The world’s first known corporation was a Swedish mining company called Stora Kopparberg. The founding certificate of the company, dated 1288, is the earliest documented evidence of a profit-making corporation. It was established by German merchants as a means of investing in a copper mine in the town of Falun and it was a roaring success. In the seventeenth century, two thirds of European copper production took place in Falun, and the mine remained an important site for copper production until it closed in the 1990s. The site of the Falun mine is now on the UNESCO World Heritage list. The idea that the world’s first corporation was born in Sweden has been a matter of national pride over the years. Stora Kopparberg’s founding documents were part of the Swedish exhibition at the 1964 World Fair in New York and are now held in the National Archive in Stockholm. Remarkably, the corporation still exists today. In its present-day guise, Stora Kopparberg (now known as Stora Enso) is the second largest paper producer in the world and is based in Helsinki.
The mine has left an enduring mark on its environment. Scientific studies of the surrounding areas reveal that both land and watercourses have been permanently damaged. One study by Swedish researchers concluded that the lakes are acidified and unlikely to recover, and that extremely high metal concentrations in the soil indicate very long-lasting and perhaps irreversible environmental damage. As we shall see in subsequent chapters, in recent years, Stora Enso has also been accused of causing significant damage to biodiversity in forests across the world. And so the legacy continues. Yet at no point in its long history has Stora Kopparberg had to face questions about its environmental record, let alone pay the costs of a clean-up or compensation for any damage it has caused. Indeed, in its modern incarnation, Stora Enso seems to have managed to escape any association with the Falun mine or its legacy. As this book will show, this is the point of the corporation. It enables investors to walk away from the damage caused by their activities without ever having to face the consequences.

The Stora story will unfold in more detail throughout this book. As we shall discover, the story of the world’s first profit-making corporation symbolises the fundamental problem that this book seeks to confront: no matter how much destruction corporations cause to us and our environment, they are designed to survive and thrive in perpetuity.

This book is about ecocide, the deliberate destruction of our natural environment. Ecocide as a term cap-
tasures the entirety of the threats to the sustainability of the planet: climate change, the ravaging of ecosystems, the eradication of species and the pollution of air, land and water. The book will argue that it is impossible to avert ecocide as long as corporations remain in control of the industrial processes that are wrecking our world.

**Capitalism, ecocide and the corporation**

As the book progresses, we will discover exactly why the contemporary form of the profit-making corporation is probably as close as we could get to a model organisation that is capable of destroying the world. If this sounds like a description of SPECTRE, the evil organisation from the Bond films, or Marvel’s A.I.M., then in many ways the truth is more terrifying than fiction. The book will show how the profit-making corporation, the form of organisation that dominates contemporary capitalism, evolved into the deadliest human invention – an invention that has accelerated the capacity for the destruction of the planet in ways its creators could never have imagined.

There is a critique of capitalism at the core of the movement against climate change led by groups like Climate Camp, Extinction Rebellion and in the school students’ movement, FridaysforFuture. On the Global Climate Strike on 20 September 2019, some of the most used slogans directed attention at capitalism: “System change not climate change!”; “Capitalism kills our
future!”; and “el capitalismo mata el planeta!” This growing movement is putting the way that the capitalist system organises our economy, and the way that it makes and consumes things, to the forefront of the struggle against climate change. A nascent movement against climate change within the trade union movement is also driven by a critique of capitalism.4

This movement is absolutely right in its critique. Understanding how capitalism works is a crucial starting point for understanding the driving forces behind the eco-crisis. Capitalism as a system is based on perpetual growth and the continual reproduction of private wealth. And for reasons explored in this book, in the capitalist system, the protection of the environment is always subordinated to the accumulation of profit for a privileged elite.

The relationship between capitalism and ecocide becomes clear when we analyse the logics and the practices of capital. Indeed, the book will show that the corporation – the mechanism that capital uses to reproduce itself – was designed in a way that virtually guarantees ecocide. Understanding the capitalist corporation and then doing something about it must therefore be at the centre of the struggle to control climate change and the ecological crisis.

