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Revolutionary Environmental Activism: Rachel Carson, Wangari Maathai, and Greta Thunberg

Kayleigh Limbach

The environmental revolution is perhaps the most important fight in which humanity has participated. Humans need clean air and water, access to natural resources, and a stable climate to survive, making environmentalism a movement that affects every person on Earth. Ever since the Industrial Revolution, when carbon emissions began to grow exponentially, individuals have expressed their concerns regarding destructive human activity to their governments. Importantly, many of those individuals have been women. Despite some of the limitations imposed on them due to their age, nationality, and/or education, women all over the world have spearheaded environmental movements and inspired others to do the same. In the modern environmental revolution, three women have had a profound impact in their home countries and on an international scale; Rachel Carson, Wangari Maathai, and Greta Thunberg have each witnessed environmental degradation and injustice and taken meaningful action against it. Resultantly, these three women catalyzed global, citizen-led environmental movements. Carson, Maathai, and Thunberg demand action that is necessary for global human survival and ecological health, making them a few of the most important women in environmental history.

Rachel Carson: Breaking the Silence

Rachel Carson, an American author and biologist, is frequently credited with igniting the modern environmental movement. Carson was born in 1907 in Pennsylvania, and her passion for nature began at a very young age; her mother was an avid naturalist, and Carson wrote stories about the birds and other animals that she and her mother encountered. At the age of ten, several of these stories won prizes and were published in literary

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magazines. 1 She continued to write about these creatures throughout high school and entered college as an English major. However, a required biology course taught by the brilliant zoologist Mary Scott Skinker inspired Carson to go beyond just writing about animals, prompting Carson to switch to a Biology major during her junior year.² After finishing college and completing graduate studies, Carson worked at the United States Bureau of Fisheries (now the U.S. Fish and Wildlife Service) and began her professional writing career. She published several books about the nature of the ocean, and in 1956 wrote "Help Your Child to Wonder," an article describing the importance of ensuring every child learns about their surrounding environment.³ In the late 1950s, she became aware of an ecological disturbance on the East coast: a sudden increase in the deaths of many popular birds. Peregrine falcons, ospreys, and even emblematic American bald eagles were suddenly dying. Olga Huckins, a friend of Rachel Carson, connected the birds' deaths to the increased use of DDT, a synthetic pesticide. Huckins wrote to The Boston Herald and said "the 'harmless' shower bath [of DDT] killed seven of our lovely songbirds outright," and claimed "for those who stand helplessly on the Earth, it is intolerable."4 Carson encouraged colleagues in her scientific community to research the issue but found many of them unwilling. The United States Department of Agriculture promoted DDT as completely safe, and millions of Americans used it to protect their crops from harmful insects.⁵ Despite DDT's federal approval and widespread use, Carson took it upon herself to investigate the mass avian deaths. This led to Carson's 1962 publication of Silent Spring, a landmark book that documents and explains the effects of DDT and other pesticides and illuminates

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¹ Linda J. Lear, "Carson, Rachel Louise (1907-1964): Writer and Scientist," *American National Biography*, 1 Feb. 2000.

² Erdős László, *Green Heroes: From Buddha to Leonardo DiCaprio* (New York, NY: Springer International Publishing, 2020).

³ László, *Green Heroes*.

⁴ Olga Huckins, "Evidence of Havoc by Air Spraying," *The Boston Herald*, 29 Jan. 1958.

⁵ Mark Stoll, "Rachel Carson's Silent Spring," *Environment & Society*, 1 Feb. 2020.

the concepts of biomagnification and ecological cycles to everyday audiences.⁶

The publication of Silent Spring is important in environmental history because it exposed how the United States government chose to ignore evidence-based science. In the beginning of the book, Carson details how many people believed DDT was harmless because it was used during World War II to prevent the spread of lice without any "immediate ill effects" experienced by its users. However, that was DDT in powder form. When it is concentrated in an oil to be sprayed as a pesticide, Carson argues it "is definitely toxic." In her book, Carson clearly explains why DDT is harmful to animals and details how the accumulation of DDT in the environment kills birds and weakens their eggshells. This came as a shock to most Americans, as they were assured by the government that DDT was harmless. It was sprayed near their homes and on farms, protecting America's food sources from insects.8 Carson's scientific exposé of the agricultural industry's use of synthetic pesticides not only brought the public's attention to the importance of the issue, but also caused her to become the target of political criticism.

