74. The purpose of the framework for transparency of action is to provide a clear understanding of climate change action in the light of the objective of the Convention as set out in its Article 2, including clarity and tracking of progress towards achieving Parties' individual nationally determined contributions under Article 4, and Parties' adaptation actions under Article 7, including good practices, priorities, needs and gaps, to inform the global stocktake under Article 14.

75. The purpose of the framework for transparency of support is to provide clarity on support provided and received by relevant individual Parties in the context of climate change actions under Articles 4, 7, 9, 10 and 11, and, to the extent possible, to provide a full overview of aggregate financial support provided, to inform the global stocktake under Article 14.

76. Each Party shall regularly provide the following information:

(a) A national inventory report of anthropogenic emissions by sources and removals by sinks of greenhouse gases, prepared using good practice methodologies accepted by the Intergovernmental Panel on Climate Change and agreed upon by the Conference of the Parties serving as the meeting of the Parties to this Agreement; and

(b) Information necessary to track progress made in implementing and achieving its nationally determined contribution under Article 4.

77. Each Party should also provide information related to climate change impacts and adaptation under Article 7, as appropriate.

78. Developed country Parties shall, and other Parties that provide support should, provide information on financial, technology transfer and capacity-building support provided to developing country Parties under Articles 9, 10 and 11.

79. Developing country Parties should provide information on financial, technology transfer and capacity-building support needed and received under Articles 9, 10 and 11.

80. Information submitted by each Party under paragraphs 7 and 9 of this Article shall undergo a technical expert review, in accordance with decision 1/CP.21. For those developing country Parties that need it in the light of their capacities, the review process shall include assistance in identifying capacity-building needs. In addition, each Party shall participate in a facilitative, multilateral consideration of progress with respect to efforts under Article 9, and its respective implementation and achievement of its nationally determined contribution.

81. The technical expert review under this paragraph shall consist of a consideration of the Party's support provided, as relevant, and its implementation and achievement of its nationally determined contribution. The review shall also identify areas of improvement for the Party, and include a review of the consistency of the information with the modalities, procedures and guidelines referred to in paragraph 13 of this Article, taking into account the flexibility accorded to the Party under paragraph 2 of this Article. The review shall pay particular attention to the respective national capabilities and circumstances of developing country Parties.

82. The Conference of the Parties serving as the meeting of the Parties to this Agreement shall, at its first session, building on experience from the arrangements related to transparency under the Convention, and elaborating on the provisions in this Article, adopt common modalities, procedures and guidelines, as appropriate, for the transparency of action and support.

83. Support shall be provided to developing countries for the implementation of this Article.

84. Support shall also be provided for the building of transparency-related capacity of developing country Parties on a continuous basis.

Article 14

85. The Conference of the Parties serving as the meeting of the Parties to this Agreement shall periodically take stock of the implementation of this Agreement to assess the collective progress towards achieving the purpose of this Agreement and its long-term goals (referred to as the “global stocktake”). It shall do so in a comprehensive and facilitative manner, considering mitigation, adaptation and the means of implementation and support, and in the light of equity and the best available science.

86. The Conference of the Parties serving as the meeting of the Parties to this Agreement shall undertake its first global stocktake in 2023 and every five years thereafter unless otherwise decided by the Conference of the Parties serving as the meeting of the Parties to this Agreement.

87. The outcome of the global stocktake shall inform Parties in updating and enhancing, in a nationally determined manner, their actions and support in accordance with the relevant provisions of this Agreement, as well as in enhancing international cooperation for climate action.

Article 15

88. A mechanism to facilitate implementation of and promote compliance with the provisions of this Agreement is hereby established.

89. The mechanism referred to in paragraph 1 of this Article shall consist of a committee that shall be expert-based and facilitative in nature and function in a manner that is transparent, non-adversarial and non-punitive. The committee shall pay particular attention to the respective national capabilities and circumstances of Parties.

90. The committee shall operate under the modalities and procedures adopted by the Conference of the Parties serving as the meeting of the Parties to this Agreement at its first session and report annually to the Conference of the Parties serving as the meeting of the Parties to this Agreement.

Article 16

91. The Conference of the Parties, the supreme body of the Convention, shall serve as the meeting of the Parties to this Agreement.

92. Parties to the Convention that are not Parties to this Agreement may participate as observers in the proceedings of any session of the Conference of the Parties serving as the meeting of the Parties to this Agreement. When the Conference of the Parties serves as the meeting of the Parties to this Agreement, decisions under this Agreement shall be taken only by those that are Parties to this Agreement.

93. When the Conference of the Parties serves as the meeting of the Parties to this Agreement, any member of the Bureau of the Conference of the Parties representing a Party to the Convention

but, at that time, not a Party to this Agreement, shall be replaced by an additional member to be elected by and from amongst the Parties to this Agreement.

94. The Conference of the Parties serving as the meeting of the Parties to this Agreement shall keep under regular review the implementation of this Agreement and shall make, within its mandate, the decisions necessary to promote its effective implementation. It shall perform the functions assigned to it by this Agreement and shall:

(a) Establish such subsidiary bodies as deemed necessary for the implementation of this Agreement; and

(b) Exercise such other functions as may be required for the implementation of this Agreement.

95. The rules of procedure of the Conference of the Parties and the financial procedures applied under the Convention shall be applied *mutatis mutandis* under this Agreement, except as may be otherwise decided by consensus by the Conference of the Parties serving as the meeting of the Parties to this Agreement.

96. The first session of the Conference of the Parties serving as the meeting of the Parties to this Agreement shall be convened by the secretariat in conjunction with the first session of the Conference of the Parties that is scheduled after the date of entry into force of this Agreement. Subsequent ordinary sessions of the Conference of the Parties serving as the meeting of the Parties to this Agreement shall be held in conjunction with ordinary sessions of the Conference of the Parties, unless otherwise decided by the Conference of the Parties serving as the meeting of the Parties to this Agreement.

97. Extraordinary sessions of the Conference of the Parties serving as the meeting of the Parties to this Agreement shall be held at such other times as may be deemed necessary by the Conference of the Parties serving as the meeting of the Parties to this Agreement or at the written request of any Party, provided that, within six months of the request being communicated to the Parties by the secretariat, it is supported by at least one third of the Parties.

98. The United Nations and its specialized agencies and the International Atomic Energy Agency, as well as any State member thereof or observers thereto not party to the Convention, may be represented at sessions of the Conference of the Parties serving as the meeting of the Parties to this Agreement as observers. Any body or agency, whether national or international, governmental or non-governmental, which is qualified in matters covered by this Agreement and which has informed the secretariat of its wish to be represented at a session of the Conference of the Parties serving as the meeting of the Parties to this Agreement as an observer, may be so admitted unless at least one third of the Parties present object. The admission and participation of observers shall be subject to the rules of procedure referred to in paragraph 5 of this Article.