Ecocide is a term that is increasingly being used in the renewed protest movement against climate change. Indeed, the proposal to make ecocide a crime has become one of the demands of Extinction Rebellion;5 it has become a topic of interest for academic lawyers
and criminologists, and has influenced criminal law in a small number of states.

The profit-making corporation was at the heart of the political debates that gave birth to the concept of “ecocide” almost half a century ago. In 1972 Olof Palme, the Prime Minister of Sweden, used the concept to describe the use of napalm and the defoliant Agent Orange during the Vietnam War. Chemical warfare in Vietnam was being used to slaughter people in enemy territory, destroy their villages and wipe out forests and crops. Palme, along with other world leaders including Indian Prime Minister Indira Gandhi called for ecocide to be an international crime and, subsequently, international lawyer Richard Falk published a draft Ecocide Convention directly in response to those calls. Though it was never adopted, the Convention provided the legal basis for outlawing the use of chemical substances to clear people from the land in wartime or peacetime.

It is estimated that 4.8 million people were directly sprayed with Agent Orange and around 400,000 people died immediately. The Vietnamese Red Cross estimates that a further 1 million people were disabled or suffered severe health problems, and Vietnamese babies are still being born today with congenital disorders caused by the persistence of the chemical in the biosphere. The chemical was sprayed on almost a fifth of the land mass of Vietnam, and tree stocks and animal life are still severely depleted in those areas and unlikely to recover.
Nine different private chemical companies, led by Monsanto, had been given the job of developing and manufacturing Agent Orange for the US military.\textsuperscript{13} There have been a number of legal actions taken against those companies, specifically, Dow, Monsanto and Diamond Shamrock. Those companies have, like the US military, continued to deny any relationship between health effects on claimants and their chemicals. Most of the class actions have been settled out of court. The US government continues to deny the effects of Agent Orange on the Vietnamese people and the persistent poisoning of land and water supplies.\textsuperscript{14}

The fact that corporations played a central role in the Vietnamese ecocide is not peripheral or coincidental; it cannot be reduced to a footnote in history. As we shall discover in the book, corporations are playing the central role in the global ecocide that we face now.

It is important to be clear about what is meant by the term “corporation”. It is used in this book to mean any profit-making organisation that is “incorporated” as an entity that is separate from its shareholders or investors. This means any for-profit organisation that has the status of a separate “person” in law (something we will explore in some detail in chapter 1 of this book) from the people that have a financial stake in it either as owners of shareholders.\textsuperscript{15}

Most of the world’s key commodities are owned and controlled by corporations.\textsuperscript{16} It is estimated that since 1965, 20 corporations have collectively produced 35\% of all fossil fuel emissions;\textsuperscript{17} since 1988, just
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100 have collectively produced 71% of all fossil fuel emissions. The biggest offenders are: ExxonMobil, Shell, BP and Chevron. Almost all of the plastic that is choking our oceans is produced by for-profit corporations. Greenpeace has listed the biggest offenders as Coca-Cola, PepsiCo, Nestlé, Danone, Mondelez International, Procter & Gamble, Unilever, Perfetti van Melle, Mars and Colgate-Palmolive. It is estimated that 60% of Coca-Cola’s packaging is single use plastic. Most ambient air pollution – the air pollution caused by particles released into the environment when fuel is used or other things are burned – is produced by profit-making corporations. Ambient air pollution is a major killer, contributing to 4.2 million early deaths every year. The deadliest chemicals in our water and air – such as pesticides and dioxins – are also produced almost entirely by profit-making corporations.

Perhaps the most systematic study of the influence of corporations in the global economy has been conducted by researchers at the Swiss Federal Institute of Technology in Zurich. The researchers analysed the ownership patterns of over 37 million corporations and investors worldwide to map exactly who owns what. This mapping exercise revealed that 737 corporations control about 80% of the wealth; and 147 corporations controlled about 40%. In other words, most of the world’s wealth is controlled by a relatively small network of elite corporations. And since this seminal study was conducted, the market concentration of corporate structures has increased significantly.
This small network of elite corporations are the key agents in climate change and the eco-crisis. It is this small network that is killing us.

