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## A Case for Hope in a Warming World

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It is difficult to feel hopeful in a rapidly warming world. But hope is not just a feeling. It is an active verb, one that calls for courage, solidarity, a clear vision, and hard work. First, knowing that each fraction of a degree counts, humanity is called not to despair but to use every technology and means, technologies we already have. Second, we can be encouraged by a vision of a new world and society that works for everyone. Third, we can be heartened by nature's resilience and an evolutionary theology that looks toward the future.

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On a recent visit to the north shore of Lake Superior, a friend told of finding her eighty-five-year-old neighbor out on the big lake's rocky, uneven shoreline one spring day planting trees. When she expressed concern that he might fall or have a heart attack—and be three hours from the nearest hospital—he merely smiled and said, “So what better place to die?” and went on with his planting. It reminded me of a saying of the Prophet Muhammad (peace be upon him (pbh)): “If you are planting a tree and the end of the world comes, continue planting your tree.”

Sometimes thinking about climate change feels like thinking about the end of the world. But, as James Crews notes, “hope, no matter how slight it might seem, is as pressing a human need right now as food, water, shelter, or rest. We may survive without it, but we cannot thrive” (Crews 2021, 2). As I write, the air here in Minnesota is dirtier than that in Beijing or New Delhi due to Canadian wildfires. Temperatures in Phoenix have topped 110 degrees Fahrenheit for a record thirty-one straight days, and people there are ending up in emergency rooms with second-degree burns merely from falling onto the pavement. Antarctic sea ice in the Southern Hemisphere's winter has diminished by an area the size of Argentina. Finding hope in these days where climate change is no longer a prediction but a lived reality has seemed a daunting task. However, my religious tradition of Quakerism recalls the words of its founder, George Fox, who wrote of a vision he had: “I saw . . . an ocean of darkness and death, but an infinite ocean of light and love, which flowed over the ocean of darkness.” In this article, I hope to provide at least a glimpse of that “infinite ocean of light and love” as it pertains to the climate of the beautiful but fragile planet on which we live.

I am no Pollyanna. I am well aware of the many ways in which we humans are ruining our world and jeopardizing our future. If hope were merely a feeling of optimism or a certainty that everything will turn out okay, I do not have it. But hope is not just a feeling. Nor is it wishful thinking. It is an active verb. Just as the Arabic term “jihad” means to struggle and strive, not merely in “a holy war” but also in daily life, hope is now a call to struggle, to work toward a different and better future, and if we fail, to at least go down fighting. It calls for courage, vision, love, and hard work. Fighting climate change with every tool we have, including hope, is our jihad as we find ourselves not anticipating but already in the Anthropocene. Hope represents a holy calling to re-envision the present as well as the future and persevere, even when things look very dark. Such a hope requires three things to propel us forward and help us keep our eyes on the ocean of light and love: perseverance, vision, and resilience.

### **The French Resistance: Hope Perseveres in Dark Times**

1940 has been described as “midnight for the French nation” (Dawsey 2022). Hitler's forces had overrun the country in a mere six weeks. Despite this

tremendous loss, then military officer Charles de Gaulle, in exile in Britain, gave a radio address urging the French to continue the struggle. His speech was recorded and broadcast by the BBC on the very day the French government signed an armistice with Germany that officially made 1.5 million French servicemembers German prisoners of war. It might have seemed that all was lost. However, de Gaulle held up a vision of a country that would prevail with British and American technology and help.

Technology, in the form of Panzer tanks and Heinkel bombers, had seemed totally on the side of the Germans in their lightning-fast conquest. But that did not make technology the enemy. De Gaulle called on anyone with experience in engineering or armaments to join the resistance and fight on with common sense, honor, and love for their nation (Wikipedia 2023). And fight they did. The number of citizens actively involved in the resistance is estimated to have been between one and three percent. While that may not seem like many, these citizens played a significant role in the Allied advance that ended the war. Resistance cells jury-rigged bombs to blow up bridges, rail lines, and ammunition depots. They published underground newspapers on small hand presses. They spirited Jews one by one to safe havens. While each action may have seemed small, they added up. These members of the resistance had no assurance they would prevail against the might of the Wehrmacht and the Gestapo. But they kept going. And they worked together. Resistance fighter Lucie Aubrac writes that the resistance “was the result of a war already lost,” yet, citing the French motto, “[t]hey robbed us of liberty and equality, but they could not prohibit fraternity!” (Aubrac 2000, 1).

