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A Wide-Angle View

THE BARE BONES: THE SITUATION NOW AND OUR LIKELY FUTURES

Our planet is suffering a crisis that is both catastrophic and unprecedented.

The catastrophe is present all around us. We can measure it, and we can experience it. Even if we begin with a limited focus on global warming, the aspect of the crisis that has received the most attention, we can find plenty of strands that draw our attention to a whole host of other problems that implicate not only how we produce our energy, but also how we feed ourselves, how we are governed, and how we create and share wealth. Following these strands, even in the condensed summary I am about to provide, means dealing with plenty of ugly, depressing facts. Nonetheless, taking in the scope of the problem is necessary for looking at the solutions, and ultimately, that is what this book is about.

As atmospheric carbon dioxide has increased from 250 to 418 parts per million since the nineteenth century, the average surface temperature has gone up by almost 1°C and it is still rising. In a complex system, such a huge change does not mean a smooth, gradual warming, but a major outbreak in turbulence as shock waves ripple all throughout the interconnected systems of the planet. These shock waves include more violent storms,¹ heavier rainfall, more deadly flooding and catastrophic landslides; and on the other hand more intense droughts and widespread wildfires. The west coast of North America, after experiencing its most intense drought in 1,200 years, went up in flames in the summer of 2020, with fire intensity in California and Oregon many times higher than in any year of the preceding two decades.² Even the Amazon rainforest is burning.

Increasing temperatures and drought contribute to widespread desertification. When water supplies are disrupted through mining or commercial irrigation and soil is destroyed by deforestation, overgrazing, or commercial monocrop farming, deserts expand. The Gobi Desert is swallowing up over 3,000 km² of land every year, and a half a million

km² of arable land have disappeared in the Sahel in the last fifty years. About 40 percent of the continental US is experiencing desertification, while in Mexico, Paraguay, and Argentina more than half the territory is threatened.³

Still other shocks come in the form of deadly heat waves. In temperate and even arctic regions, temperatures have exceeded 40°C for extended periods of time, while new records have been set in Death Valley (54.4°C in 2020) and the Sahara (51.3°C in 2018). Heat waves have increased in frequency by 80 percent due to anthropogenic climate change.⁴

The oceans are acidifying and losing oxygen, threatening nearly all marine species with decline or extinction. Growing swathes of the Arctic are becoming ice free every summer, leading to a loss of habitat and also creating a feedback loop: with less of the planet's surface covered in highly reflective ice, more solar radiation is absorbed, causing even more warming.

The interlinked problems of severe warming, pollution, noxious infrastructures, and extractive industries are causing mass die-offs. One million species are at risk of extinction and animal populations across the board have declined by 68 percent since 1970.⁵ Extinctions are currently happening 1,000 times faster than the normal or background rate.

Given that a habitat is a web of mutually beneficial relationships between living species and a host of geological entities such as bodies of water, soil, and air, it is no surprise that entire habitats are disappearing. On a geological timeline, habitats are always changing. Throughout the history of our planet, habitat loss from the perspective of one species is usually habitat gain from the perspective of another species. And though we are right to associate water with life, even the spread of deserts has often been a shift from one kind of biodiversity to another kind.

However, at an accelerating pace over the last century, we have witnessed a wholly different kind of change that can be described as an objective loss of habitat for all living beings: the proliferation of wastelands or dead zones. These are places that, in quantitative terms, have low biodiversity and low biomass. In other words, hardly anything lives there, as though an entire area has been removed from the living world.

A prime example are oceanic dead zones, large areas of an ocean or sea that become depleted in oxygen and subsequently devoid of most forms of life. The dead zones proliferating today are caused by chemicals from industrial agricultural saturating a watershed and causing algae blooms that consume all the oxygen. There are currently over 400 such dead

zones worldwide, including in the Chesapeake Bay, off the coast of Louisiana, in the northern Adriatic, the Kattegat strait between the Baltic Sea and the North Sea, and in the coastal waters of China, Japan, and New Zealand.⁶

Another example of a wasteland, a former habitat that our society has made unsuitable for life, are the toxic sites poisoned by a wide variety of industrial practices. Manufacturing—especially in the chemical and electronics industries—mining, and energy production result in huge quantities of toxic waste that is lethal to humans and other life forms. Much of this pollution stays in the environment a very long time, with examples including the radioactive byproducts of nuclear energy, with a half-life of billions of years, or synthetic chemicals like PFOA, a carcinogen used in Teflon that is so stable it is all but indestructible.