Article 17

99. The secretariat established by Article 8 of the Convention shall serve as the secretariat of this Agreement.

100. Article 8, paragraph 2, of the Convention on the functions of the secretariat, and Article 8, paragraph 3, of the Convention, on the arrangements made for the functioning of the secretariat, shall apply *mutatis mutandis* to this Agreement. The secretariat shall, in addition, exercise the functions assigned to it under this Agreement and by the Conference of the Parties serving as the meeting of the Parties to this Agreement.

Article 18

101. The Subsidiary Body for Scientific and Technological Advice and the Subsidiary Body for Implementation established by Articles 9 and 10 of the Convention shall serve, respectively, as the Subsidiary Body for Scientific and Technological Advice and the Subsidiary Body for Implementation of this Agreement. The provisions of the Convention relating to the functioning of these two bodies shall apply *mutatis mutandis* to this Agreement. Sessions of the meetings of the Subsidiary Body for Scientific and Technological Advice and the Subsidiary Body for Implementation of this Agreement shall be held in conjunction with the meetings of, respectively, the Subsidiary Body for Scientific and Technological Advice and the Subsidiary Body for Implementation of the Convention.

102. Parties to the Convention that are not Parties to this Agreement may participate as observers in the proceedings of any session of the subsidiary bodies. When the subsidiary bodies serve as the subsidiary bodies of this Agreement, decisions under this Agreement shall be taken only by those that are Parties to this Agreement.

103. When the subsidiary bodies established by Articles 9 and 10 of the Convention exercise their functions with regard to matters concerning this Agreement, any member of the bureaux of those subsidiary bodies representing a Party to the Convention but, at that time, not a Party to this Agreement, shall be replaced by an additional member to be elected by and from amongst the Parties to this Agreement.

Article 19

104. Subsidiary bodies or other institutional arrangements established by or under the Convention, other than those referred to in this Agreement, shall serve this Agreement upon a decision of the Conference of the Parties serving as the meeting of the Parties to this Agreement. The Conference of the Parties serving as the meeting of the Parties to this Agreement shall specify the functions to be exercised by such subsidiary bodies or arrangements.

105. The Conference of the Parties serving as the meeting of the Parties to this Agreement may provide further guidance to such subsidiary bodies and institutional arrangements.

Article 20

106. This Agreement shall be open for signature and subject to ratification, acceptance or approval by States and regional economic integration organizations that are Parties to the Convention. It shall be open for signature at the United Nations Headquarters in New York from 22 April 2016 to 21 April 2017. Thereafter, this Agreement shall be open for accession from the day following the date on which it is closed for signature. Instruments of ratification, acceptance, approval or accession shall be deposited with the Depositary.

107. Any regional economic integration organization that becomes a Party to this Agreement without any of its member States being a Party shall be bound by all the obligations under this Agreement. In the case of regional economic integration organizations with one or more member States that are Parties to this Agreement, the organization and its member States shall decide on their respective responsibilities for the performance of their obligations under this Agreement. In such cases, the organization and the member States shall not be entitled to exercise rights under this Agreement concurrently.

108. In their instruments of ratification, acceptance, approval or accession, regional economic integration organizations shall declare the extent of their competence with respect to the matters

governed by this Agreement. These organizations shall also inform the Depositary, who shall in turn inform the Parties, of any substantial modification in the extent of their competence.

Article 21

109. This Agreement shall enter into force on the thirtieth day after the date on which at least 55 Parties to the Convention accounting in total for at least an estimated 55 per cent of the total global greenhouse gas emissions have deposited their instruments of ratification, acceptance, approval or accession.

110. Solely for the limited purpose of paragraph 1 of this Article, “total global greenhouse gas emissions” means the most up-to-date amount communicated on or before the date of adoption of this Agreement by the Parties to the Convention.

111. For each State or regional economic integration organization that ratifies, accepts or approves this Agreement or accedes thereto after the conditions set out in paragraph 1 of this Article for entry into force have been fulfilled, this Agreement shall enter into force on the thirtieth day after the date of deposit by such State or regional economic integration organization of its instrument of ratification, acceptance, approval or accession.

112. For the purposes of paragraph 1 of this Article, any instrument deposited by a regional economic integration organization shall not be counted as additional to those deposited by its member States.

Article 22

The provisions of Article 15 of the Convention on the adoption of amendments to the Convention shall apply *mutatis mutandis* to this Agreement.

Article 23

113. The provisions of Article 16 of the Convention on the adoption and amendment of annexes to the Convention shall apply *mutatis mutandis* to this Agreement.

114. Annexes to this Agreement shall form an integral part thereof and, unless otherwise expressly provided for, a reference to this Agreement constitutes at the same time a reference to any annexes thereto. Such annexes shall be restricted to lists, forms and any other material of a descriptive nature that is of a scientific, technical, procedural or administrative character.

Article 24

The provisions of Article 14 of the Convention on settlement of disputes shall apply *mutatis mutandis* to this Agreement.

Article 25

115. Each Party shall have one vote, except as provided for in paragraph 2 of this Article.

116. Regional economic integration organizations, in matters within their competence, shall exercise their right to vote with a number of votes equal to the number of their member States that are Parties to this Agreement. Such an organization shall not exercise its right to vote if any of its member States exercises its right, and vice versa.

Article 26

The Secretary-General of the United Nations shall be the Depositary of this Agreement.

Article 27

No reservations may be made to this Agreement.

Article 28

117. At any time after three years from the date on which this Agreement has entered into force for a Party, that Party may withdraw from this Agreement by giving written notification to the Depositary.

118. Any such withdrawal shall take effect upon expiry of one year from the date of receipt by the Depositary of the notification of withdrawal, or on such later date as may be specified in the notification of withdrawal.

119. Any Party that withdraws from the Convention shall be considered as also having withdrawn from this Agreement.

Article 29

The original of this Agreement, of which the Arabic, Chinese, English, French, Russian and Spanish texts are equally authentic, shall be deposited with the Secretary-General of the United Nations.

DONE at Paris this twelfth day of December two thousand and fifteen.

IN WITNESS WHEREOF, the undersigned, being duly authorized to that effect, have signed this Agreement.

2.

National Security Implications of Climate-Related Risks and a Changing Climate

Preliminary Comment: This 2015 assessment by the Department of Defense indicates clearly that the military harbors little doubt about the reality of ACC. As Congressional Republicans continue to proclaim their denial or skepticism, those that are asked to fight and die in order to address serious threats to the country are preparing for the upheavals ahead. It is nothing short of calumny that these politicians are dismissive of those who are charged with the sacred assignment of saving the citizenry from global threats. What follows is abridged and was lightly edited for style. The technical preamble was redacted, and footnotes were converted to endnotes.

