The objective of this chapter is to use the social closure theoretical framework to analyse the socioeconomic dynamics underlying what Ciplet, Roberts, and Kahn (2015) aptly refer to as the remaking of inequality and power in a warming world. It investigates environmental social closure based on monopolising resources and waste sinks, resulting in the exclusion of latecomers from opportunities. This emergent dimension of social closure will be examined to gain insight into the fossil-fuelled climate crisis. The chapter also aims to show how biophysical dynamics of the atmosphere, which is the ultimate commons for humanity across space and time, carry social relations of closure.

What Is Social Closure?

The concept social closure was proposed originally by Weber (1978) and then elaborated by Parkin (1972, 1974a, 1974b, 1979, 1980, 1982) and Murphy (1988). Collins’ (1968, 1971, 1975, 1979, 1980, 1981, 1986) work has also been integrated into the closure framework. It continues to
be theoretically elaborated (Mackert 2004; Swartz 2008; Daly and Silver 2008) and deployed in empirical studies (Koch 2003; Minefee et al. 2015; Masuku and Rama 2020; Mauer 2020; Viola 2020). Mackert (2004 and especially 2012) provides an exhaustive overview of research using the concept. Both his overview and my own search lead to the conclusion it has not been used in the environmental social sciences. I will endeavour to show its value to analyse fossil-fuelled climate change.

Closure refers to processes of subordination whereby one group monopolizes resources thereby closing off opportunities to other groups: ‘material monopolies provide the most effective motives for the exclusiveness of a status group’ (Weber 1978: 935). The concept enabled Weber to analyse monopolization of opportunities by property classes in the market and by status groups based on race, gender, religion, ethnicity, etc., in terms of an overarching coherent framework. It constitutes an enlargement of focus from monopolizing one particular resource (means of production) and one set of rules of closure (private property laws) to other forms of monopolization and exclusion based on gender, race, religion, credentials, and the Communist Party. Groups can monopolize opportunities only if they have the power to do so. There is not usually an absolute monopoly, but rather a process of monopolization and corresponding practices of exclusion. In the USA, Barak Obama became President and Nancy Pelosi Speaker, but such exceptions do not disprove prevalent dynamics of racial and gender monopolization and exclusion. Notwithstanding cases of rags to riches in market competition, which are as spectacular as they are rare, resources and opportunities tend to be concentrated, even intergenerationally. Dynamics of market closure lead to sequential oligopolies in particular economic sectors.

Parkin distinguished collectivist exclusionary criteria such as race, gender, etc., which transmit advantage to descendants of the group within which one was born, from individualist criteria such as property and credentials, which are designed to legitimate advantage and are somewhat less efficient at transmitting it to future generations. The closure framework has been used to analyse monopolization and exclusion among races, ethnic groups, genders, and religions, for example
Koch’s (2003) study of Northern Ireland. Collins focussed on positional property and political labour to impose one’s definition of reality to legitimate exclusion. In his books Conflict Sociology and The Credential Society, he examined credentials as the basis for monopolizing organizational positions.

The focus is on objective relations of appropriation and exclusion. Their relationship to intentions and cultural struggle to either legitimate or oppose closure is subject to investigation. All forms of exclusion have potential to provoke reactions, which Parkin called usurpation, consisting of attempts to bite into advantages and power of privileged groups. Monopolization results in inequality of opportunity and exclusion, which can incite reactions and movements aiming to foster inclusiveness and greater equality of opportunity. It is hard to imagine how persistent slavery was as a practice of social closure two centuries ago, but it was eliminated. Aristocratic monopolization, and exclusion of commoners based on birth, was deeply embedded in the past, but it too was challenged and abolished. Apartheid has been overthrown in South Africa, but racial exclusion still exists there and elsewhere in lesser forms. Monopolization by the Communist Party has been toppled in Eastern Europe, the Soviet Union no longer exists, but that form of closure persists in North Korea. China has changed to a paired mode of power monopolization based on the Communist Party and market-based private property. In terms of economics, the closure framework and its focus on practices of monopolization and exclusion is related to the institutional economics and countervailing power analysis of Galbraith (1967) and to the work of Stiglitz (2012, 2015a, 2015b) and Spence (2019). Monopolization based on private property in the market has become stronger worldwide with the advent of globalization, neoliberalism, mergers, acquisitions, and international strategies of tax evasion, which have led to greater concentration of corporate power and wealth. Surprisingly the closure perspective has been rarely used to analyse monopolization and exclusion in the market, an omission this chapter seeks to correct as a secondary objective.
Market Dynamics of Monopolization and Exclusion from the 1980s to the Present