These toxins are concentrated at the point of production or intentionally stored in a waste dump. With a cavalier mentality, such sacrifice zones are justified as the necessary price for people to have air fresheners or new cell phones, though in truth no sacrifice zone is perfectly isolated, with carcinogens and other poisons leaking off into the water, soil, or air for the foreseeable future. In other instances, however, poisonous chemicals are intentionally pumped into the environment as widely as possible, as is the case of the 2.5 million tons of pesticides used for industrial agriculture every year.⁷

In the United States, highly contaminated industrial wastelands are placed within the Superfund system, which lists 40,000 toxic sites spread across the country. Fifty percent of the population of New Jersey live within three miles of a Superfund site.⁸ Clean-up is paid for by consumers and taxpayers; however, most sites are left to slowly leak out with no clean-up whatsoever.

The impact and meaning of a toxic site are impossible to convey quantitatively. In order to understand just what is being done to the planet, perhaps we need to get a little more visual. The most devastated places I have ever seen were an open pit copper mine in the Atacama Desert and Sierra Minera in Cartagena, Spain.

The Atacama Desert is the driest place on earth. Walking across the face of it feels like being on the surface of another planet. Nonetheless, there are quite a few creatures that live in that seemingly inhospitable place, and the longer you spend there, the more you pay attention, the more you realize how alive it really is, even before you discover the

lomas, or fog oases that survive by drawing moisture out of the air, and the forests of *chañar*, trees kept alive by groundwater.

The open pit copper mines, operated by multinationals or by the state-owned company Codelco, are nothing like that. The one I saw was like a gaping wound in the earth, too big and brutal to be believed. It was unsettling the way the mine, clearly excavated without any concern for the harm it entailed, was nonetheless dug out in a semblance of geometric perfection—a terraced abyss of concentric rings—like some deeply unhappy creature’s idea of beauty. The devastation of the habitat, the scars of heavy machinery, countless tons of explosives, and toxic run-off had resulted in a landscape hostile to life itself. And the death it caused went well beyond the gigantic hole in the ground, nearly a kilometer deep and several kilometers across. All the water stolen by the industry has irrevocably depleted the water table that fragile desert ecosystems depend on. Many once lush forests in desert oases are now graveyards of desiccated trees.

The Sierra Minera of Cartagena has been mined for 2,500 years, since the times of the Phoenicians and Carthaginians. In the mid-twentieth century, multinational mining companies switched to the more profitable open pit mining system. Now it looks like Mordor, which, incidentally, was based on the artillery blasted trenches Tolkien witnessed in World War I, as well as the slag heaps and smoke-choked landscape of the coal-mining and industrial regions of the English Midlands, a comparison that suggests an affinity between total warfare and industrial mining. Denuded hills carved out in unnatural shapes, a long interplay of excavations, the roads flattened to carry the minerals away, and then erosion as mud and rock gave way to wind and rain, and then baked dry in the sun. And everywhere, pools of blood-red goo giving off noxious smells. Countless children in nearby villages are experiencing severe health problems from leftover toxins, years after the mines have been closed.⁹

Next to the toxic sites produced by mining and industry, one of the most common types of wasteland presents quite the contrast. Though they are defining features of landscapes in the Global North, few people would think to include them as examples of a wasteland. In fact, they actually masquerade as symbols of fertility, prosperity, and lush, green bounty in the bourgeois imaginary. I’m talking about the two bookends of capitalist suburbia: green lawns and parking lots. There are over 160,000 km² of lawn in the US alone, maintained to the tune of billions of dollars of chemical products, water, and gasoline-powered lawnmow-

ers, making it the number one “crop” in the entire country.¹⁰ This huge expanse, twice as large as all of Ireland, is home to a tiny number of grass species, which are cut short before they can feed any pollinators, and serves as a meager habitat for a small number of bugs. It is, in other words, far more desolate than a desert.

Parking lots and asphalted areas more generally are the companion to the artificially green residential subdivisions. To fulfill their dream of consumer bliss, all those isolated houses with parceled lawns require individualized transportation—cars—and abundant places to leave those cars while shopping and working. (Mortgaged) home ownership, consumerism, and car culture form the normative idea of success and happiness at the center of American capitalism, an idea that has globalized considerably over the past decades. Between roads and parking lots, 158,000 km² across the US are covered in pavement. This is almost as much land as is dedicated to wheat farming.¹¹ In the UK, it’s around 8,000 km². Aside from constituting a dead zone hostile to nearly all forms of life, parking lots and roads are a source of water pollution and urban heating.