NATIONAL SECURITY IMPLICATIONS OF CLIMATE-RELATED RISKS AND A CHANGING CLIMATE

Response to Congressional Inquiry on National Security Implications of Climate-Related Risks and a Changing Climate

July 2015

Elements of Request for Report

This report responds to the request by the Senate Committee on Appropriations for information on the *National Security Implications of Climate Change* made in the report to accompany H.R. 4870, the Department of Defense (DoD) Appropriations Act for the fiscal year ending September 30, 2015. Specifically, the Committee requested that the Under Secretary of Defense for Policy provide a report to:

- ❖ Identify the most serious and likely climate-related security risks for each Combatant Command.
- ❖ Identify ways Combatant Commands integrate risk mitigation in their planning processes, including in the areas of:
 - Humanitarian disaster relief;
 - Security cooperation;
 - Building partner capacity; and

- Sharing best practices for mitigation of installation vulnerabilities.
- ❖ Describe resources required for an effective response and the timeline of resources needs.

This report is organized into three primary sections:

- I. Common Conceptions of Risk and Response
- II. Geographic Combatant Commands (GCCs) - Specific Aspects
- III. Conclusion

I. Common Conceptions of Risk and Response

DoD recognizes the reality of climate change and the significant risk it poses to U.S. interests globally. The National Security Strategy, issued in February 2015, is clear that climate change is an urgent and growing threat to our national security, contributing to increased natural disasters, refugee flows, and conflicts over basic resources such as food and water.¹ These impacts are already occurring, and the scope, scale, and intensity of these impacts are projected to increase over time.

The Department's defense strategy, as reflected in the 2014 Quadrennial Defense Review (QDR), emphasizes three pillars: protect the homeland, build security globally, and project power and win decisively. A changing climate increases the risk of instability and conflict overseas, and has implications for DoD on operations, personnel, installations, and the stability, development, and human security of other nations. This is why DoD released the Climate Change Adaptation Roadmap (CCAR) in October 2014. The CCAR identifies three overarching goals: to identify and assess the effects of a changing climate on the Department's infrastructure, mission, and activities; to identify, manage, and integrate climate change considerations across the full range of Department missions and activities; and to collaborate with internal and external entities on understanding and assessing the challenges of a changing climate and developing appropriate responses to those challenges.

Geographic Combatant Commands (GCCs) incorporate the risks posed by current and projected climate variations into their planning, resource requirements, and operational considerations. GCCs, often at the request of partner nations, cooperate with other nations on adaptation practices, resilience, environmental considerations, and risk reduction.

Climate-Related Security Risks

Global climate change will have wide-ranging implications for U.S. national security interests over the foreseeable future because it will aggravate existing problems—such as poverty, social tensions, environmental degradation, ineffectual leadership, and weak political institutions—that threaten domestic stability in a number of countries. Each GCC's assessment of risk reflects how this range of factors will affect security in its Area of Responsibility (AOR). GCCs generally view climate change as

a security risk because it impacts human security and, more indirectly, the ability of governments to meet the basic needs of their populations.

Communities and states that are already fragile and have limited resources are significantly more vulnerable to disruption and far less likely to respond effectively and be resilient to new challenges. Case studies indicate that in addition to exacerbating existing risks from other factors (e.g., social, economic, and political fault lines), climate-induced stress can generate new vulnerabilities (e.g., water scarcity) and thus contribute to instability and conflict even in situations not previously considered at risk.

GCCs have identified four general areas of climate-related security risks:

- **Persistently recurring conditions such as flooding, drought, and higher temperatures** increase the strain on fragile states and vulnerable populations by dampening economic activity and burdening public health through loss of agriculture and electricity production, the change in known infectious disease patterns and the rise of new ones, and increases in respiratory and cardiovascular diseases. This could result in increased intra- and inter-state migration, and generate other negative effects on human security. For example, from 2006-2011, a severe multi-year drought affected Syria² and contributed to massive agriculture failures and population displacements. Large movements of rural dwellers to city centers coincided with the presence of large numbers of Iraqi refugees in Syrian cities, effectively overwhelming institutional capacity to respond constructively to the changing service demands. These kinds of impacts in regions around the world could necessitate greater DoD involvement in the provision of humanitarian assistance and other aid.
- **More frequent and/or more severe extreme weather events** that may require substantial involvement of DoD units, personnel, and assets in humanitarian assistance and disaster relief (HA/DR) abroad and in Defense Support of Civil Authorities (DSCA) at home. Massive flooding in Pakistan in 2010 was the country's worst in recorded history, killing more than 2,000 people and affecting 18 million; DoD delivered humanitarian relief to otherwise inaccessible areas. Super Storm Sandy in New York and New Jersey in 2012 resulted in over 14,000 DoD personnel mobilized to provide direct support, and at least an additional 10,000 who supported the operation in various capacities in the areas of power restoration, fuel resupply, transportation infrastructure repair, water and meal distribution, temporary housing and sheltering, and debris removal. The need for HADR and DSCA will likely rise as cities expand to encompass the majority of the global population and because flood risk threatens more people than any other natural hazard, especially in urban areas.³ Many growing cities are located in low- and middle-income countries with limited resources. Building partner nation capacity for HA/DR capabilities and civilian-military partnerships for DSCA are important parts of GCC security cooperation efforts. The Office of U.S. Foreign Disaster Assistance (OFDA) is responsible for leading and coordinating the U.S. Government's response to disasters overseas.
- **Sea level rise and temperature changes** lead to greater chance of flooding in coastal communities and increase adverse impacts to navigation safety, damages to port facilities and cooperative security locations, and displaced populations. Sea level rise may require more frequent or larger-scale DoD involvement in HADR and DSCA. Measures will also likely be required to protect military installations, both in the United States and abroad, and to work with partner nations that support DoD operations and activities. Sea level rise, increased ocean acidification, and increased ocean warming pose threats to fish stocks, coral, mangroves, recreation and tourism, and the control of disease affecting the economies, and ultimately stability, of DoD's partner nations. Some Pacific island nations face the risk of being entirely submerged by rising seas, and most island nations' freshwater supplies will be threatened by saltwater

intrusion well before then. Loss of land, especially highly populated and agriculturally rich coastal land, also poses second-order effects on human displacement and economic and food stability, and may further exacerbate challenges associated with disease vectors. ⁴

- **Decreases in Arctic ice cover, type, and thickness** will lead to greater access for tourism, shipping, resource exploration and extraction, and military activities. Land access—which depends on frozen ground in the Arctic—will diminish as permafrost thaws. These factors may increase the need for search and rescue (SAR) capabilities, monitoring of increased shipping and other human activity, and the capability to respond to crises or contingencies in the region. Difficult and unpredictable weather conditions, large distances, and scarce resources make emergency response in the Arctic difficult. Arctic operations are expensive and dangerous for military forces that are unprepared for the austere operating environment. DoD continues to evaluate the need for specific Arctic capabilities.