Since social closure based on market dynamics is so persistent, has become more predominant over the past three decades, and since the modern form if rooted in manipulating nature’s dynamics yet threatened by them, the evidence about market monopolization and exclusion generally must be examined before analysing its relationship to fossil-fuelled climate change. Economists (Piketty 2014; Krugman 2007; Stiglitz 2012, 2015a, 2015b; Akerlof and Shiller 2015; Zucman 2015), sociologists (Carolan 2011, 2014), political scientists (Freeland 2012), law professors (Wu 2018) and journalists (McQuaig and Brooks 2010) have provided documentation of income and wealth disparities and the processes underlying them. This typically means practices of monopolization and exclusion. Note that monopolization is examined here as a process (a verb) and a set of practices. In some cases market monopolization results in a monopoly (a noun), with Microsoft being an approximation in its market niche. In other cases, it produces a duopoly (Boeing and Airbus). But in most cases, practices of market monopolization lead to more diffuse inequality (the 1% and the 99%).

Piketty (2014) argues as follows. Initial immigration to America led to less inequality there than in Europe, but by the early twentieth Century inequality was high in both. Later two world wars and the great depression reduced inequality especially in Europe. After World War II the expansion of education and the welfare state also reduced inequality. But since 1980 processes of divergence—Piketty’s term for the concentration of income and wealth by a pecuniary elite—dominate. This was especially true in English-speaking countries: the USA, Britain, Canada, and Australia. ‘The growth of capital’s share accelerated with the victories of Margaret Thatcher in England in 1979 and Ronald Reagan in the United States in 1980, marking the beginning of a conservative revolution’ (Piketty 2014: 42). He (Piketty 2014: 335) argues that ‘the decrease in the top marginal income tax rate led to an explosion of very high incomes, which then increased the political influence of the beneficiaries of the change in the tax laws, who had an interest in keeping top tax rates
Piketty documented two main dynamics of monopolization that led to greater inequality. The first consists of inheritance and accumulation of wealth: when the top tax rate was decreased and new forms of tax evasion were developed, the return to capital invested grew faster than wages, which stagnated. ‘The entrepreneur inevitably tends to become a rentier’ (Piketty 2014: 571) who hires talented professionals to monopolize wealth, avoid taxes and diminish risk. People without wealth (the vast majority) are excluded from such opportunities. The second involves the transformation of managers into compensation superstars who set their own remuneration, which has exploded. He shows that, although some managers have done remarkable work, the evidence is weak that remuneration for compensation superstars as a whole is meritocratic, but the claim of merit is nevertheless used to justify their compensation. Even some big institutional investors are questioning the remuneration of managers. Superstar monopolization of compensation resulted in greater inequality: ‘in all the wealthy countries, including continental Europe and Japan, the top thousandth enjoyed spectacular increases in purchasing power in 1990-2010, while the average person’s purchasing power stagnated’ (Piketty 2014: 320).