The destruction of the earth’s living communities has a major impact on human life as well. One study found that in 2018, one in every five deaths around the world was caused by fossil fuels.¹² The World Health Organization estimates that between 2030 and 2050 climate change will cause an additional 250,000 deaths every year, though this only counts excess deaths (deaths in excess of rates previously considered normal) from more severe heat waves, loss of access to clean water due to climate change, malnutrition caused by drought, and the geographical spread of the malaria zone.¹³ The already alarming figure of 2.5 million people killed every decade by the energy, agriculture, and manufacturing industries does not take into account the complex way that different aspects of the ecological crisis are interrelated, beyond just climate.

Take all the deaths caused by contaminated drinking water. Deforestation causes erosion, which, together with the climate trend towards more violent storms, increases flooding, one of the principal ways drinking water is contaminated. And the shift from localized subsistence agriculture to commercial cash crop production (the “Green Revolution” encouraged by leading governments, corporations, and institutions the world over) multiplies the wasteful use of water, as well as poisonous run-off. Contamination of water is also caused by mining, waste dumps, and urbanization. The result is that 500,000 small children are

killed every year.¹⁴ While only a small portion of those deaths are directly attributable to global warming, access to clean water is undeniably an ecological issue, a question of how we treat our environment, and what kind of economic activities we promote to “make a living,” as inappropriate as that phrase often is.

What about food production? How we feed ourselves is one of the ways we most intensively interact with the rest of the living world. Every year, human societies produce a surplus of food, yet 3.1 million people die from malnutrition and under-nutrition. Even in wealthy countries, millions of poor and racialized people are put at risk of diabetes and heart disease because they live in “food deserts,” neighborhoods where it is impossible to obtain healthy, fresh food.

Air pollution, caused largely by cars, energy production, and manufacturing, was already killing 8.8 million people a year in 2015.¹⁵ A study in *The Lancet* found 1.8 million deaths a year caused by water pollution and 1 million deaths a year caused by pollution in the workplace.¹⁶

Our society produces a tremendous amount of waste, which is bad news for the people—usually poor people—who have to live close to it. Living near a landfill substantially increases the risk of a range of cancers and respiratory diseases.¹⁷ And none of these statistics do justice to the millions of people who are sickened or disabled for life, the people who take care of them, and all the people who have to carry on after losing loved ones.

Because our society is making ever larger areas of the planet unlivable, millions of people are forced to pull up their roots and migrate in search of a more secure place to live. Ecological refugees face the trauma of losing their homes, the racist abuse they endure throughout their migration, and—if they do not join the tens of thousands who die in the Mediterranean or the Sonoran Desert, victims of border regimes that are designed to kill—extreme marginalization when they arrive in the countries that have profited the most off their ecological woes.

In just the first half of 2019, 7 million people were internally displaced (within their home countries) by extreme weather events, which is two times more than the number displaced by violent conflicts.¹⁸ The Intergovernmental Panel on Climate Change (IPCC) has estimated that by 2050, there will be 150 million “environmental migrants” or climate refugees.¹⁹

In other words, our society’s destruction of the earth is very much a suicidal activity and is already one of the greatest causes of death and suffering that humans face.

No one knows what the future will look like, not even the next hundred years. The exercise of modeling likely climate scenarios is problematic because it often obscures the death and destruction that is already taking place. Bandyng about different projections of temperature and sea level rise expected by 2050 to decide how urgently we must take action is to implicitly promote the idea that what is going on right now is acceptable, that the present is some gold standard we should try to preserve as closely as possible. The normalization of all of this death and suffering has much to do with who is profiting off the ecological crisis.

It can be useful to guide our efforts to look at the likely changes we may face, but I want to reject any notion of normalizing *only* 10 million human deaths a year or *only* a 10 percent extinction event as some kind of victory.

In the mainstream conversation around climate change, the most optimistic proposal suggests achieving carbon neutral economies by 2050, which supposedly could keep the temperature from rising more than 2°C. What changes could we expect to see in that most optimistic scenario?