Silent Spring brought Carson into the political spotlight very quickly. Immediately after the book's publication, President John F. Kennedy asked the President's Science Advisory Committee to investigate the claims made in the book, and a year later in 1963, released a report that validated Silent Spring. The issue was instantly divisive in American politics. On one side, conservative politicians were eager to attack and discredit Carson, as their constituents were often farmers who relied on DDT and they themselves were connected to the agricultural industry in some way. On the other side, liberal senators and representatives were concerned with the government declaring pesticides to be safe

⁶ László, Green Heroes.

⁷ Rachel Carson, Silent Spring (New York, NY: Fawcett Crest Books, 1962).

⁸ László, *Green Heroes*.

⁹ Stoll, "Rachel Carson's Silent Spring."

while Carson argued otherwise. So, they called for a congressional hearing in which Carson testified on June 4, 1963. While defending Silent Spring, she said, "[N]ow we are receiving sharp reminders that our heedless and destructive acts enter into the vast cycles of the earth and in time return to bring hazard to ourselves. The problem you have chosen to explore is one that must be resolved in our time." The pesticide industry, valued at 300 million dollars in 1962, immediately perceived Carson as a threat and opposed any action to restrict DDT or other synthetic pesticides.¹² In 1964, the National Agricultural Chemical Association poured at least twenty-five thousand dollars into a public relations venture. They released advertisements, pamphlets, and letters to the editor in several major newspapers, describing the safety and necessity of using chemicals to produce food.¹³ Two chemists, Thomas Jukes and Robert White-Stevens, even spread misinformation about bird populations to discredit Carson. In the Audubon Society's annual Christmas Bird Count published in American Birds, they wrote that the robin population "over which Miss Carson despairingly cries requiem as they approach extinction, show an increase of nearly 1200% over the past two decades." This simply was not true.¹⁴

Rachel Carson died in 1964 after a protracted battle with breast cancer.¹⁵ Although she was gone, the impact of Silent Spring remained, and politicians and organizations continued to disparage her postmortem. Decades after she passed, major publications like Forbes, The Washington Times, and The National Review ran articles attacking Silent Spring.¹⁶ Further, in the early 1970s, the World Health Organization (WHO) stopped spraying DDT to

¹⁰ Ibid.

¹¹ Rachel Carson, "Rachel Carson's Statement Before Congress, 1963" (Rachel Carson Council, 1963).

¹² John M. Lee, "Silent Spring' Is Now Noisy Summer," New York Times, 1962.

¹³ Stoll, "Rachel Carson's Silent Spring."

¹⁴ Stoll, "Rachel Carson's Silent Spring."

¹⁵ Lear, "Carson, Rachel Louise."

¹⁶ László, Green Heroes.

exterminate mosquitoes carrying malaria. Although WHO did so because research was showing mosquitoes were developing a resistance to DDT, many world leaders jumped on the opportunity to say that Carson inspired WHO to stop using DDT. These leaders vilified Carson for creating unnecessary controversy and blamed her for an increase in malaria deaths since DDT was no longer used.¹⁷ This is one of many examples that demonstrate how determined some leaders were to silence the truth Carson revealed.

Despite the political chaos surrounding Carson, her work resulted in meaningful change. Congressional committees, pressured by the concerned readers of Silent Spring, began investigating DDT and other pesticides. Their harmful effects were confirmed, and by 1975, each toxic chemical Carson named in her book was either banned or severely restricted.¹⁸ In addition to securing important ecological protections and restrictions, Carson's work inspired decades of environmental debates. Not only did the book itself reveal the true risks of using DDT and other chemicals, but the attempts made to discredit the book showed Americans that environmental scientists were a force to be reckoned with. As much as the National Agricultural Chemical Association tried to promote DDT's safety, people were beginning to realize the extent of the misinformation. Ultimately, Carson's most important impact was that people started to question what the government considered safe for the environment. If these pesticides are actually harmful, what else is the government misleading people about? This skepticism encouraged people to listen to scientific evidence and think independently before accepting what the government said. Rachel Carson was the first leader in the environmental revolution in the United States and inspired citizens worldwide to seek out the truth about things that affected their environment and health. Carson exposed that the government was more concerned with profit than protection, and in

¹⁷ Stoll, "Rachel Carson's Silent Spring."