Integration of Climate-Related Security Risks into Planning Processes

GCCs use their Theater Campaign Plans, Operation Plans, Contingency Plans, and Theater Security Cooperation Plans as a means to identify or take into account climate risks. To assist with historical climatology and climate change near-term assessments, the Air Force's 14th Weather Squadron (14WS) provides authoritative data sets and tailored decision aids to GCCs. In addition, the National Oceanic and Atmospheric Administration (NOAA) provides long-term global climate projections, weather forecasts, and other services to all federal agencies within the United States—including DoD.

Cooperation and building partner capacity. Although activities vary, all GCCs are working with partner nations to increase partner abilities to reduce risks and implications from environmental impacts and climate change, including severe weather and other hazards. GCCs work with partner nations in three lines of activities:

- *Building infrastructure:* examples include emergency operations centers, disaster response warehouses, disaster shelters, and construction of dams for hydro-electric power.
- *Training:* provides disaster management and response personnel in partner nations with the knowledge and skills to meet the basic needs of the populace. These programs are often coordinated with the in-country security cooperation officers and the U.S. Agency for International Development (USAID).
- *Equipping:* GCCs support the delivery of Non-governmental Organization (NGO) emergency donations through the Defense Security Cooperation Agency's Funded Transportation Program and Denton Program.⁵ U.S. Southern Command (USSOUTHCOM) funds National Preparedness Baseline Assessments, which include gap analyses and five-year plans to build capability and capacity within partner nations, helping to provide a better picture of specific vulnerabilities to climatic events across a wide range of indicators. Other GCCs have similar disaster risk reduction cooperation programs or are evaluating such programs.

Sharing best practices for mitigation of installation vulnerabilities. Military Departments are responsible for assessing and addressing the vulnerabilities of DoD installations. DoD has directed a global screening level vulnerability assessment to determine DoD installations' vulnerability to climate changes, water and environmental requirements, and sea level rise. The Military Departments will use

information from the screening assessments to identify serious vulnerabilities and to develop adaptation strategies as necessary for installations.

Resources and Timeline

Resources for assessing and responding to the impacts of climate change are provided within existing DoD missions, funds, and capabilities. Activities associated with climate resiliency planning in GCCs are subsumed under existing risk management processes. Training for GCC personnel in accessing and using climate and weather data related to climate change may incur costs. Attending coordination meetings with partner nation organizations focusing on climate impacts may also add to GCC personnel

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Humanitarian assistance and disaster relief is costly, particularly for first response activities. Common requirements include strategic lift assets, water and water purification capability, vertical lift assets for dispersal of relief supplies, engineering equipment for removing debris from critical infrastructure, medical care, robust communications, repair of overloaded or nonfunctioning electricity generation, SAR, and port opening and traffic control capabilities.

DoD has put many of these capabilities in use for humanitarian assistance following the earthquakes in Nepal in 2015.

The main source of funding for the GCCs' HA/DR programs is the Overseas Humanitarian, Disaster, and Civic Aid (OHDACA) appropriation, which enables the Combatant Commands to provide immediate life-saving assistance to countries in their regions.

II. GCCs - Specific Aspects

Geographic Combatant Commands independently have assessed climatic risks in the context of their respective AORs. For instance, U.S. Africa Command (USAFRICOM) assesses humanitarian crisis as the most likely climate-related risk within its AOR, foremost due to the impact that devastating events like drought and disease could have on vulnerable populations and on state stability in places already struggling with fragility and conflict. North American Aerospace Defense Command / U.S. Northern Command (NORAD/USNORTHCOM) and USEUCOM are concerned with security risks arising from increased shipping, military operations, and resource exploration in the Arctic as the ice-cap melts. U.S. Pacific Command (USPACOM) considers rising sea-levels to be a particularly significant threat to people in geographically vulnerable locations. USSOUTHCOM similarly highlights the threat that sea level rise and

ocean acidification and warming pose to fish stocks, coral, mangroves, recreation and tourism, and the control of disease. USSOUTHCOM also identifies coastal flooding to be a particular concern for parts of the Caribbean basin due to climate change-related sea level rise.

GCCs assess that, in line with the Intergovernmental Panel on Climate Change (IPCC) conclusions,⁶ climate change will have the greatest impact on areas and environments already prone to instability, which aligns with DoD's wider assessment of climate change as a threat multiplier. USPACOM already reflects this likely implication in its planning processes by addressing not only the direct effects of climate change but also the imperative this implication creates for environmental and resource management. U.S. Central Command (USCENTCOM) similarly monitors resource scarcity (e.g., water, food, energy) in its arid AOR, and accounts for this factor in its planning. Although the context differs, USAFRICOM assesses that climate change will exacerbate existing economic, social, and environmental vulnerabilities, while conditions of drought, disease, and economic stagnation may tip states toward systemic breakdowns.

GCCs recognize the risk climate change poses to existing resource allocation.

USAFRICOM highlights how climate change will alter the distribution and quality of natural resources, such as fresh water, arable land, coastal territory, and marine resources. USPACOM assesses that climate change will affect populations already living in unstable environments and already experiencing urban or rural conflict driven, in particular, by seasonal water shortage.

USCENTCOM identifies that climate changes heighten competition at the national or sub-national level in an already arid region, and this competition could be more dangerous as actors seek to protect limited resources. However, inter-state conflict risk is attenuated by the context of international treaties and agreements. USNORTHCOM identifies increased resource exploration in the Arctic as driving an increase in the future demand for SAR and environmental disaster response missions in support of other agencies and civil authorities.

Both USSOUTHCOM and USAFRICOM recognize the economic risks associated with climate change, again as a stressor on vulnerable populations. USAFRICOM and USPACOM both identify how technological, infrastructure, skills, and information constraints heighten vulnerability to climate stresses.

GCCs highlight the impact that climate change may have on the frequency and severity of weather-related events. In addition to humanitarian assistance in its AOR, USPACOM anticipates this will increase the demand for DSCA as well as pose a challenge to U.S. critical defense infrastructure. These concerns are consistent with the 2014 DoD Climate Adaptation Roadmap. GCCs are accordingly integrating climate-related risk mitigation into planning processes, the details of which are provided below:

USAFRICOM

Integration of Climate-Related Risks Management into Planning Processes

- USAFRICOM will consider climate change-related factors from key strategic documents⁷ in its annual Theater Campaign Plan (TCP) reviews.
- USAFRICOM's Foreign HA/DR Country Plans will be expanded to promote engagement with partner nations to enhance planning, responses, and resilience to the effects of climate change. USAFRICOM also

works closely with USAID in HA/DR, and USAFRICOM's intervention in HA/DR operations will align with USAID's strategy.

- USAFRICOM's building partner capacity efforts are nested within its security cooperation programs and will adapt to a variety of trends and projections, including climate change.