The millions of yearly deaths discussed above would increase as clean water becomes scarcer, droughts and extreme weather events multiply, and desertification spreads. Somewhere around 25 percent of species could go extinct.²⁰ To name just one of the many precious ecosystems that will suffer collapse, 99 percent of coral reefs will die off, leading to the loss of 25 percent of marine species and the livelihoods of 500 million people.²¹

It will be a world rocked by extreme, deadly heat waves breaking all previous records. The land area subjected to extreme summer heat will quadruple.²² By 2050, the land that 150 million people live on will be reclaimed by the sea, and the land that 300 million people live on will be below the level of annual coastal floods, destroying coastal cities around the world.²³ Further rises in sea level would probably be locked in over the following centuries.

This is by no means a rosy picture. Nonetheless, governments, NGOs, and scientific institutions around the world are banking on this scenario as an acceptable level of collateral damage. It is no wonder that the breathless chorus of mainstream voices cheerleading the optimistic goal of going “carbon neutral by 2050” rarely discuss the extreme suffering and devastation that actually accompany their chosen timeline. City governments around the world run web pages touting their “Smart City”

plans for public transportation, ride shares, and green energy. Think tanks and NGOs try to whip up enthusiasm for the few politicians who have actually committed to the goal. And barely any of them mention what that rosy scenario means for the planet and its people.

Yet it's even worse than that. There is no guarantee that going carbon neutral by 2050 will actually function as the meager containment wall it is being sold as. Scientific predictions relating to climate have consistently underestimated the intensity and timeline of projected changes.²⁴ To name just one example, a summer heatwave in Alaska in 2019 led to a massive salmon die-off. The science director for a local watershed non-profit spoke about a climate model they had prepared just three years earlier, that included moderate and pessimistic scenarios. "2019 exceeded the value we expected for the worst-case scenario in 2069," she told the media.²⁵

Runaway warming might be caused by a number of feedback loops that are already reaching their tipping point. When the IPCC first introduced the concept of climate tipping points two decades ago, they believed that no such tipping point would be triggered shy of 5°C of warming. Now they recognize that many tipping points can be triggered with just one or two degrees of warming, and there is in fact evidence that some have already begun.²⁶ These include the collapse of ice sheets, which would substantially decrease the portion of the earth's surface that reflects solar radiation back into space. As the polar regions warm at an accelerated rate, arctic permafrost is beginning to thaw. This has the potential to release a huge amount of methane, a greenhouse gas roughly thirty times more potent than carbon dioxide. Boreal forests in Siberia and North America are also falling victim to warming through more frequent forest fires and insect plagues. The massive tree and soil die-off means the release of more CO₂.

The Amazon rainforest, currently home to one in ten species on the planet and absorbing 600 million metric tons of carbon a year,²⁷ is in danger of turning into a giant savanna, or even a desert. Droughts caused by warming, together with deforestation for commercial agriculture, work together to take their toll. The estimate is that when the Amazon loses between 20 and 40 percent of its forest cover, the entire ecosystem will collapse.²⁸

Warming in the oceans is causing the slowdown of Atlantic currents that are vital to the transfer of heat and nutrients that form the basis of marine ecosystems, as well as much of the planet's weather. This could

exacerbate droughts in Africa's Sahel region and in the Amazon, and would even disrupt the East Asian monsoon, which means the collapse of more habitats, and more suffering for humans and other forms of life.²⁹

The implication is that even if we stop all greenhouse gas emissions today, there may be natural processes under way that force a shift to a new dynamic equilibrium, a "hothouse" planet unlike anything nearly all species alive today have evolved to survive.

What might that look like? A 4.5°C rise in temperature could mean 50 percent of species would go extinct, and that's only in a short-term analysis.³⁰ By the end of the century, 1 billion people would be displaced and hundreds of millions would fall victim to famine. Fifty-five percent of the world's human population would suffer more than 20 days of lethal heat a year; it's more than a hundred days a year in the middle latitudes. Between scorching conditions and the collapse of insect populations, crop yields could decrease by a fifth or more.³¹ It's no wonder that even the World Bank says that 4°C of warming might be "beyond adaptation" for human civilization.³² The hot period could easily last 200,000 years.³³

As we shall see, the experts cannot solve this problem, and they have already wasted valuable decades. The subtext to the official conversation belies a staggering apathy. *We will not be the ones to die. All those who disappear, human and otherwise, are an acceptable loss. We will come out on top.*

For many people—especially among policy makers and experts—there is a truth to that mindset, at least for now. The millions of human deaths caused by the ecological crisis every year are not shared equally. Most of them occur in the Global South.