There is no assurance of victory in the fight to mitigate global warming. As with the French in 1940, it may at times feel like we have already lost the fight. But just as those who joined the resistance used hope to work together to make whatever gains they could, we can do the same. And, though it may seem, as it did to the French, that technology is the problem, it is also on our side. We already have the technologies to provide clean fuel, better materials, and improved agriculture. The over 200 geologists, engineers, agronomists, politicians, writers, climatologists, biologists, botanists, economists, financial analysts, and architects in Project Drawdown (<https://drawdown.org/solutions/table-of-solutions>) have compiled a list of the more than ninety technological and political solutions to climate change already available and roughly twenty more that are on the way. Here are the top 15:

1. Reduced food waste
2. Plant-rich diets
3. Family planning and education of girls
4. Refrigerant management
5. Tropical forest restoration

6. Onshore wind turbines
7. Alternative refrigerants
8. Utility-scale solar photovoltaics
9. Clean cooking
10. Distributed solar photovoltaics
11. Silvopasture
12. Methane leak management
13. Peatland protection and rewetting
14. Tree plantations (on degraded land)
15. Temperate forest restoration ([www.drawdown.org](http://www.drawdown.org))

The good news is that the implementation of new technologies and techniques in many of these areas is not only the right thing to do but also the cost-effective thing to do. Wind and solar power are now more cost effective than fossil fuels and with the passage of Biden's Inflation Reduction Act, they are approaching those fuels in subsidization. Since 2010, the cost of solar energy has decreased by eighty-five percent, wind energy by fifty-nine percent onshore and seventy-one percent offshore, and lithium-ion batteries by eighty-nine percent. California now produces enough green energy to supply ninety-five percent of its in-state needs (Roth 2021). Former United States Environmental Protection Agency administrator Gina McCarthy believes it is quite possible to cut greenhouse gas emissions in half by 2030, and zero them out by 2050, partly because businesses are rapidly coming to see the shift to new energy technologies as job producers rather than job killers. She points to the automakers' realization that electric vehicles are the future and to the \$2.2 billion in private investment funding for offshore wind supply chains (McCarthy 2022). Private investors are not in it to lose money. Even Texas, despite the chokehold of the fossil fuel industries on its politics, has increased solar capacity six-fold since 2019, primarily because renewable energy brings a better financial return than fossil fuel (Rampell 2023).

Worldwide, reductions in the price of renewable sources of energy and a rise in political awareness have cut predictions of temperature rise in this century from four or even five degrees Celsius to somewhere between two or three degrees. The pace of transition to new technologies is quickening perceptibly in the United States with the adoption of the Biden administration's Inflation Reduction Act. It is also accelerating in China, where in 2023 alone, more solar power was added than is currently on the ground in the United States. In 2022, China's added renewable power would have met the demands of a single country such as South Africa, Australia, or Spain. At this pace, China is likely to reach its 2030 target ahead of time (Ritchie 2023).

But change is not happening fast enough. The Intergovernmental Panel on Climate Change emphasizes that humans must cut worldwide emissions in half by 2030. While China is on track for that target, most other countries are

not. Meanwhile, 2022 and 2023 have shown that the climate is changing far more rapidly than most models predicted. Despite reluctance on the part of most scientists, geoengineering technologies—such as orbiting “space mirrors,” hydrogen-filled balloons, or ejecting large clouds of sulfur dioxide into the stratosphere to increase the reflection of sunlight—may become necessary. These could have a rapid cooling effect (as some places experienced under the high-level smoke clouds from Canadian fires this summer) and would be relatively inexpensive to implement. Environmentalist Bill McKibben (2022) notes that “a recent article in the *Harvard Environmental Law Review* estimates that the ‘direct costs of deployment—collecting the precursor materials for aerosols, putting them into the sky, monitoring, and so on—would be . . . as low as several billion dollars a year.’” This puts solar reduction technologies in the wherewithal of not only countries but wealthy individuals such as Bill Gates or Elon Musk.