**Conspicuous by its absence**

Yet the central role played by the corporate economy in this eco-crisis has been conspicuously absent from the public debate. The role that the corporation plays in this looming catastrophe is almost always ignored in the most significant scientific reports on climate change and global pollution. Pick up any of the reports by the UN or the international financial institutions, or indeed any of the global health organisations, and you will not see any discussion of the corporation’s role in the growing environmental catastrophe.

The Paris Agreement,\(^{25}\) for example, includes no acknowledgement of the key role that profit-making corporations play in climate change. It fails to mention the words “corporation”, “company”, “profit”, or indeed make any reference to the key roles played by corporate management or corporate investors in the text. Precisely the same can be said about all of the key manuals, reports and agreements on this subject that are produced by international organisations. The detailed manual supporting the Kyoto Protocol included no reference to those terms, with one exception. A solitary footnote asserts that “an entity can be a company, plant or broker authorized by a Party to
hold or trade in emissions”. The Kyoto Protocol therefore only mentions corporations when it asserts their role as participants in the new system of emissions trading that was established by the Treaty.26

Other key climate change reports mention corporations only in passing. When they are mentioned, it is only in the context of their positive contribution to policy or carbon-reduction strategies, such as in the Intergovernmental Panel on Climate Change’s seminal Special Report on Global Warming of 1.5°C.27 We can say the same thing about other key ‘official’ documents on the eco-crisis, including the World Bank’s Climate Change Action Plan,28 the World Health Organization’s Reducing Global Health Risks Through the Mitigation of Short-lived Climate Pollutants29 and the International Agency for Research on Cancer’s Air Pollution and Cancer.30

Any efforts to reduce climate change are bound to fail unless we confront the reality that the vast majority of the major threats to our environment are currently produced and controlled by profit-making corporations. Yet in the international treaties, and in many of the radical proposals to transform our economy, corporations are either envisaged as a solution to the crisis, or are ignored completely.

We can make a similar observation about the agenda that has emerged to promote a “green new deal” and a “green industrial revolution”. Take, for example, the proposal presented by the US politician Alexandria Ocasio-Cortez, setting out how the
US government could create a green new deal.\textsuperscript{31} The proposal is extensive and radical, and it sets out a blueprint for the transformation of the economy. Yet it stops short of making any proposals for the reform of the corporate economy. Of course, the context is important here. This proposal was tabled in the second legislature of the world’s leading capitalist nation, the US House of Representatives. Because of this, Ocasio-Cortez is understandably being strategic about her targets.

In other versions of the green new deal, developed in places that do not need to be so politically cautious or strategic, we still find a lack of discussion about the corporation as a problem that needs to be confronted head-on. In the international trade union movement, the adoption of green new deal proposals tend to be based on the idea that a just transition to a carbon neutral economy can be achieved \textit{in partnership} with corporations. Environmental historian Stefania Barca has shown that the International Trade Union Confederation and the International Labour Organisation promote a sustainable version of capitalism that can be achieved through “dialogue and democratic consultation” with “social partners and stakeholders”.\textsuperscript{32} Through this process, corporations are persuaded to come to their senses and change their ways. In short, the dominant approach that is currently present in trade union demands for a green new deal would mean the continuation of a model of capitalism which retains the profit-making corpora-
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tion as its main protagonist. This approach will not be enough to protect workers in supply chains with global corporations at the head. There is powerful evidence that the intensification of labour in agricultural supply chains, combined with rising global temperatures, has already given rise to deadly new occupational diseases.\footnote{33}

This book will argue that a viable green new deal will have to contend with the problem of corporate power head-on. New forms of organisation must replace rather than sit alongside profit-making, share-owned corporations, because, as this book will show, the latter are incapable of contributing to a sustainable economy.