Piketty (2014: 300, 257) documents that the top 1% in the USA appropriated 20% of income, the richest 10% owned 72% of its wealth, and the bottom 50% only 2%. In 2010–2011 in France, the richest 10% owned 62% of total wealth whereas the lowest 50% owned only 4%, and this likely underestimates inequality because of hidden wealth. Monopolization becomes more pronounced higher up the wealth and income curves. The two types of appropriation are mutually supportive: superstar managers become rentiers with their wealth and pass it on to their offspring. Duff (2017: B4) confirms that tax deductions for stock options and capital gains are monopolized by the wealthy, which enable them to pay lower rates of income taxes. In the USA, the best universities and superior health care are private and costly whereas public universities and health institutions are criticized as unwarranted ‘entitlements’ and underfunded because of resistance of the wealthy to paying taxes.
Hence, the best universities and hospitals tend to be monopolized by the wealthy, and the majority of the population excluded. The offspring of the wealthy inherit the fortune, attend the most expensive schools providing quality education and insertion into advantageous networks, and receive the best health care money can buy. Such opportunities, even health care in the USA, are closed off to others by lack of money and networks. Oxfam documents that, since 2015, the richest 1% has owned more wealth than the rest of the world's population, eight men now own the same amount of wealth as the poorest half of the world, over the next 20 years 500 people will hand over $2.1 trillion to their heirs—a sum larger than the GDP of India, and a Fortune-100 CEO earns as much in a year as 10,000 people working in Bangladesh’s garment factories (Hardoon 2017: 2). Monopolization of resources and opportunities persists even as large numbers of people are lifted out of extreme poverty into less poverty, especially in China.

There are differences in talent, effort, choice of activity, and therefore rewards, but monopolistic structures amplify benefits for the wealthy and prevent others from receiving them. Inequality of opportunity is at the core of social closure. Layered upon the objective facts of monopolization and exclusion is discursive struggle to either legitimate or undermine them. Despite claims of individual meritocratic accomplishment, achievement often involves differential insertion into networks and inheritance from one generation to another, with all the inequalities of opportunity that entails. Markets free of government regulations claim to increase liberty and freedom but in fact diminish them. Winners in market competition accumulate resources, so the next round of competition begins on an unequal footing. Winners can even curtail competition, which can only be prevented by government antitrust legislation. Free market theories reduce liberty by handcuffing the only institutions capable of controlling monopolization by billionaires and their corporations and by underfunding public institutions capable of enhancing equality of opportunity and thereby the liberty and freedom of the rest of the population. People are not free if they are unable to access quality education necessary to develop their talents or if they are sick and do not have adequate health care. Stiglitz (2015a, 2015b) and
Jackson (2017) following Galbraith (1967) decades earlier, argue that market power of big corporations and the wealthy has to be held in check by the countervailing power of democratic governments and trade unions.

Recognition that power wielded in market competition unconstrained by government regulation leads to oligopolies, dominance of the interests of large shareholders and top managers over those of consumers, workers, and small shareholders, and to extreme inequalities is not limited to left-wing economists. It is found also in analyses in serious business journals. Reguly (2017a: B2) documents that in the USA mergers turned eight major airlines into four, a single airline controls a majority of seats at 40 of America’s 100 largest airports and one or two airlines at 93 of the top 100 airports, hence they enjoy ‘oligopoly profits’. This monopolization has worsened since the year 2000. Airlines ‘are not the only examples of highly concentrated corporate power – monopolies, duopolies and oligopolies – that have snuffed out competition, raised prices and harmed innovation’ (Reguly 2017a: B2). Furthermore, they ‘exert enormous lobbying pressure on even the strongest governments to bend rules in their favour’ (Reguly 2017b: 19). Globally, industries as diverse as pesticides and seeds, baby formula, and cable TV are dominated by four or fewer companies. Google (Alphabet) has a market share of eighty per cent (Mortished 2017: B4). Amazon dominates its sector. Taplin (2017) documents this winner-takes-all economy. Money is spent on share buy-backs to benefit the biggest shareholders rather than investing in research, reducing prices for consumers, or increasing jobs and salaries for workers. Dow Chemical is merging with DuPont, ChemChina purchased Syngenta, and Bayer is taking over Monsanto (Reguly 2017c). Reguly argues that market concentration became extreme in the Reagan era under the influence of Milton Friedman when the deregulation cult terminated the government’s trust-busting role. He contends oligopolies and duopolies eventually get diluted by new start-up companies with innovative ideas and competitive prices, but that takes decades and results in new oligopolies, hence competition can only be maintained by bringing back government’s trust-busting role. Crowley (2017: B4) argues that ‘the growth strategy of many companies now is to
improve their profitability by buying up their rivals, and their market share, and thereby insulating themselves from the market discipline that puts limits on the prices they can charge’. The company Glencore controls more than half the global market for copper and zinc, the global tea trade is dominated by three companies, and 81% of the American beef market is controlled by four processing companies. Highly profitable mega-companies then shelter profits from taxes by buying political influence and lobbying. ‘In the political climate of the United States today, monopoly per se is not a sin. On the contrary it is merely a measure of success. According to Peter Thiel, the PayPal co-founder, monopolies are the only businesses worth having’ (Mortished 2017: B4). Moreover, ultra-rich severance packages for executives who failed to perform and astonishingly big rewards for nothing more than luck in the market refute myths that executive compensation is based on performance and that market competition renders it meritocratic (McGugan 2017a). Lazonick (2014) argues that the increasing practice of share buy-backs undermine investments in productivity, innovation and long-term health of a corporation, benefit only shareholders and top company executives, and result in ‘profits without prosperity’. From his market competition perspective, Crowley contends monopolization can be countered by free-trade agreements between governments and action by lawmakers to curtail mergers and bust trusts to promote competition. Market competition freed from government regulation fosters monopolization and exclusion. It can only be overcome by government action to restore competition. If such action is precluded, then monopolization, exclusion, and inequality of opportunity proceed full bore.