¹⁸ Ibid.

her thorough defense of her findings, she began a lasting environmental movement in the United States.

Wangari Maathai: Starting with Her Roots

The work of Wangari Maathai, an environmental and political activist, is known far beyond the borders of her home country of Kenya. She was the first African woman to win the Nobel Peace Prize, and she founded the Greenbelt Movement, a campaign that encouraged tree planting and environmental conservation. Maathai was born in 1940 in Ihithe, a small village in the highlands of Kenya. In her 2007 memoir Unbowed, Maathai said that she "was born as an old world was passing away." She quickly became familiar with the policies that British colonial rulers created to limit native Kenyans' access to land and natural resources. For example, colonists razed swaths of forest to set up enormous plantations. In order to force Kenyans to provide labor, they instituted a tax system and created a currency so that Kenyans would have to work to be able to afford the taxes.²⁰ Additionally, colonial rulers took advantage of the fact that Kenyans did not believe anyone could own any land and began giving parcels of the fertile highlands to British settlers while forcing Kenyan tribes into crowded native reserves.²¹ Kenya gained independence in 1963 while Maathai was attending university in the United States, but they continued to enforce colonial land tenure practices. Kenyan tribes, like Maathai's own Kikuyu, were forced to share a designated native reserve where competition for resources increased as populations grew and people claimed particular areas for their families. Wealthier Kenyans and British settlers who remained in Kenya maintained possession of the highlands, which are much more productive than the native reserves in the

¹⁹ Wangari Maathai, *Unbowed: A Memoir* (New York: Random House, Inc., 2007), 7.

²⁰ Ibid.

²¹ Ibid., 10–2.

lowlands.²² Throughout her childhood and early adulthood, Maathai witnessed the conflict and environmental injustice that occurred under the colonial system.

Maathai's activism first began when she became a professor at the University of Nairobi. When she realized that the university's benefits only applied to her male colleagues, Maathai attempted to unionize the faculty so women could receive the same benefits.²³ This was an especially bold move, as the university's chancellor, Jomo Kenyatta, was also the president of Kenya.²⁴ This was the first of many moves Maathai made for women to become revolutionaries. Maathai's activism then shifted to environmental issues as she volunteered much of her time at the United Nations Environment Programme (UNEP), headquartered in Nairobi. Maathai reflected that "a whole different world opened up to [her]" when she began working with the program, and that over her ten years of involvement with UNEP "it almost became [her] second full-time career."25 During her research and fieldwork, Maathai realized how much Kenya's landscape had changed since her childhood. Although she was researching the effect of parasites on cattle, she continued to notice the increasing environmental decline. Maathai wrote in Unbowed that "Kenya's and the whole region's livestock industry was threatened more by environmental degradation" than by parasites or anything else. She began attending meetings held by the National Council of Women of Kenya (NCWK) and discovered that the environment was deteriorating in more ways than she ever imagined. At that time, she realized that "not only was the livestock industry threatened by a deteriorating environment, but I, my children, my fellow citizens, and my entire country would pay the price."26 Of the

²² Martin S. Shanguhyia, "Integrating African Traditions in Environmental Control in Western Kenya: Contradictions and Failure in Colonial Policy, 1920-1963," *International Journal of African Historical Studies* 49, no. 1 (2016): 23–52.

²³ Maathai, *Unbowed*, 115.

²⁴ Ibid., 116.

²⁵ Ibid., 120.