After attending the UN General Assembly in September 2019, the anti-Apartheid leader, Archbishop Desmond Tutu, clearly disappointed by the lack of any discussion of the role of the corporate economy, demanded that corporations and financial institutions “must pull us back from the climate abyss”. The corporate sector must, he argued, “reinvent itself by gravitating to sustainable investment in both developed and developing markets”. If they don’t, he argued “activists must insist that they do it”.\footnote{34}

Beetles and monkeys

There must be executives and corporations who are prepared to reinvent the corporate sector presently, but as this book will argue, they are not likely to
change the tide. We now have a century’s worth of very detailed evidence that tells us exactly how corporate executives – and investors – respond to the discovery of very serious problems with their products. Unfortunately, this evidence does not allow us to draw very optimistic conclusions about the likelihood of the corporate sector reinventing itself.

The story of how tobacco executives distorted and denied evidence of the link between smoking and cancer is well known. Medical research linking smoking to lung cancer began to appear in the 1920s. In the early 1950s, as it became apparent that the mounting evidence could threaten its interests, the tobacco companies organised a major campaign to disrupt scientific research, and to lie about and distort medical evidence. Similarily, the mineral asbestos was known as “killer dust” in the nineteenth century and all of the main manufacturers systematically hid evidence of the death toll for more than a century.

We can observe precisely the same pattern in countless other industries. The Volkswagen “dieselgate” case which broke in 2015 is perhaps the best-known environmental scandal to hit the corporate sector in recent years. The case involved the use of software to fraudulently understate deadly NOx emissions from 11 million cars. The real level of NOx emissions in Volkswagen, Audi and Porsche cars was up to 40 times more than the test results showed, and research subsequently showed that this pollution led to around 1,200 premature deaths. It seems incredible now, but prior
to dieselgate, Volkswagen was regarded as an archetypal environmentally friendly company.\textsuperscript{39}

In terms of the sheer scale of the fraud, and the scale of the air pollution it produced, it is a case that revealed a lot about the way that corporate capitalism works. Two events that occurred either side of the scandal breaking are especially revealing. In 2014, the year before the dieselgate story broke, Volkswagen had commissioned a series of tests that involved placing 10 Java monkeys in small airtight chambers for four hours watching cartoons as they breathed in diesel fumes from a VW Beetle. Internal company documents revealed that similar tests had been conducted on human subjects.\textsuperscript{40} The Beetle was one of the cars fitted with a defeat device, and therefore would have produced misleading results. We do not know precisely the purpose of the research but we do know that the results would almost certainly have distorted the environmental and human toll of emissions.

One of the first things that Volkswagen did after the first news stories began to emerge in summer 2015 was commission its own engineers to test other brands.\textsuperscript{41} The company’s executives knew that one way of deflecting attention and mitigating the blame was to dish the dirt on the whole industry. Volkswagen put their research team on the job because they assumed something that the rest of us didn’t: the falsification of diesel emissions had been common practice across the industry for years. The aim was to prove that cheating was normal across the industry and therefore mitigate
Volkswagen’s guilt and reduce its exposure to litigation. Of course, its assumption was correct. As well as having been fitted to Volkswagen brands, we know now that “defeat” devices were used by Fiat Chrysler, Nissan, Renault, Mercedes and Mitsubishi amongst others. The car industry would require a much bigger book than this one just to summarise the extent to which all of the major manufacturers have covered up and distorted evidence of environmental and human harm over the years. The classic case study of corporate crime that is still used widely in business school classrooms is the example of the Ford Pinto. But in reality, examples like the Ford Pinto – in which known, potentially deadly, safety flaws were denied and covered up – happen so routinely in the industry they are barely noticed now. It is likely Volkswagen’s response to dieselgate will feature as a model case study in business school corporate social responsibility and marketing courses for years to come. Why? Because Volkswagen not only survived this crisis, but came out of it with restored revenues and a barely dented reputation.