Two interrelated developments modified dynamics of market closure in the past three decades. First technological innovations resulted in previous temporary oligopolies being undermined and new ones established. The development of the personal computer led to new hardware and software companies (Apple, Microsoft, etc.) usurping dominance by IBM’s mainframe computers, to innovation of mobile phones (iPhones, Android phones, tablets), and to new monopolistic niches in specific areas. McGugan (2017c: 5) argues that Google and Facebook make fortunes by distributing work created by others and taking a freeride
on their backs: ‘The rise of the digital duopolists has devastated creative industries ranging from music to journalism’. McGugan (2017b) adds: ‘Thanks to their ever-expanding utility, Google and Facebook are natural monopolies that seem destined to dominate their respective areas. At this point, no new rival could realistically challenge their supremacy’. They favour their own platform for advertising, and pit countries and regions against one another to evade taxes. Portraying them as ‘natural’ is an overstatement, but their monopolies are based on producing a useful service and on a network effect where their utility becomes greater the bigger their network. Srinivasan (2018: Abstract) argues that ‘Facebook’s ability to extract this qualitative exchange from consumers is merely this titan’s form of monopoly rents. The history of early competition, Facebook’s market entry, and Facebook’s subsequent rise tells the story of Facebook’s monopoly power. However, the history which elucidates this firm’s dominance also presents a story of anticompetitive conduct. Facebook’s pattern of false statements and misleading conduct induced consumers to trust and choose Facebook, to the detriment of market competitors and consumers’ own welfare’. Thus she argues that the principles of antitrust should be used to induce competition. The co-founder of Facebook, Chris Hughes (2019) concludes that it ‘has used its monopoly position to shut out competing companies or has copied their technology’. When users are annoyed with Facebook, they punish Facebook by moving to Instagram or WhatsApp, not realizing Facebook has bought those too. Thus Hughes argues regulations are needed and it’s time to break-up Facebook through antitrust legislation like with AT&T’s monopoly, which spurred innovation. Carolan (2014: 183) concludes that ‘we are left living in a world where freedom for the pike is death for the minnow. … most socioeconomic “minnows” (the bottom 90 percent in the US and bottom 99.9 percent worldwide) exist in this state through no fault of their own’. Among his solutions are enhancing and enforcing antitrust laws.

However, antitrust legislators and regulators have great difficulty controlling such monopolistic companies because a break-up would diminish their utility. European lawsuits against monopolistic practices of Microsoft and Google have had limited success. The invisible hand
of the market, far from enhancing competition, results in winners and losers, with the former accumulating resources to reinforce monopolistic practices in their particular domains, including mergers and acquisitions to diminish competition. Thus the principal barrier to market competition is the normal functioning of the market itself. The principal rewards go to the major shareholders and managers, often by way of dual-class shares to maintain control.