²⁶ Ibid., 124–5.

environmental degradation that Maathai learned about or personally witnessed, nearly all of it was caused by the continuation of colonial land use practices. Densely forested areas that performed many ecological services had been razed to make room for tea and coffee plantations; areas that previously produced food for Kenyans now produced cash crops to be exported; and, native Kenyans still did not have access to the most fertile soils in the highlands. In the 1960s, it was estimated that 10% of Kenyans owned one-third of the arable land, and one out of eight Kenyans was completely landless.²⁷ As she pondered the lack of resources and the increasing environmental inequality many Kenyans experienced, Maathai simply asked herself, "[W]hy not plant trees?"²⁸

Planting trees would help solve many environmental issues, but from her own experience and wisdom, Maathai knew it was no simple task. Encouraging people all over the country to plant trees would require organization, national attention, and, most importantly, local support. Through her work at UNEP, Maathai saw how national non-governmental organizations (NGOs) failed to effectively assist Kenyans, because NGOs simply did not understand what they were doing. Maathai wrote in her memoir Unbowed, "[Y]ou may think you are doing the right thing, but in the local context, you are completely off track."29 After encountering many difficulties starting her own environmental initiative working with the poor, she received support from the NCWK, whose ties to the United Nations helped Maathai formally begin the Greenbelt Movement in 1977.³⁰ Importantly, the Greenbelt Movement mobilized the planting of trees by women, many of whom succeeded in this role because of their gardening skills and time at home.

²⁷ Shanguhyia, "Integrating African Traditions."

²⁸ Maathai, *Unbowed*, 129.

²⁹ Ibid., 133.

³⁰ Ibid., 132.

The first seven trees were planted in Nairobi with a formal ceremony, marking the beginning of a national campaign to plant trees and revitalize Kenya's environment. As helpful as this support was, Maathai needed to contextualize the movement for the people of small, destitute villages. Kenyans with lower incomes could not appreciate the long-term importance of planting trees when they were struggling to simply survive in the shortterm. To address this issue, The Greenbelt Movement (under Maathai's direction) established tree nurseries all over the country where Kenyan villagers would receive free seedlings. For each year the trees survived, the villagers would be compensated with a small amount of money.³¹ This combined approach ensured that the movement had international attention, national support, and local cooperation. Among Kenyan tribes, women typically stayed at home while men tended to livestock or hunted, so it was primarily women who cared for the trees and collected the compensation. Further, the Greenbelt Movement became politically active in later years. When Karura Forest near Nairobi was at risk of being destroyed to make room for urban development, the Greenbelt Movement led demonstrations and garnered international support for its protection. While these actions made Maathai an enemy of the Kenyan government, the movement saved Karura Forest, which still stands as a freely accessible woodland.³² Finally, Maathai's most important impact through The Greenbelt Movement was empowering women to be environmental stewards. In East Africa and many other parts of the world, women have the most potential to inspire sustainability; they are the ones collecting firewood, raising crops, and occasionally caring for livestock. Importantly, they impart their ways of living onto their children. The Greenbelt Movement taught women the importance of maintaining a healthy environment and gave them the ability to personally benefit from tree planting.

³¹ László, Green Heroes.

³² Ibid.

The results of Maathai and the Greenbelt Movement are recognized by environmentalists across Africa and all over the world. The movement "established thousands of nurseries, mobilized hundreds of thousands of participants, and planted tens of millions of trees" in Kenya.³³ Not only does this help restore forests and replenish natural resources for Kenyans, it also taught Kenyans the importance of maintaining a sustainable environment to prevent drought, resource depletion, and environmental injustice. Planting trees for monetary compensation continues today and has expanded into several surrounding East African countries. The Greenbelt Movement challenged the land tenure practices leftover from the colonial period and prevented countless forested areas from further destruction. As the effects of climate change become more and more tangible in East Africa, the importance of Maathai's work is more relevant than ever.