Burying the bodies

The major oil companies have been manipulating the evidence of climate change for decades, at least since the 1970s. Exxon executives were presented with evidence by its own scientists in 1977 which estimated that “a doubling of the carbon dioxide concentration in the atmosphere would increase average global
temperatures by 2 to 3 degrees Celsius”. The company then embarked on an intensive programme of research that sampled CO₂ emissions and conducted rigorous climate modelling. In 1981, the research programme concluded: “An expanded R&D program does not appear to offer significantly increased benefits” and the research was quietly ditched. From the early 1990s onwards corporate funding by Exxon and by the Koch Family Foundations directly financed groups that attacked climate change science and policy solutions. This research sowed enough polarisation and doubt around climate change science to ensure that political recognition of the problem of climate change was significantly downplayed. Subsequently, environmental campaigners have discovered that the propaganda battle around climate change involved extensive covert surveillance and spying on them by Big Oil.

One of the first warning signs about climate change came to the world’s attention when scientists began to understand the effects of chlorofluorocarbons (CFCs), the chemicals used in a range of products including aerosols and fridges, air conditioning and all-purpose packaging and furniture products like Styrofoam. In 1974, two significant scientific studies demonstrated that a build-up of CFCs was responsible for depleting the ozone layer, essential for absorbing the sun’s ultraviolet radiation and cooling down the earth. Indeed, the studies concluded that the effects were most probably irreversible. It is unlikely that chemical companies manufacturing CFCs knew, or could have known, the
irreversible effects of their product before 1974. Yet, as soon as the findings were published, the US Chemical Manufacturers Association, led by the chemical company, DuPont (the main commercial developer of CFCs), initiated a research programme by academic investigators to obtain their own results. The industry urged caution, and, promising it would step up the search for a safe alternative chemical, did everything it could to delay a regulatory ban on CFCs. In 1980, as soon as it became obvious that a global ban was on its way, DuPont withdrew all research funding for its safe alternative. It was not until 1986, after British scientists had discovered a gaping hole in the ozone layer over Antarctica, that DuPont re-committed to finding an alternative, and later the company was to support a phase out of CFCs by 2000. James Lovelock, the British scientist who had discovered the problem of CFC build-up in 1971, noted with regret almost 50 years later: “Manufacturers were determined to deny they had any effects on the global environment, notably the depletion of the ozone layer in the atmosphere”.

The manipulation of the science of climate change and ozone depletion reveals a pattern of corporate denial and deliberate cover-up that seems to prevail, even when the evidence becomes irrefutable. This is a pattern that has also typified the production of our most persistent and damaging chemicals. Here are just a few examples.

- **Leaded petrol.** The deadly effects of adding lead compounds to petrol was discovered by scientists in the
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1920s. Despite this knowledge, a trio of major corporations: General Motors, DuPont (both of CFC fame) and Standard Oil of New Jersey (now ExxonMobil) ensured that almost all research on the health effects of lead in petrol was funded by the oil companies, and produced findings which concluded that lead additives were not harmful. They then aggressively marketed and promoted the addition of tetraethyl-lead until it was banned in the 1990s.

• Bisphenol A (BPA). BPA is a plastic that has been known to mimic oestrogen and cause hormonal damage to humans since the 1930s. The American Chemistry Council consistently sought to cast doubt over scientific studies. The result was that BPA production continued to grow and is still widely used in food and drink packaging.

• Polychlorinated biphenyl (PCB). Monsanto was the principle manufacturer of PCB, a chemical used as a coolant and lubricator in electrical equipment when irrefutable evidence of its health impacts came to the attention of the company in 1969. Research showed that those chemicals cause cancer and a wide range of serious health effects, and that they were killing birds and other species. Monsanto’s response was to commission a number of research papers based on falsified and distorted results which denied the health and environmental impact of PCB and other chemicals it was manufacturing. Those studies were successful in delaying the banning of PCB for a decade.
• *Polyvinyl chloride (PVC).* In 1973, an internal Ethyl Corporation memo noted lab results showing a “positive carcinogenic effect” produced by exposure to vinyl chloride, the chemical used to produce the polymer, polyvinyl chloride (PVC).\(^6\) And yet, well into the 1990s, US chemical companies continued to conspire and manipulate the results of scientific studies on PVC production to avoid liability for worker exposure, refusing to warn local communities that chemical spills of vinyl chloride could be deadly.\(^6\)