Increased efficiency in the flow of information, and in transportation of goods and people, has led to a second driver of modern forms of social closure, namely globalization. Owners have transferred production from developed countries (USA, Europe, Canada, etc.) where wages are high and labour and environmental regulation relatively strict to developing ones (China, India, Bangladesh, Mexico, etc.) where wages are low and regulations lax. This has been facilitated by free-trade agreements which enshrine shareholder property rights for international investment and enable transnational companies to sue governments. The result is increased profits for owners, a slight rise in earnings for the world’s poorest, but decreased workers’ wages in developed countries (Hammond 2017: B4). It has resulted in somewhat lower inter-country inequality but greater intra-country inequality. This has produced working-class downward mobility and resentment in developed countries, which has often been displaced towards immigrants in Europe and North America. If the broader population does not benefit through social welfare programmes and instead market winners monopolize benefits, Stiglitz (2017: A13) argues that ‘Trumpian politicians may become a permanent feature of the landscape. … They [the Scandinavian countries] understood that the only sustainable prosperity is shared prosperity’. This requires political action to promote equal opportunity and include everyone as beneficiaries. Piketty advocates taxation, including international taxation, and quality public education to diminish inequality. Saunders (2017: F7) agrees these measures are needed to knock down walls making ‘privilege a closed loop that excludes outsiders’.
Processes of Monopolization and Exclusion in the Anthropocene

Heal (2017: 160) demonstrates that GDP is not a good measure of well-being for two reasons. ‘The first is that the measures offer no distinction between an increase in the nation’s income that goes entirely to the rich (as has happened in the United States recently) and one that is distributed more uniformly. The second is that the measures don’t in any way reflect damage to natural capital and, perversely, could even show gains from this’. This conclusion leads to the chapter’s main objective: analysing emergent forms of closure characteristic of the Anthropocene, namely, ways social practices interact with planetary biophysical dynamics. ‘An unquestioning society-wide commitment to economic growth at almost any cost; enormous investment in technologies designed with little regard for the environment; powerful corporate interests whose overriding objective is to grow by generating profit, including profit from avoiding the environmental costs they create; markets that systematically fail to recognize environmental costs unless corrected by governments; government that is subservient to corporate interests and the growth imperative; rampant consumerism spurred by a worshipping of novelty and by sophisticated advertising; economic activity so large in scale that its impacts alter the fundamental biophysical operations of the planet – all combine to deliver an ever-growing world economy that is undermining the planet’s ability to sustain life’ (Speth 2009: 7–8). Environmental social closure has distinctive features. It involves monopolizing biophysical resources and appropriating the atmosphere and oceans as pollution sinks in a first-come, first-served manner, whereby latecomers are threatened with exclusion. Benefits are disproportionately garnered by some, but consequences are suffered by others excluded from most benefits. Beck (1992, 1998, 2009) argued that there is a new power structure imbedded in the concept of global risk, namely organized irresponsibility: those who are making decisions are not accountable to those affected, and those affected have no participation in the decision-making.
Monopolization and Exclusion in Space

Monopolising raw materials has occurred for a long time. Rich nations typically extract raw materials in poor nations, then process those materials, and the processing makes them rich (Wallerstein 2011; Roberts and Parks 2007). This has intensified under globalization (i) with technologically enhanced capacity for extracting and transporting materials and communication and (ii) in terms of trade agreements. Hydraulic fracturing for oil and natural gas has been innovated, as has deepwater oil drilling and oil extraction from bituminous sands. Although it seems these have refuted theories of peak oil, likely that is not the case. A discovery of oil or gas may supply a large population for thirty years, but that is only one-third of a lifetime, hardly long enough to ensure sustainability. Oil and gas deposits in shale become depleted rapidly and new ones have to be found. There is an abundance of fossil fuels and other raw materials, but remaining deposits may be geographically or technologically hard to extract and require so much energy and cost to extract, upgrade, and transport that it would not be worthwhile. The affluent of this generation are picking low-hanging fruit, leaving difficult or impossible ones to latecomers whether poor individuals, poor countries, or future generations. This threatens to close off resources to them.