Resources and Timeline

- USAFRICOM's resource planning takes into account the probabilities of climate events driving resource requirements for HA/DR-related program budgets. Embassy country teams throughout Africa work closely with interagency partners to ensure DoD contributions are represented in embassies' Integrated Country Strategy documents.

USCENTCOM

Integration of Climate-Related Risks Management into Planning Processes

- Current and historic climatic conditions are factored into TCPs, including water scarcity, which is a recurring issue in the AOR. Warning indicators are part of the deliberate planning process.
- Climate change is not a stand-alone topic. Real-world, actual climate conditions are taken into consideration for planning missions. HA/DR and security cooperation/building partner capacity are specific lines of effort addressed in the TCP.
- Service components will address specific needs for their installations; for example, the Navy will address sea level rise and access to ports.

Resources and Timeline

- The Military Departments/Services provide most of the resources for on-the-ground activities. USCENTCOM focuses on nearer-term (five years) projected changes in climate.

USEUCOM

Integration of Climate-Related Risks Management into Planning Processes

- The Arctic Security Forces Roundtable is USEUCOM's flagship engagement effort for nations that have security forces within the Arctic region. It is a forum in which senior military leaders from Arctic nations, and other stakeholders, confer and agree upon actions that can support stability and peaceful commercial activity in the region. Lessons learned from our Arctic allies and partners are used to enhance operational safety. An Arctic assessment is included in the current TCP and informs the development of the GCC's activities.
- In response to melting ice and newly accessible areas of the Arctic, EUCOM sponsors the ARCTIC ZEPHYR series of table-top exercises focused on SAR operations in the Arctic.

Resources and Timeline

- The Northern Sea Route generally opens for four weeks each year—usually the month of September.⁸ Arctic-specific SAR resources will need to be trained and ready as Arctic activity, particularly tourism, increases. In 2016, the cruise liner CRYSTAL SERENITY will attempt to transit the North West Passage with 900 expected passengers, the first leisure cruise ship to make the crossing.
- Future Arctic offshore drilling will also create a resource demand and the need for emergency response, risk reduction measures, and environmental protections.

NORAD/USNORTHCOM

Integration of Climate-Related Risks Management into Planning Processes

- USNORTHCOM routinely includes extreme weather-driven scenarios in training and exercise events. USNORTHCOM has also developed planning tools to guide operational response efforts for potential catastrophic events, including severe weather events.
- NORAD/USNORTHCOM has participated in the ARCTIC ZEPHYR series of table-top exercises, and has conducted cooperative Arctic SAR exercises with Canada.
- NORAD/USNORTHCOM has hosted two Arctic collaborative workshops with the full range of governments, international partners, the private sector, and academia to focus on projected climate changes in the Arctic.

Resources and Timeline

- Acquisition and supply chain requirements for the Arctic are considerably longer than for the rest of the AOR and are much more costly. DoD will continue to partner with federal departments and agencies; state, local, and tribal agencies; other nations; and the private sector on services as appropriate.

USPACOM

Integration of Climate-Related Risks Management into Planning Processes

- USPACOM efforts addressing climate change risks are primarily outlined in the “All Hazards” Line of Effort in the USPACOM TCP. The focus is two-fold: readiness to respond to and be resilient to disasters, and sustainable resource management toward critical resource security. USPACOM coordinates these efforts with a variety of DoD interagency partners— including the Department of State, USAID, Department of Homeland Security, Department of the Interior, and NOAA—to ensure its readiness to execute concepts of operations for DSCA, Pandemic and Emerging Infectious Disease, and Foreign HA/DR.

- USPACOM Country Security Cooperation plans, under the Theater Security Cooperation Plan and its logistics Theater Security Cooperation branch, provide opportunities to work in collaboration with host nations to address disaster and critical resource security needs through a variety of operations, actions, and activities in country.
- USPACOM is developing a visual display tool that seeks to overlay historic disaster event data, climate and weather data, population and geographic data, Country Book information, resource scarcity data, and all hazards-related activities in the region into a comprehensive tool that will not only provide planners with historic and needs-based data to inform plans, but will also enable USPACOM and those with access to the information to leverage and co- execute events for the greatest overall impact in the region. USPACOM is working to integrate Australia, Canada, New Zealand, and the United Kingdom into all hazards-related activities to leverage lessons learned, best practices, and limited resources to support disaster response readiness and capability development more effectively, as well as work toward critical resource security as a means of protecting peace in the region.
- In June 2015, USPACOM and Thailand co-hosted the fifth annual Pacific Environmental Security Forum in Bangkok. The forum seeks to develop foreign nation capacity in several environmental security areas through combined projects within the USPACOM AOR. Sessions on project concept development followed three days of discussions on the DoD Climate Change Adaptation Roadmap, the protection of the commons in a civilian-military context, and military environmental programs.
- USPACOM is also developing partnerships focused on building the overall resilience of the State of Hawaii and nesting the resilience of USPACOM installations within that framework.

Resources and Timeline

- USPACOM has established Pacific Augmentation Teams around its AOR to identify quickly immediate needs that can be met with military assets. These teams represent an effort to shorten disaster response times by allowing USPACOM to begin mobilizing a response in anticipation of a Secretary of Defense-approved request. Proximity to the disaster is also a factor that dramatically reduces the response time. U.S. forces training, exercising, or operating in the vicinity of a disaster can be re-tasked to support relief efforts . . .

III. Conclusion

The Department of Defense sees climate change as a present security threat, not strictly a long-term risk. We are already observing the impacts of climate change in shocks and stressors to vulnerable nations and communities, including in the United States, and in the Arctic, Middle East, Africa, Asia, and South America. Case studies have demonstrated measurable impacts on areas vulnerable to the impacts of climate change and in specific cases significant interaction between conflict dynamics and sensitivity to climate changes. Although climate-related stress will disproportionately affect fragile and conflict-affected states, even resilient, well-developed countries are subject to the effects of climate change in significant and consequential ways.

For these reasons, Combatant Commands are integrating climate-related impacts into their planning cycles. Depending on the region, risks to Combatant Commands vary, but all GCCs share a common assessment of its significance. The ability of the United States and other countries to cope with the risks and implications of climate change requires monitoring, analysis, and integration of those risks into existing overall risk management measures, as appropriate for each Combatant Command.

Although DoD and the Combatant Commands cannot prepare for every risk and situation, the Department is beginning to include the implications of a changing climate in its frameworks for managing operational and strategic risks prudently. Moreover, the Department is working with other U.S. Government departments and agencies, partner nations, and many other entities on addressing climate security risks and implications.

Notes

¹ National Security Strategy, White House, February 2015.

² Peter Gleick, “Water, Drought, Climate Change, and Conflict in Syria,” Pacific Institute, February 2, 2014.

³ Implementation of the International Strategy for Disaster Reduction, Report to Secretary General, UN General Assembly, A/69/364, September 2014.