It is not known what the side effects of such technologies would be, but they would likely include further acidification of the ocean. Another strategy is ocean farming, which involves injecting nitrogen into the oceans to support seaweed and algal blooms. The fundamental issue of ocean farming is that the energy is at the surface but the nutrients there are depleted. They remain available in the depths, where the sun doesn’t reach. One company, Seaforestation ([www.seaforestation.com](http://www.seaforestation.com)), has developed a platform on which to grow kelp that spends the day at the surface of the ocean capturing sun and at night sinks below the surface to where there are nutrients. This kelp can be used as fertilizer, feed for fish, or a resource for producing other things like plastics or pharmaceuticals. It seems like a win-win proposition. Then again, kelp and algae can also get out of hand, as seen in 2018 when large piles of sargassum took over beaches from Florida to Mexico (Schubel and Thompson 2019). Technology is almost always a two-edged sword. As climate change worsens, it is likely that disputes will arise among both states and non-state actors as to the feasibility and advisability of these strategies and the jurisdiction of the air and seas.

Big investments or government programs, as necessary as they will be, can leave individuals feeling powerless, just as the armies fighting in World War II must have seemed to be the determining bodies beyond the small efforts of the resistance fighters. But here I come to the second piece of good news. Many of the things on the Drawdown list are small, things that can be begun person by person. An individual can install a heat pump, an induction stove, better insulation. Humans can all reduce our food waste and move toward a more plant-based diet.

Or consider number fifteen on the Drawdown list: the protection of temperate forests. While farming the ocean could lead to food sources that would obviate the need to clear forests for farmland, any big change here is still years down the road. But there are small things that can make a difference.



Consider that the average American uses about twenty-four rolls of toilet paper per year. If a sizable number of people would install a bidet, millions of the pines, birches and aspens that provide the virgin pulp to make toilet paper—particularly older, mature trees with the longer fibers that produce the ultrasoft texture we Americans demand—would remain standing (Coren 2023). Imagine if Americans could be convinced that washing our backsides was as crucial to personal hygiene as brushing our teeth?

Small potatoes, one might think. But every change, no matter how small, has a cumulative effect, and every tenth of a degree of warming prevented will save lives. As Czech playwright and politician Vaclav Havel writes:

Neither I nor anyone else will ever win this war once and for all. At the very most, we can win a battle or two—and not even that is certain. Yet I still think it makes sense to wage this war persistently . . . I have few illusions. But I feel a responsibility to work towards the things I consider good and right. I don't know whether I'll be able to change certain things for the better, or not at all. Both outcomes are possible. There is only one thing I will not concede: that it might be meaningless to strive in a good cause. (Havel 1991, 16–17)

French resistance fighter and actor Marcel Marceau concurs: “As the Book of Ecclesiastes said, two hundred years before Jesus Christ, ‘There is a time to live, to die, to build, to destroy, to love, to hate.’ Vanity, vanity. Everything is vanity, but you need to know that you have to go toward the light even if you know that one day we shall be dust” (Marceau 2002).

### **Pope Francis: Hope Rests on a Vision**

Pope Francis, in the encyclical *Laudato Si*, asks people to consider what kind of world they would like to leave for their children. He decries the rampant consumerism of a “throwaway culture,” one that discards people, promises, the bonds of community, and the gifts of nature when they seem to lack immediately obvious or quantifiable value (*Laudato Si*, 16). He presents the current ecological crisis as inextricably intertwined with a social crisis and notes that humanity cannot solve one without tackling the other. This brings me to the second necessity for hope. While fear can lead to despair or apathy, hope rests on a vision of a better world, not just one with fewer smoke-filled days or monster storms but one with closer communities, more fulfilling jobs, more leisure time, better health, and, yes, even cleaner backsides. We already have the technologies we need. What we lack is the political will to implement them. That will can come in part through a clearer vision of what a better world might look like.