More novel and important (Jaccard 2009) is the appropriation of the atmosphere as a sink to dump greenhouse gases. It is a commons shared by all, including past, present, and future generations (Nordhaus 2013). Countries, companies, and individuals are taking as much of the atmospheric sink for their emissions as they want and can afford. Hence there is much inequity in its use to dispose of long-lasting carbon dioxide emissions. Since the Earth’s atmosphere is finite, and since there are intensifying adverse consequences as it fills with greenhouse gases, unregulated dumping amounts to monopolising it as a pollution sink. A hundred companies account for more than seventy per cent of carbon dioxide emissions; the richest one per cent of the world’s population emit more than the poorest fifty per cent; the wealthiest ten per cent emit half of humanity’s emissions (Mason 2019: A11). Exploitation of
fossil fuels has made billionaires of a few, provided some benefits to many (jobs, fossil-fueled combustion engines for travel, heating, and air conditioning), but are polluting the atmosphere needed by everyone. The carbon pollution spreads worldwide and is cumulative because of the physical properties of carbon dioxide which remains in the atmosphere for a century. Property laws grant ownership of fossil fuels without requiring responsibility for their pollution, thereby concentrating benefits with polluters and spreading danger to many, especially those living in distant locations excluded from the benefits. Thus Stern (2009: 13) argues that ‘the poor countries are least responsible for the existing stock of greenhouse gases, yet they are hit earliest and hardest by climate change’. They have lowest emissions because inhabitants have no electricity, only rudimentary means of transportation, etc. (CDIAC 2018). Decisions to rely on fossil fuels in countries on one side of the planet (e.g. the USA and Canada) have threatening consequences for societies on the other side (Bangladesh, Chad, etc.) because the atmosphere is a medium which transports carbon combusted and emitted from one side to the other. Whereas emissions are 18 tonnes per-person per year in the USA, they are only 0.1 tonnes per person in Madagascar (Hawken 2017: 81). This constitutes monopolising the atmosphere as a carbon dump. Poverty results in exclusion from the pleasures of fossil-fuelled practices the affluent enjoy: 80 per cent of the world’s population have never been on an airplane (Friesen 2019: A4). It is not the poor who are combusting jet fuel and thereby contributing to the climate crisis. The habitat of the Arctic Inuit is experiencing degradation earliest. ‘In all four regions where the Inuit live – Northern Canada, Alaska, Greenland, and Siberia – every community is struggling to cope with extreme coastal erosion, melting permafrost and rapid runoff as temperatures rise’ (Watt-Cloutier 2019: O11).

The drought and bush fires in coal-based Australia in 2020 during Melbourne’s prized Australian Open tennis tournament gives a foretaste of monopolization and exclusion to come. The smoke gave the city the worse air quality in the world. A horse race was cancelled because thoroughbreds are so valuable. But lowly tournament qualifiers had to compete despite smoke that dried their throats and lungs, caused
coughing fits, and forced one to withdraw. ‘When the news is telling you to stay inside, to keep your pets inside, why are we exerting ourselves to the maximum? … There’s everything at stake for these players in qualifying. This is their ticket to potentially break through into the top 100, make the main draw, be able to support themselves for the rest of the season. So of course they’re going to play. … As the qualifiers were coughing and struggling outside, the top stars in the game – Federer, Novak Djokovic and others – were practising in air-filtered, air-conditioned comfort inside one of the three stadiums’ (Myles 2020: B19).

Even safety from nature’s forces is being monopolized. Louisiana has a prosperous oil industry, yet it also has one of the highest levels of inequality in the USA (McNichol et al. 2012). New Orleans is a city mostly below sea level surrounded by the Mississippi River, enormous Lake Pontchartrain, and the Gulf of Mexico, in an area prone to hurricanes and storm surges. The safe high ground of the city in the French Quarter and Garden District is monopolized by the wealthy, and closed off to the poor by housing prices in the market. The poor are housed in what is left, the vulnerable Lower Ninth Ward. Monopolization of safe areas by some and exclusion from safety for most became painfully visible when Hurricane Katrina struck in 2005 with catastrophic consequences for the excluded.