⁴ Southeast Asia: The Impact of Climate Change to 2030. National Intelligence Council, January 2010.

⁵ The Denton Program provides transportation for approved humanitarian assistance commodities destined for approved countries. It is administered by USAID, the Department of State, and the Defense Security Cooperation Agency.

⁶ Intergovernmental Panel on Climate Change 2014, Impacts, Adaptation and Vulnerability, Summary for Policy Makers and Technical Summary, Working Group II to Fifth Assessment. <http://www.ipcc.ch/>

⁷ Including the National Security Strategy, Quadrennial Defense Review, National Military Strategy, Joint Strategic Capabilities Plan, and the Chairman’s Risk Assessment.

⁸ Canada’s Northwest Passage will not likely be consistently open for another 20 years, with some estimates putting complete opening at 2050.

3.

Margaret Thatcher: Speech to United Nations General Assembly (Global Environment) 8 November 1989

Comment: This speech by Margaret Thatcher is one of the finest appeals to the world, via the mechanism of the United Nations, to take appropriate action to head off the damage that would be caused by ACC. Thatcher, Prime Minister of Great Britain (1979-1990), was a conservative, known for, among other things, her fond relationship with American president Ronald Reagan. Her conservative principles and hawkishness garnered to her the epithet “The Iron Lady.” Not only does Thatcher display an incredible knowledge of ACC, she does not give short shrift to the United Nations, highlighting its important role in dealing with international exigencies. In this speech, given in 1989, Thatcher makes it clear that climate change is not a liberal or conservative issue, but rather is a global issue for which labels of “liberal” and “conservative” are totally inappropriate. This speech could very well have been given today – by Bill McKibben or Al Gore.

Mr President, it gives me great pleasure to return to the Podium of this assembly. When I last spoke here four years ago, on the 40th anniversary of the United Nations, the message that I and others like me gave was one of encouragement to the organisation to play the great role allotted to it.

Of all the challenges faced by the world community in those four years, one has grown clearer than any other in both urgency and importance—I refer to the threat to our global environment. I shall take the opportunity of addressing the general assembly to speak on that subject alone.

INTRODUCTION

During his historic voyage through the south seas on the Beagle, Charles Darwin landed one November morning in 1835 on the shore of Western Tahiti.

After breakfast he climbed a nearby hill to find advantage point to survey the surrounding Pacific. The sight seemed to him like “a framed engraving” , with blue sky, blue lagoon, and white breakers crashing against the encircling Coral Reef.

As he looked out from that hillside, he began to form his theory of the evolution of coral; 154 years after Darwin 's visit to Tahiti we have added little to what he discovered then.

What if Charles Darwin had been able, not just to climb a foothill, but to soar through the heavens in one of the orbiting space shuttles?

What would he have learned as he surveyed our planet from that altitude? From a moon's eye view of that strange and beautiful anomaly in our solar system that is the earth?

Of course, we have learned much detail about our environment as we have looked back at it from space, but nothing has made a more profound impact on us than these two facts.

First, as the British scientist Fred Hoyle wrote long before space travel was a reality, he said “once a photograph of the earth, taken from the outside is available ... a new idea as powerful as any other in history will be let loose”.

That powerful idea is the recognition of our shared inheritance on this planet. We know more clearly than ever before that we carry common burdens, face common problems, and must respond with common action.

And second, as we travel through space, as we pass one dead planet after another, we look back on our earth, a speck of life in an infinite void. It is life itself, incomparably precious, that distinguishes us from the other planets.

It is life itself—human life, the innumerable species of our planet—that we wantonly destroy. It is life itself that we must battle to preserve.

For over forty years, that has been the main task of this United Nations.

To bring peace where there was war.

Comfort where there was misery.

Life where there was death.

The struggle has not always been successful. There have been years of failure.

But recent events have brought the promise of a new dawn, of new hope. Relations between the Western nations and the Soviet Union and her allies, long frozen in suspicion and hostility, have begun to thaw.

In Europe, this year, freedom has been on the march.

In Southern Africa—Namibia and Angola—the United Nations has succeeded in holding out better prospects for an end to war and for the beginning of prosperity.

And in South East Asia, too, we can dare to hope for the restoration of peace after decades of fighting.

While the conventional, political dangers—the threat of global annihilation, the fact of regional war—appear to be receding, we have all recently become aware of another insidious danger.

It is as menacing in its way as those more accustomed perils with which international diplomacy has concerned itself for centuries.

It is the prospect of irretrievable damage to the atmosphere, to the oceans, to earth itself.

Of course major changes in the earth's climate and the environment have taken place in earlier centuries when the world's population was a fraction of its present size.

The causes are to be found in nature itself—changes in the earth's orbit: changes in the amount of radiation given off by the sun: the consequential effects on the plankton in the ocean: and in volcanic processes.

All these we can observe and some we may be able to predict. But we do not have the power to prevent or control them.

What we are now doing to the world, by degrading the land surfaces, by polluting the waters and by adding greenhouse gases to the air at an unprecedented rate—all this is new in the experience of the earth. It is mankind and his activities which are changing the environment of our planet in damaging and dangerous ways.

We can find examples in the past. Indeed we may well conclude that it was the silting up of the River Euphrates which drove man out of the Garden of Eden.

We also have the example of the tragedy of Easter Island, where people arrived by boat to find a primeval forest. In time the population increased to over 9,000 souls and the demand placed upon the environment resulted in its eventual destruction as people cut down the trees. This in turn led to warfare over the scarce remaining resources and the population crashed to a few hundred people without even enough wood to make boats to escape.

The difference now is in the scale of the damage we are doing.

VAST INCREASE IN CARBON DIOXIDE

We are seeing a vast increase in the amount of carbon dioxide reaching the atmosphere. The annual increase is three billion tonnes: and half the carbon emitted since the Industrial Revolution still remains in the atmosphere.

At the same time as this is happening, we are seeing the destruction on a vast scale of tropical forests which are uniquely able to remove carbon dioxide from the air.

Every year an area of forest equal to the whole surface of the United Kingdom is destroyed. At present rates of clearance we shall, by the year 2000, have removed 65 per cent of forests in the humid tropical zones.

The consequences of this become clearer when one remembers that tropical forests fix more than ten times as much carbon as do forests in the temperate zones.

We now know, too, that great damage is being done to the Ozone Layer by the production of halons and chlorofluorocarbons. But at least we have recognised that reducing and eventually stopping the emission of CFCs is one positive thing we can do about the menacing accumulation of greenhouse gases.

It is of course true that none of us would be here but for the greenhouse effect. It gives us the moist atmosphere which sustains life on earth. We need the greenhouse effect—but only in the right proportions.

More than anything, our environment is threatened by the sheer numbers of people and the plants and animals which go with them. When I was born the world's population was some 2 billion people. My grandson will grow up in a world of more than 6 billion people.