• *Organophosphates.* The devastating effects of organophosphate pesticides have always been known. It is estimated that 3 million people are poisoned and 300,000 are killed every year by this substance.\(^6\) Yet the industry has doubled its efforts under the Trump administration to prevent new regulation to limit the use of organophosphates by urging selective use of data in Federal government reviews. Key manufacture Dow AgroSciences, in particular, has funded a major lobbying effort to block government reviews of the evidence.\(^6\) Sales by major manufacturers, including DuPont, Syngenta, Bayer CropScience AG, BASF SE, Cheminova AS, Yara International, and of course, Dow AgroSciences, continue to rise.\(^7\)

• *Glyphosate.* A recent court action on behalf of 11,000 victims of Monsanto’s Roundup weed killer revealed that the corporation spent 10s of millions of dollars on deceptive PR campaigns, ghost-written sci-
entific studies and placed news stories. Documents from the trial showed that in the 1980s EPA studies showed that mice dosed with glyphosate developed rare kidney tumours. After strong lobbying by Monsanto, the US Environmental Protection Agency ignored its own evidence and declared to the public that glyphosate poses no cancer risk. Glyphosate has become the most widely used weed killer precisely because of industry claims it is safer to use than other products.71

The chemicals discussed here are known as persistent organic pollutants, or “bio-accumulative” because they are resistant to environmental degradation and therefore accumulate in the biosphere over time.72 They accumulate in our eco-systems and continue to kill living organisms, for a very, very long time. The knowledge that could have protected us from those toxins has been distorted, devalued and very deliberately buried. And countless bodies have been buried along with this knowledge.

Subsequently, the outcome for the corporations has pretty much been the same as it was for Volkswagen: unharmed, or even improved, market share and revenues. In most cases, the corporations in control of those threats continued to do their utmost to hide everything they knew from us, to deceive us and to produce alternative, “official”, scientific results that proved in numbers, equation or lab tests, that there was nothing to see here.
Conclusion: taking the corporation seriously

The big question we are asking here is: if all of those deadly industrial processes are financed, manufactured and distributed under the control of profit-making corporations, then why are corporations not seen as central to the planet’s problems?

I don’t mean this in the sense of apportioning “blame” or responsibility (although I will discuss the connected issues of liability and impunity in more detail in chapters 1 and 3), but just in a practical sense. Dealing with the fallout of industrial production and consumption means taking the role that the major producers and consumers play in all of this seriously. The central role played by the corporation is of crucial importance to the dynamics of the climate crisis and the ecocide that the planet faces. Yet we persist in allowing all of the substances and industrial processes that are threatening the end of the species to be financed, manufactured and distributed by profit-making corporations.

Let us just reflect on this point, since it presents us with a very significant blind spot in the debate about climate change and the eco-crisis. The corporation is a major threat to us, yet it is a threat that we are not taking seriously enough. If the threats to our environment are left under the control of CEOs and capitalist investors, acting through corporations, all we will be able to do is appeal to their better judgement. The tactic of asking politely is doomed to fail. The evidence that I have so far described indicates that we
have a problem that cannot simplistically be dismissed as the fault of a few “rogue” or “bad apple” corporations. In all of the examples mentioned here – fossil fuels, tobacco, asbestos, synthetic chemicals and the car industry – one thing stands out. Very large numbers of corporate executives who were in charge of making deadly products knew exactly what they were doing. Executives wilfully ignored and actively sought to bury the evidence of their killer trade. They were fully aware of the consequences of what they were doing, but did it anyway.

Indeed, as this book will show, those executives were doing the job that the corporate system expects of them. The entity of the corporation has been specifically designed and adopted to ensure the fast and uninhibited reproduction of profit, with little regard for the environmental and social costs. The purpose of this book, then, is to take the corporation seriously. This book will show, categorically, that we will not survive if we continue to allow corporations to occupy a central role in the economy.