However, while the semantic distinction between Global North and Global South is useful, many of the same processes occur in both places; the world is not as divided as those on top want to believe. For example, though the 60,000 people killed on average every year by extreme weather events mostly live in the Global South, so-called wealthy countries are not immune. The 2003 heat wave in Europe, for example, led to 70,000 excess deaths. Needless to say, few of them were living in the houses of the wealthy, with their high ceilings and air conditioning. And while 92 percent of pollution-related deaths occur in low- and middle-income countries, 800,000 people die every year from air pollution in Europe and 155,000 die every year in the US.³⁴ Still, even these deaths are unevenly distributed. Not many rich people live near industrial parks and toxic waste dumps.

In settler states like the US, Canada, Australia, and Argentina, class is largely inscribed by the historical legacy of colonialism, with the descendants of enslaved Africans and Indigenous peoples subjected to conditions that the global distribution of wealth and power usually reserves for the Global South. When Hurricane Katrina descended on New Orleans in 2005, killing 1,800 people, anyone paying attention saw that the way infrastructure was built in poor and Black neighborhoods left people vulnerable, whereas infrastructure in wealthy white neighborhoods was designed to protect people. And contrary to the spontaneous initiatives of mutual aid that constituted the primary life saver, with neighbors helping neighbors survive the storm, and ex-Black Panthers and anarchists setting up the first on-site clinic,³⁵ government responses focused on shooting neighbors trying to take clean water or diapers from supermarkets, and then making sure that only middle-class and wealthy residents could return to the city, “gentrification by God.” As Neil Smith wrote in the aftermath of that storm, “there is no such thing as a natural disaster.”³⁶ The disaster was produced and directed by economic and political structures.

Those who currently hold power in our society, those who have failed us tragically, do not have our interests at heart, nor those of the planet. And in fact, our interests and the interests of the earth are one and the same. We do not know how disastrous these next decades will be. But there is one certainty that can give us hope and courage: there is not a single scenario in which taking action, in defense of ourselves, in defense of one another, in defense of all the interconnected life on this planet, will not make things better.

IN THE BIOSPHERE EVERYTHING IS CONNECTED:
THE ECOLOGICAL CRISIS BEYOND CARBON

The default assumption in our society has been that nature is mechanical rather than communicative. For something to be communicative, it has to have subjectivity, and if it has subjectivity it becomes harder to justify treating it like our personal toilet or gold mine.

Although there have been extraordinary biologists and other experts who have seen in the living world the same mutuality and communicativity that others see, the history of the scientific method from Francis Bacon to the present has in other ways been a process of trained scientists getting dragged kicking and screaming, sometimes by their own

day as I had during the course of the preceding winter. The only way to describe it is that they were celebrating.

Proponents of the default assumptions of Western thinking will make the unsurprising claim that this is anthropomorphizing, projecting human characteristics on non-humans. Such an unfortunate coincidence that we have no term for the inverse flaw, assuming that only humans possess what are actually widespread traits. In recent decades, biologists have rediscovered what others never forgot: that other living beings think, feel, learn, play, and can be sad or happy. Ritual, culture, intergenerational learning, and mourning are also being documented in a growing body of research, so we may as well get ahead of the curve and speak frankly about celebration, too.³⁷

It gave me great joy to discover this sudden change, shared across multiple species of birds by some unknown consensus. And I mean discovery not in the sense of knowledge that I produced, but knowledge that was shared with me when I had the humility or good sense to respectfully approach another community of living beings and see what they had to teach me. That joy was a sort of non-instrumental knowledge that for me was the most important thing, even though it is a type of knowledge our society places a low premium on. It was accompanied by instrumental forms of knowledge as well.

For example, the birds' declaration of spring was not merely a subjective, culturally inscribed proclamation. Their affirmation also has about it something of the *cold, hard fact*. Every year so far, after the day marking their distinct change in behavior, the temperature has gone up and the nightly frosts have ended. The fact that the birds are making a weather prediction with at least some degree of accuracy, and freely sharing this knowledge with anyone who cares for it, is relevant to me because I keep a garden. If I plant my tomatoes before the last frost, no more tomatoes.

And this knowledge takes on a new level of significance as we follow it through time. So far, the day has tended to come earlier year after year. In 2020, it came a half month earlier than 2019, with the birds already conducting their ostensible celebration in mid-January. When we pay attention to the world around us, we can see the signs of climate change, and a great deal more.

I live in Catalunya. Starting in March, we experienced almost two months of strict lockdown. These conditions led to a remarkable improvement in air quality due to the mass reduction in chemical and noise pollution. After all, car traffic had come to an almost absolute halt.