Put in its bluntest form: the main threat to our environment is more and more people, and their activities: • The land they cultivate ever more intensively; • The forests they cut down and burn; • The mountain sides they lay bare; • The fossil fuels they burn; • The rivers and the seas they pollute.

The result is that change in future is likely to be more fundamental and more widespread than anything we have known hitherto. Change to the sea around us, change to the atmosphere above, leading in turn to change in the world's climate, which could alter the way we live in the most fundamental way of all.

That prospect is a new factor in human affairs. It is comparable in its implications to the discovery of how to split the atom. Indeed, its results could be even more far-reaching.

THE LATEST SCIENTIFIC EVIDENCE

We are constantly learning more about these changes affecting our environment, and scientists from the Polar Institute in Cambridge and The British Antarctic Survey have been at the leading edge of research in both the Arctic and the Antarctic, warning us of the greater dangers that lie ahead.

Let me quote from a letter I received only two weeks ago, from a British scientist on board a ship in the Antarctic Ocean: he wrote, "In the Polar Regions today, we are seeing what may be early signs of man-induced climatic change. Data coming in from Halley Bay and from instruments aboard the ship on which I am sailing show that we are entering a Spring Ozone depletion which is as deep as, if not deeper, than the depletion in the worst year to date. It completely reverses the recovery observed in 1988. The lowest recording aboard this ship is only 150 Dobson units for Ozone total content during September, compared with 300 for the same season in a normal year." That of course is a very severe depletion.

He also reports on a significant thinning of the sea ice, and he writes that, in the Antarctic, "Our data confirm that the first-year ice, which forms the bulk of sea ice cover, is remarkably thin and so is probably unable to sustain significant atmospheric warming without melting. Sea ice, separates the ocean from the atmosphere over an area of more than 30 million square kilometres. It reflects most of the solar radiation falling on it, helping to cool the earth's surface. If this area were reduced, the warming of earth would be accelerated due to the extra absorption of radiation by the ocean."

"The lesson of these Polar processes," he goes on, "is that an environmental or climatic change produced by man may take on a self-sustaining or 'runaway' quality ... and may be irreversible." That is from the scientists who are doing work on the ship that is presently considering these matters.

These are sobering indications of what may happen and they led my correspondent to put forward the interesting idea of a World Polar Watch, amongst other initiatives, which will observe the world's climate system and allow us to understand how it works.

We also have new scientific evidence from an entirely different area, the Tropical Forests. Through their capacity to evaporate vast volumes of water vapour, and of gases and particles which assist the formation of clouds, the forests serve to keep their regions cool and moist by weaving a sunshade of white reflecting clouds and by bringing the rain that sustains them.

A recent study by our British Meteorological Office on the Amazon rainforest shows that large-scale deforestation may reduce rainfall and thus affect the climate directly. Past experience shows us that without trees there is no rain, and without rain there are no trees.

THE SCOPE FOR INTERNATIONAL ACTION

Mr President, the evidence is there. The damage is being done. What do we, the International Community, do about it?

In some areas, the action required is primarily for individual nations or groups of nations to take.

I am thinking for example of action to deal with pollution of rivers—and many of us now see the fish back in rivers from which they had disappeared.

I am thinking of action to improve agricultural methods—good husbandry which ploughs back nourishment into the soil rather than the cut-and-burn which has damaged and degraded so much land in some parts of the world.

And I am thinking of the use of nuclear power which—despite the attitude of so-called greens—is the most environmentally safe form of energy.

But the problem of global climate change is one that affects us all and action will only be effective if it is taken at the international level.

It is no good squabbling over who is responsible or who should pay. Whole areas of our planet could be subject to drought and starvation if the pattern of rains and monsoons were to change as a result of the destruction of forests and the accumulation of greenhouse gases.

We have to look forward not backward and we shall only succeed in dealing with the problems through a vast international, co-operative effort.

Before we act, we need the best possible scientific assessment: otherwise we risk making matters worse. We must use science to cast a light ahead, so that we can move step by step in the right direction.

The United Kingdom has agreed to take on the task of co-ordinating such an assessment within the Inter-governmental Panel on Climate Change, an assessment which will be available to everyone by the time of the Second World Climate Conference next year.

But that will take us only so far. The report will not be able to tell us where the hurricanes will be striking; who will be flooded; or how often and how severe the droughts will be. Yet we will need to know these things if we are to adapt to future climate change, and that means we must expand our capacity to model and predict climate change. We can test our skills and methods by seeing whether they would have successfully predicted past climate change for which historical records exist.

Britain has some of the leading experts in this field and I am pleased to be able to tell you that the United Kingdom will be establishing a new centre for the prediction of climate change, which will lead the effort to improve our prophetic capacity.

It will also provide the advanced computing facilities that scientists need. And it will be open to experts from all over the world, especially from the developing countries, who can come to the United Kingdom and contribute to this vital work.

But as well as the science, we need to get the economics right. That means first we must have continued economic growth in order to generate the wealth required to pay for the protection of the environment. But it must be growth which does not plunder the planet today and leave our children to deal with the consequences tomorrow.

And second, we must resist the simplistic tendency to blame modern multinational industry for the damage which is being done to the environment. Far from being the villains, it is on them that we rely to do the research and find the solutions.

It is industry which will develop safe alternative chemicals for refrigerators and air-conditioning. It is industry which will devise bio-degradable plastics. It is industry which will find the means to treat pollutants and make nuclear waste safe—and many companies as you know already have massive research programmes.

The multinationals have to take the long view. There will be no profit or satisfaction for anyone if pollution continues to destroy our planet.

As people's consciousness of environmental needs rises, they are turning increasingly to ozone-friendly and other environmentally safe products. The market itself acts as a corrective the new products sell and those which caused environmental damage are disappearing from the shelves.

And by making these new products widely available, industry will make it possible for developing countries to avoid many of the mistakes which we older industrialised countries have made.

We should always remember that free markets are a means to an end. They would defeat their object if by their output they did more damage to the quality of life through pollution than the well-being they achieve by the production of goods and services.

On the basis then of sound science and sound economics, we need to build a strong framework for international action.

It is not new institutions that we need. Rather we need to strengthen and improve those which already exist: in particular the World Meteorological Organisation and the United Nations Environment Programme.

The United Kingdom has recently more than doubled its contribution to UNEP and we urge others, who have not done so and who can afford it, to do the same.

And the central organs of the United Nations, like this General Assembly, must also be seized of a problem which reaches into virtually all aspects of their work and will do so still more in the future.

CONVENTION ON GLOBAL CLIMATE

The most pressing task which faces us at the international level is to negotiate a framework convention on climate change—a sort of good conduct guide for all nations.

Fortunately we have a model in the action already taken to protect the ozone layer. The Vienna Convention in 1985 and the Montreal Protocol in 1987 established landmarks in international law. They aim to prevent rather than just cure a global environmental problem.