Greta Thunberg: Small Strikes for a Big Difference

Swedish climate activist Greta Thunberg is perhaps the most recognizable environmental revolutionary of the twenty-first century. She is the face of the most recent wave of environmentalist activism and inspires school-aged children around the world to demand change from their governments before it is too late. Seventeen-year-old Thunberg comes from a typical family, but interestingly, she is related to Svante Arrhenius, a scientist who won the Nobel Prize in chemistry in 1903 and developed a model of human-driven climate change.³⁴ Thunberg said she first became aware of the global climate crisis at eight years old and was alarmed by the fact that seemingly no one else was concerned. During a 2018 speech in London, she said that "[If climate change] was really happening, we wouldn't be talking about anything else...if burning fossil fuels was so bad that it

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³³ Jamie Betchel and Wanjira Mathai, "The Legacy of Wangari Maathai: Women as Green Agents of Change," *The Huffington Post*, 17 Oct. 2012.

³⁴ Brian Shelton, "Greta Thunberg: What Does the Teenage Climate Change Activist Want?," *BBC News*, 28 Feb. 2020.

threatened our very existence, how could we just continue like before?"³⁵ In the same speech, Thunberg explained that the way she perceives the world with Asperger's Syndrome was part of her motivation to take action. She said, "I think in many ways we autistic are the normal ones and the rest of the people are pretty strange. They keep saying that climate change is an existential threat...yet carry on just like before." Because she perceives the world in a black and white way, Thunberg said, "There are no grey areas when it comes to survival. Either we go on as a civilization or we don't."³⁶ As a young teenager, Thunberg became increasingly overwhelmed by climate change and humanity's bleak future.

To combat these feelings, Thunberg began utilizing school strikes to generate attention for the climate crisis. At her first school strike in August 2018, she sat outside of the Swedish parliament with flyers, demanding that her country complied with the guidelines set forth by the Intergovernmental Panel on Climate Change (IPCC). In defense of her strike, she said "[W]hat is the point of learning facts within the school system when the most important facts given by the finest science of that same school system clearly mean nothing to our politicians and our society?"³⁷ She makes it abundantly clear that swift action is needed now, and instigating school strikes is the best way she can make her voice heard. While Thunberg demanded attention from her government, it was never her aim to become a political figure; she only wanted politicians to listen to the IPCC reports. She said in a February 2019 Facebook post, "[I]f everyone listened to the scientists and the facts that I constantly refer to, then no one would have to listen to me or any of the other hundreds of thousands of schoolchildren

³⁵ Greta Thunberg, "Almost Everything Is Black and White," in *No One Is Too Small to Make a Difference* (Stockholm, Sweden: Penguin Books, 2018).

³⁶ Ibid.

³⁷ Ibid.

on strike."³⁸ Despite this, world leaders have violently criticized Thunberg and frequently belittled her for being a child. Thus far, she has withstood the criticism and believes that this negative attention indicates her school strikes are working.³⁹

Thunberg's environmental activism extends far beyond school strikes in her home country of Sweden. For example, she goes on international tours to speak at and participate in climate rallies and conferences, with her most notable speeches at United Nations climate summits. In her commitment to combating climate change, she travels as sustainably as she can; when the United Nations COP25 summit suddenly changed locations, Thunberg took a two-week sailing voyage to Madrid rather than flying.⁴⁰ She is an inspiration to many as she speaks the truth and leads by example. Thunberg's ambition is to halt climate emissions, and in her speeches, she constantly refers to the most recent IPCC report. This report states that humanity is approximately eleven years away from "[setting] off an irreversible chain reaction beyond human control."⁴¹ Thunberg repeats this fact in almost every one of her speeches; she is intentionally repetitive to emphasize the utmost importance of listening to the best available science. By inserting few of her own opinions and echoing what climate scientists have found, Thunberg is the loudest voice in the current environmental revolution.

Thunberg has generated incredible results since her first school strike two years ago. She has personally gone on a school strike every Friday for almost 100 consecutive school weeks and has inspired millions of students around the world to do the same.⁴² Young people around the world are coming together to demand

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³⁸ Greta Thunberg, "I'm Too Young to Do This," in *No One Is Too Small to Make a Difference* (Stockholm, Sweden: Penguin Books, 2019).

³⁹ Shelton, "Greta Thunberg: What Does the Teenage Climate Change Activist Want?" ⁴⁰ Simon Evans and Josh Gabbatiss, "COP25: Key Outcomes Agreed at the UN Climate Talks in Madrid," *CarbonBrief*, Dec. 2019.