Many people who have lived in Europe have found that life lived on a smaller scale can indeed be more pleasant. Public transportation, readily

available, obviates the hassles of keeping a personal car or three; rental agencies make cars easily available when needed. Smaller dwellings are easier to clean and maintain, and food bought every few days is fresher, healthier, and more enjoyable. Most importantly, without long commutes and with more relaxed workdays, there is time for friends and family, for enjoying nature, and for other pursuits. Greener, quieter cities with cafes and shops in a walkable distance can be imagined. Humanity knows of more sustainable and healthier modes of agriculture, ones that do not rely on the constant application of chemical pesticides, herbicides, and fertilizers. It is possible to imagine buildings that no longer account for thirty-two percent of current energy use but rely on natural light and smart glass, heat pumps, and green roofs.

Vienna has shown that sustainability and equitable development need not be in conflict. The Wohnpark Neue Donau housing project, built over an underground expressway, includes 850 housing units, including subsidized rentals, owner-occupied homes, apartments for refugees, and student housing. The housing blocks are arranged diagonally so that most have a river view. Nearby shops, a school, a church, and a kindergarten mix with office high-rises and other residential neighborhoods (US Department of Housing and Urban Development 2023). With several other planned green developments, Vienna has been judged the most livable city by journals such as *The Economist* and other surveys (*The Economist Data Team* 2018).

Such a change in physical infrastructure requires creativity, a creativity humans possess as part of our creation in the image of our creator. Pope Francis notes that exercising the creativity needed to instantiate our vision of a better life “would be a worthy expression of our most noble human qualities, for we would be striving intelligently, boldly and responsibly to promote a sustainable and equitable development within the context of a broader concept of quality of life” (LS, 192). But material creativity and regeneration alone are not enough. Also needed is a fundamental change in our attitude toward life. We need to recognize that more or bigger is not always better. That a society might be better judged by its GNH (gross national happiness) than its GDP. That nature is not something to be tamed or used. It is not, as Pope Francis notes, “a mere setting in which we live” (LS, 139). We have evolved to be a part of our natural habitat, and while we have been uniquely resourceful in finding ways to control or modify that habitat, we remain dependent on it for our lives.

Despite the insistence of some, this vision of a world in harmony with nature does not call for deprivation. As Pope Francis notes:

It is not a lesser life or one lived with less intensity. On the contrary, it is a way of living life to the full. In reality, those who enjoy more and live better each moment are those who have given up dipping here and there, always on the lookout for what they do not have. They experience what

it means to appreciate each person and each thing, . . . Happiness means knowing how to limit some needs which only diminish us, and being open to the many different possibilities which life can offer. (LS, 223)

Such a vision can give our actions both direction and meaning. But will this vision be realized? Psychologist Viktor Frankl, writing after experiencing the darkness of a concentration camp, thought this was the wrong question: “We had to learn ourselves and, furthermore, we had to teach the despairing men, that it did not really matter what we expected from life, but rather what life expected from us. We needed to stop asking about the meaning of life, and instead think of ourselves as those who were being questioned by life—daily and hourly. Our answer must consist, not in talk and meditation, but in right action and in right conduct” (Frankl [1946] 2006, 77).

“We’re not fighting for a merely ‘livable’ planet,” says climate scientist Peter Kalmus. “We’re fighting for a riotous, wild, gorgeous, generous, miraculous, life-cradling planet that’s home to a society that works for everyone” (Hayhoe 2021, 243). And humanity is not alone in this fight.

