INTRODUCTION

What is disposal but production's counterpart? Each spent television travels a maze of hands, trucks, and channels before coming to rest. Along the way, it might be furnace-heated or stripped for parts. Week-old peppers are consigned to the dumpster. Meanwhile, back at the delivery warehouse, new inventory files into place. Our waste management systems wreak financial and environmental havoc, but they also keep us from drowning in our own shit.

It's no wonder that similar approaches have been dreamt up for CO_2, the planet-warming gas. With CO_2 disposal, the gas is disposed of like waste into the ocean or deep underground. It promises to halt, or even reverse, CO_2 emissions without halting the use of fossil fuels. Its supporters insist that the infrastructural build-out is just a few years away.

Yet we find blueprints for CO_2 disposal dating back more than thirty years in the studies of Italian physicist Cesare Marchetti and in Clinton Era reports to the US Office of Fossil Energy. We find that its history can be pieced together from conference proceedings, newspaper articles, and international treaty amendments. Then, as now, CO_2 disposal was compatible with continued social domination by the ruling class and an instrumentalist view of the environment. Likewise then, as now, CO_2 disposal faced resistance from distrustful communities.

My interest in CO_2 disposal was catalyzed by several observations in my career as a climate and sustainability professional. What struck me first was the immense scale at which CO_2 disposal occurs in computer simulations. These simulations are intended to guide policy, and many of them depict more than ten billion tons of CO_2 disposal a year by 2050.[1] What struck me next was the irony of invoking pipelines—a common element of CO_2 disposal—to solve the climate crisis: pipelines being a vehicle for land theft and water pollution, as well as carbon-dense fuel. What converted my interest to an obsession was learning that certain types of CO_2 disposal were *illegal under international law until energy industry proponents, who viewed this as hardly an inconvenience, decided to revise the law.*

As I began collecting evidence, the story started to unfold. The London Convention was opened for signature in 1972 and became the global framework for the prevention of ocean dumping in 1975. Decades later, the framework would be fought over and transformed due to how it restricted CO_2 disposal. Working groups debated whether CO_2 should qualify as waste. Competing agencies dedicated entire reports to ensuring that "international legal obstacles associated with global CCS [carbon capture and storage] deployment be removed."[2] Images flowed from my head to my hand to the pages I kept as evidence: an oil rig, a diplomatic session, a forest fire. I arranged the evidence into a rough timeline, and it became the London Convention Drawings (p. 22–42).

I learned that MIT hosted an event called the Third International Conference on Carbon Dioxide Removal in 1996. More than 250 delegates from twenty-six countries attended. There was an extensive program of talks, panels, and poster sessions exploring CO_2 disposal. Toward the end of the conference, three "Greenman [sic] Awards" were issued for outstanding research.

I thought the Green Man was a surprising choice of motif. Visually striking and mysterious, the Green Man is a face sprouting leaves. It dates back more than a thousand years and has been found all over the

world, but it is most commonly observed in medieval European architecture. MIT's Greenman Awards included text explaining that the motif symbolizes "the mysteries of creativity, compassion, healing, new beginnings, and especially our connection with nature and the power of humankind working together with nature."[3] Yet some Green Man enthusiasts have argued against this popular interpretation. They insist that the Green Man is actually a symbol of wickedness and ruin.[4] I found this amusing because techno-solutions like CO_2 disposal have been the subject of similar disputes.

My collection of evidence grew to include studies with names like "Ocean Systems for Managing the Global Carbon Cycle" and "How To Solve the CO_2 Problem Without Tears." I combed through them for weeks and became familiar with their techno-economic models. I set them against news clippings. Somehow, the longer I looked at them, the more clearly I saw the Green Man's contorted face shining through. It is captured like an apparition in the Green Man drawing series (p. 4–12).

I became convinced that CO_2 disposal was never a particularly sensible answer to rising emissions. For decades, it was used by governments and corporations as an excuse for inaction. Policies to conserve energy and reduce fossil fuel production were obstructed, while CO_2 disposal projects were awarded billions in US federal support. Nevertheless, many of these projects failed due to high costs, legal obstacles, and grassroots activism. I wrote about the history of CO_2 disposal and the urgency of internationalist, anti-imperialist, and pro-worker climate change mitigation strategies in the essay "A New Plan to Capture Greenhouse Gas" (p. 14–20). My friend Ansar Fayyazuddin has written about similar topics, so we began exchanging ideas. One of our conversations is transcribed at the end of this book (p. 44–50).

There are two arguments in favor of CO_2 disposal that I find compelling but also somewhat misleading. First, that CO_2 disposal could enable countries like the United States to go further in addressing their historic responsibility for the climate crisis than would be possible with emissions reductions alone.[5] Second, that CO_2 disposal could be used as a back-up measure in case other plans to reduce emissions fall short.[6] Both arguments view CO_2 disposal as a complement–not a replacement–for plans to reduce emissions in the near-term. They are compelling because countries in the Global North indeed owe humanity a tremendous amount for causing the climate crisis, and the world indeed faces an awful amount of risk. However, I feel they are also too hypothetical, given that oil and gas production is still climbing, and too ambiguous about the importance of shifting power.

I believe it's more important than ever to fight for near-term action. There is no shortage of climate policies that are ready to be enacted but needing grassroots support. Lifestyle decisions–especially flying less–are also impactful. Yet I also believe that we need to build new institutions that are fair and just by design. Such institutions might be capable of CO_2 disposal in small amounts to the benefit of society, but I feel that current institutions are not.

CO_2 disposal is more than technology. It is infrastructure, and it is history. It is symbolic. In the eyes of critics, it is fantasy. I cannot express all it is in words, nor in artwork, but I hope the combination of both sparks fascination and discovery.