⁴¹ Greta Thunberg, "You're Acting Like Spoiled, Irresponsible Children," in *No One Is Too Small to Make a Difference* (Stockholm, Sweden: Penguin Books, 2019).

⁴² Shelton, "Greta Thunberg: What Does the Teenage Climate Change Activist Want?"

action from governments, whose negligence places their future at risk. Thunberg's impact has been so great that she was named the 2019 Person of the Year by Time magazine. The editors argued that Thunberg "has succeeded in creating a global attitudinal shift, transforming millions of vague, middle-of-the-night anxieties into a worldwide movement calling for urgent change."43 This worldwide movement is extremely tangible. For example, in September 2019, more than four million students in 161 countries participated in a "Fridays for Future" strike, demonstrating the international concern that many young people share.⁴⁴ Clearly, Thunberg is not alone in her concern for the climate crisis.

One important result of Thunberg's work is that she inspires young people, especially girls, to begin Fridays for Future strikes in their own communities. In the United States, climate activist Xiye Bastida proclaims that "[W]herever you are, the climate crisis is affecting everyone, everywhere."45 In South Africa, seventeenyear-old Ayakha Melithafa advocates for more people of color becoming involved in fighting climate change and even represented South Africa at the United Nations Convention on the Rights of a Child.⁴⁶ There are dozens of other Greta Thunbergs in dozens of other nations, demonstrating the confidence Thunberg has given young women to demand better protection for their futures. Finally, another important result of Thunberg's work is that politicians are beginning to feel the pressure from the Fridays for Future movement. Michael Gove, British parliamentarian and environmental secretary, admitted to Thunberg that he felt guilty after she gave a speech in London. Gove said to Thunberg, "[W]hen I listened to you, I felt great admiration, but also

⁴³ Charlotte Alter, Suyin Haynes, and Justin Worland, "Time 2019 Person of the Year: Greta Thunberg," TIME, 23 Dec. 2019.

⁴⁴ Aylin Woodward, "Greta Thunberg Turns 17 Today. Here's How She Started a Global Climate Movement in Just 18 Months," Business Insider, 3 Jan. 2020.

⁴⁵ Marlene Cimons, "Meet Xiye Bastida, America's Greta Thunberg," *Peril & Promise*, 19 Sep. 2019.

⁴⁶ Tessa Knight, "Cape Town teen climate activist Ayakha Melithafa takes drought to the UN," Maverick Citizen, 26 Sep. 2019.

responsibility and guilt. I am of your parents' generation, and I recognise that we haven't done nearly enough to address climate change and the broader environmental crisis that we helped to create."⁴⁷ While Thunberg's ultimate goal of halting climate emissions remains unmet, she has ignited a global call for action that the next generation will heed for years to come.

Where Do We Go From Here?

These three women have had an incredible influence on the modern environmental revolution, with their impacts extending far beyond their individual movements and home countries. Rachel Carson ignited the environmental movement in the United States, and her book Silent Spring managed to expose dozens of destructive practices while constantly being criticized and discredited. Wangari Maathai empowered women in Kenya and around the world to take environmental action into their own hands, and through the Greenbelt Movement made it possible for people to benefit from caring for their environment. Greta Thunberg inspired millions of students and young women to speak up for themselves and demand action from their governments to ensure that their futures are not threatened by environmental collapse. The work of these women began and contributed to a revolution that affects every person on Earth.

In history, Carson, Maathai, and Thunberg will be remembered in one of two ways. They will be known for being revolutionaries that motivated humanity to stop destroying our environment, or for being three alarm calls that went unheeded. As environmental degradation and climate change rapidly destroy our planet, it is up to us to decide what to do. We can ignore their actions and face irreversible environmental degradation, or we can change our ways to protect the one Earth we all share. These

⁴⁷ Jonathan Watts, "The Greta Thunberg Effect: At Last, MPs Focus on Climate Change," *The Guardian*, 2020.

women are part of the environmental revolution's beginning, and their true impact can only be measured at the end.

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