### **Nature Herself: Hope Is Resilient**

Catholic theologian John Haught writes: “Humans, to be sure, will always need unattainable ideals that call us to nobility of life, but these ideals can only be enlivening if they steer us toward an unprecedented future rather than a hypothesized initial or timeless perfection. . . . The notion of an unfinished universe happily opens up the horizon of a healing future . . .” (Haught 2015, 93). Belief in God’s total controlling power, combined with the Christian hope of eternal life in the “next world,” has led many Evangelicals to embrace an otherworldliness that diminishes this world. I recall hearing in my youth the words of Ronald Regan’s secretary of the interior, James Watt, that there was no need to preserve our natural resources for future generations since he did not “know how many future generations we can count on before the Lord returns” (Prochnau 1981). But for Haught, the future is not about the next world but the ongoing transformation of this world. Faith in the resurrection does not obviate moral choices in the here and now. Rather, it makes them imperative.

Climatologist Katherine Hayhoe labels the Evangelical dismissal of human responsibility expressed in the belief that “it’s all in God’s hands” as “false hope.” She writes that “false hopes might ease our mind short-term, [but] they do nothing to erase the fears that still roil in the back of our brains” (Hayhoe 2021, 243). True hope requires recognition of what’s at stake coupled with an acceptance that “we reap what we sow” (Hayhoe 2021, 244). Christianity has never preached helplessness. Indeed, the apostle Paul, writes in his epistle to the Romans (5:4 NRSV): “We know that troubles help us learn not to give up. When we have learned not to give up, it shows we have stood the test. When we



have stood the test, it gives us hope” (Hayhoe 2021, 244). In the same spirit, the prophet Muhammad (pbh), when asked whether humans’ actions mattered in light of God’s omnipotence, replied, “Trust God. But also tie up your camel.”

A faith informed by evolutionary science “rejoices that the same divine promise that brought Israel and the Church into being has for billions of years been drawing a whole universe toward an unimaginable future. Informed by cosmic hope, an ecological spirituality trusts that the divine field of attraction we refer to as the Holy Spirit is still at work in the entire cosmos . . . and applies not only to the ‘people of God’ but also, as St Paul came to see, to the ‘whole of creation’ (Rom. 8:22)” (Haught 2015, 155).

The hand of this Holy Spirit can be seen in the resilience of nature. She will heal if humanity lets her. Consider Moyenne Island. Brendon Grimshaw bought this despoiled and somewhat barren island in the Seychelles for £9,000, quit his job as a newspaper editor back in England and started a new life there. Moyenne had been uninhabited for 50 years. Grimshaw, together with a Seychellese companion, proceeded to plant 16,000 trees on the island. These, in time, attracted 2,000 new bird species. The birds were followed by other species, including hundreds of giant tortoises. The once-deserted island now contains two-thirds of the Seychelles’s fauna. In forty years, a desolate island became a paradise and was declared a national park in 2008 (Ham 2022).

Or consider the exclusion zone surrounding the now-defunct nuclear reactor in Chernobyl, where 30 years ago the explosion and subsequent fire at the No. 4 reactor of the Chernobyl nuclear power plant released large quantities of radioactive material. One hundred sixteen thousand people were evacuated from an area encompassing more than a thousand square miles. One might expect nothing but devastation. However, the more than 150 cameras placed in this zone have shown a remarkable flourishing of nature. Wolves, wild boars, beavers, moose, eagles, deer, lynx, and bears inhabit the zone’s thick woodlands. Packs of dogs, feral descendants of abandoned pets, and herds of an endangered species of horse originally from Mongolia roam. Though lifespans are shorter than elsewhere, life goes on despite high levels of radiation (Wood and Beresford 2023). In fact, in the absence of human activity, nature flourishes.

There is resiliency in humanity as well. Human history is a story of resourcefulness and adaptation, though sometimes it looks like one step forward and two steps back. As Czech playwright and politician Vaclav Havel writes: “A heaven on Earth in which people will love each other and everyone is hard working, well mannered, and virtuous, in which the land flourishes and everything is sweetness and light, working harmoniously to the satisfaction of God: this will never be” (Havel 1991, 16). However, Havel notes that the future depends on the young, who possess the idealism and morality to imagine a better future without looking too closely at the obstacles and costs that might lay in the path.