I believe we should aim to have a convention on global climate change ready by the time the World Conference on Environment and Development meets in 1992. That will be among the most important conferences the United Nations has ever held. I hope that we shall all accept a responsibility to meet this timetable.

The 1992 Conference is indeed already being discussed among many countries in many places. And I draw particular attention to the very valuable discussion which members of the Commonwealth had under the Mahathir bin Mohamad, Prime Minister of Malaysia's chairmanship at our recent Commonwealth Heads of Government Meeting in Kuala Lumpur.

But a framework is not enough. It will need to be filled out with specific undertakings, or protocols in diplomatic language, on the different aspects of climate change.

These protocols must be binding and there must be effective regimes to supervise and monitor their application. Otherwise those nations which accept and abide by environmental agreements, thus adding to their industrial costs, will lose out competitively to those who do not.

The negotiation of some of these protocols will undoubtedly be difficult. And no issue will be more contentious than the need to control emissions of carbon dioxide, the major contributor—apart from water vapour—to the greenhouse effect.

We can't just do nothing. But the measures we take must be based on sound scientific analysis of the effect of the different gases and the ways in which these can be reduced. In the past there has been a tendency to solve one problem at the expense of making others worse.

The United Kingdom therefore proposes that we prolong the role of the Inter-governmental Panel on Climate Change after it submits its report next year, so that it can provide an authoritative scientific base for the negotiation of this and other protocols.

We can then agree to targets to reduce the greenhouse gases, and how much individual countries should contribute to their achievement. We think it important that this should be done in a way which enables all our economies to continue to grow and develop.

The challenge for our negotiators on matters like this is as great as for any disarmament treaty. The Inter-governmental Panel's work must remain on target, and we must not allow ourselves to be diverted into fruitless and divisive argument. Time is too short for that.

Before leaving the area where international action is needed, I would make a plea for a further global convention, one to conserve the infinite variety of species—of plant and animal life—which inhabit our planet.

The tropical forests contain a half of the species in the world, so their disappearance is doubly damaging, and it is astonishing but true that our civilisation, whose imagination has reached the boundaries of the universe, does not know, to within a factor of ten, how many species the earth supports.

What we do know is that we are losing them at a reckless rate—between three and fifty each day on some estimates—species which could perhaps be helping us to advance the frontiers of medical science. We should act together to conserve this precious heritage.

BRITAIN'S CONTRIBUTION

Every nation will need to make its contribution to the world effort, so I want to tell you how Britain intends to contribute, either by improving our own national performance in protecting the environment, or through the help that we give to others, and I shall tell you under four headings.

First, we shall be introducing over the coming months a comprehensive system of pollution control to deal with all kinds of industrial pollution whether to air, water or land.

We are encouraging British industry to develop new technologies to clean up the environment and minimise the amount of waste it produces—and we aim to recycle 50 per cent of our household waste by the end of the century.

Secondly, we will be drawing up over the coming year our own environmental agenda for the decade ahead. That will cover energy, transport, agriculture, industry—everything which affects the environment.

With regard to energy, we already have a £2 billion programme of improvements to reduce acid rain emissions from our power stations. We shall be looking more closely at the role of non-fossil fuel sources, including nuclear, in generating energy. And our latest legislation requires companies which supply electricity positively to promote energy efficiency.

On transport, we shall look for ways to strengthen controls over vehicle emissions and to develop the lean-burn engine, which offers a far better long-term solution than the three-way catalyst, in terms of carbon dioxide and the greenhouse effect.

We have already reduced the tax on lead-free petrol to encourage its use. That is an example of using market-based incentives to promote good environmental practice and we shall see whether there are other areas where this same principle can be applied.

With regard to agriculture, we recognise that farmers not only produce food—which they do with great efficiency—they need to conserve the beauty of the priceless heritage of our countryside. So we are therefore encouraging them to reduce the intensity of their methods and to conserve wild-life habitats.

We are planting new woods and forests—indeed there has been a 50 per cent increase in tree planting in Britain in the last ten years.

We also aim to reduce chemical inputs to the soil and we are bringing forward measures to deal with the complex problem of nitrates in water. All that is part of our own ten-year programme coming up to the end of the century.

Third, we are increasing our investment in research into global environmental problems. I have already mentioned the climate change centre that we are establishing.

In addition we are supporting our own scientists', and in particular the British Antarctic Survey's crucial contribution to the World Ocean Circulation Experiment, as well as the voyages of our aptly-named research ship, the 'Charles Darwin'.

We have also provided more money for the Climate and Environment Satellite Monitoring Programmes of the European Space Agency.

Fourth, we help poorer countries to cope with their environmental problems through our Aid Programme.

We shall give special help to manage and preserve the tropical forests. We are already assisting in twenty countries and have recently signed agreements with India and Brazil.

And as a new pledge, I can announce today that we aim to commit a further £100 million bilaterally to tropical forestry activities over the next three years, mostly within the framework of the Tropical Forestry Action Plan. That is what we are doing in Britain under those four headings. All of those things.

CONCLUSION

Mr President, the environmental challenge which confronts the whole world demands an equivalent response from the whole world. Every country will be affected and no one can opt out.

We should work through this great organisation and its agencies to secure world-wide agreements on ways to cope with the effects of climate change, the thinning of the Ozone Layer, and the loss of precious species.

We need a realistic programme of action and an equally realistic timetable.

Each country has to contribute, and those countries who are industrialised must contribute more to help those who are not.

The work ahead will be long and exacting. We should embark on it hopeful of success, not fearful of failure.

I began with Charles Darwin and his work on the theory of evolution and the origin of species. Darwin's voyages were among the high-points of scientific discovery. They were undertaken at a time when men and women felt growing confidence that we could not only understand the natural world but we could master it, too.

Today, we have learned rather more humility and respect for the balance of nature. But another of the beliefs of Darwin's era should help to see us through—the belief in reason and the scientific method.

Reason is humanity's special gift. It allows us to understand the structure of the nucleus. It enables us to explore the heavens. It helps us to conquer disease. Now we must use our reason to find a way in which we can live with nature, and not dominate nature.

At the end of a book which has helped many young people to shape their own sense of stewardship for our planet, its American author quotes one of our greatest English poems, Milton's "Paradise Lost".

When Adam in that poem asks about the movements of the heavens, Raphael the Archangel refuses to answer. "Let it speak", he says,

"The Maker's high magnificence, who built
So spacious, and his line stretcht out so far,
That Man may know he dwells not in his own; An edifice too large for him to fill,
Lodg'd in a small partition, and the rest
Ordain'd for uses to his Lord best known."

We need our reason to teach us today that we are not, that we must not try to be, the lords of all we survey.

We are not the lords, we are the Lord's creatures, the trustees of this planet, charged today with preserving life itself—preserving life with all its mystery and all its wonder.

May we all be equal to that task.

Thank you Mr President.

Notes

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