The activism and empathy of this younger generation are inspiring. The young citizens of Montana sued, and won, against the state, arguing that the extensive support for the fossil fuel industry championed by the Republican majority violated the state constitution, which guarantees residents “the right to a clean and healthful environment,” and holds the state responsible for maintaining and improving the environment “for present and future generations” (Gelles 2023a). These students are a hopeful vanguard. According to Michael Gerrard, director of the Sabin Center for Climate Change Law at Columbia Law School, there have been few trials regarding the climate: “This is the first that [gets] into the merits of climate change and what needs to be done, and how the state may have to change its policies” (Gelles 2023a). As generations that have been taught the human impact on the climate—generations unafraid to do things differently—age into the voting booth, there may be a change in direction.

The Montana lawsuit is not the only one of its kind. Class action attorney Missy Sims is representing sixteen Puerto Rican municipalities that are seeking to hold some of the biggest players in the fossil fuel industry responsible for the damage caused by Hurricane Maria through their deliberate obfuscation of the known effects of burning fossil fuels. This is the first case to use the Racketeer Influenced and Corrupt Organizations Act (RICO), originally designed to crack down on organized crime, in a climate suit (Gelles 2023c). RICO charges frequently carry massive financial penalties, a prospect that might eventually induce the fossil fuel industry to faster change. The Oregon county that includes Portland has also filed a lawsuit against several fossil fuel companies regarding the deadly heat wave of 2021 (Gelles 2023b). As climate costs mount, other lawsuits will follow.

The young are changing the nature of the American electorate. As older voters die and young people turn eighteen, climate change is gaining importance as an electoral issue. By the 2024 election, thirty-two million new Generation Z voters (those born between 1998 and 2014) will have come on board and 20 million older voters will have died since the last election; this changes the complexion of the electorate by about twenty percent. Gen Z has shown itself more inclined to get out and vote than previous generations were when they were young, and they vote on the issues (Lake and Heller 2023). A 2021 study conducted by the Pew Research Center found that for members of both Generation Z and millennials (those born between 1981 and 1996), thirty-five percent list climate change as their top political concern, and sixty-nine percent agree that addressing climate change should be the top priority of politicians (Funk 2021).

This does not let those in prior generations off the hook. In “A Letter to Adults,” Alexandra Villaseñor (2020) notes that while her generation “are stepping forward as the ‘conscience and moral voice’ on the climate crisis . . . the reality is it is too much work for one generation.” She calls on “[t]hose of

you who are retired and have more time on your hands, or with children you are no longer caring for, or those of you with additional resources” (Villaseñor 2020) to become climate activists as well. “Can you imagine how beautiful a movement led by children and grandparents would be?” (Villaseñor 2020). No one will solve climate change alone. The task is big, but each action, however small, may keep the Earth from warming some fraction of a degree. Thus, as one Irish Benedictine monk told me (pers. comm.): “There are three questions you can ask. But you should only ask one of them: ‘Did I try?’ The other two are ‘did I try hard enough?’ and ‘did I succeed?’ Well, there is a trap door over your head, and if you ask one of these, as sure as I’m standing here, that trap door is going to open and a whole load of excrement is going to come down.”

Life on Earth will continue. It is up to humanity whether the model will be Moyenne Island, where human agency fosters and encourages an abundant renewal and coexistence with nature or Chernobyl, where, despite humanity and its mistakes, nature flourishes in its absence. Perhaps humanity’s loss will be the gain of other plants and animals. This, then, is my final hope. In the words of nature poet Mary Oliver, no matter how much we love this world “when the time comes to let it go, . . . let it go” (Oliver 1983, 83).

Should that time come, if you are planting a tree, faith and hope call you to continue planting that tree.

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