Some putative technological solutions to fossil-fuelled climate change increase the risk of monopolization: nuclear energy, carbon capture and sequestration, geoengineered sunscreens in space. ‘These large-scale solutions also tend to concentrate power to the hands of governments and wealthy corporations as they require massive investment, central planning, and often intensive security measures’ (Suzuki and Hanington 2017: 163, see also 222). The claim is made that the oppositional dynamics and equal voting rights for all regardless of knowledge lead democracy to be slow and ineffective for dealing with urgent, slow onset, invisible perils; hence it needs to be replaced by authoritarian monopolies by knowledgeable elites. This claim risks become more widespread as fossil-fuelled consequences becoming more severe.
Monopolization and Exclusion in Time

The gravest threat of fossil-fuelled climate change occurs over time. Appropriation of biophysical resources, including atmospheric sinks, by the present generation, with benefits disproportionately concentrated, results in the risk that future generations will be excluded from benefits, restricting their life chances: ‘issues of climate justice include the excluded non-living generations, who are going to suffer most’ (Beck 2015: 82). The atmospheric commons shared by present and future generations is a medium carrying social relations of monopolization and exclusion between risk makers and risk-takers over generations. For the present generation, principal monopolizers need to be differentiated from minor beneficiaries. Similarly for future generations, there will be significant differences between principal victims, namely the vulnerable poor and middle classes, compared to minor victims who are wealthy and have resources to protect themselves. Through the medium of the atmosphere, current social practices threaten to close off opportunities to future others. Priority given to near-term economic benefits to the exclusion of long-term danger constitutes a code of social closure and monopolization embedded in culture, social practices, and physical infrastructures. Pipelines need to transport oil for many decades to be profitable; hence decisions made today to build pipelines lock in emissions for the next half-century. Holmberg (2017) demonstrates that corporate short-termism, namely emphasis on short-term profits, is a driver of both social inequality and fossil-fuelled climate change.

As atmospheric greenhouse gases accumulate to dangerous levels and harm increases, safety will require that emissions decrease, more drastically the longer it takes. Either the atmosphere will have to be closed off to future emitters as a sink to ensure safety, or they will suffer the consequences. Latecomers, both the poor and future generations, will be excluded from using the atmosphere to dump greenhouse gases the way high polluters of the present generation are doing. Latecomers will bear the brunt of monopolization by high early emitters. McKibben (2019: O8) postulates an ‘iron law of climate change [which] is that the less you did to cause it, the quicker and harder you’re hit by its effects’. The less a country (think Madagascar) or a generation (think our grandchildren)
did to cause fossil-fuelled global warming, the more their opportuni-
ties will be closed off in terms of nature’s degraded services and the
atmospheric carbon sink becoming full. There are market dynamics of
monopolising both fossil-fuel benefits and security, and exclusion from
well-being and safety.

Ethicists contend every person—past, present, and future—has the
right to an equal amount of carbon they can emit into the atmosphere
(Dyer 2008: 75, 174), hence its disproportionate use as a pollution
dump resulting in exclusion of latecomers from using it, is unethical.
Spokespersons from developing countries argue that countries which
became wealthy by emitting carbon dioxide for centuries have a duty
(i) to cut back their emissions more than recent emitter developing ones
so that the latter won’t be excluded from using the atmospheric carbon
sink, and (ii) to compensate the latter by paying for their adaptation and
transition to low-carbon energy. High carbon-polluting societies, compa-
nies, and individuals refuse this logic, a refusal understandable prior to
the scientific documentation of harmful effects but unconvincing for
subsequent emissions.

An important dimension consists of present generations’ practice of
monopolising what ecologists refer to as ecosystem services or what
economists call natural capital, which consists of public common goods,
such as the climate system, hydrological cycle, tropical forests, biodiver-
sity, oxygen produced from photosynthesis, etc. It doesn’t have market
value, but it is essential to life and irreplaceable by technological inno-
vations. Heal (2017: 171) concludes ‘it is of immense value to human
societies. We depend on it in many ways, and it provides services we
could not replace. Yet we still deplete this natural capital, running it
down so that future generations will inherit less than we have, and
less than we inherited from our predecessors. … We are leaving our
successors less and poorer natural capital – a world with a less stable
and hospitable climate, fewer species, less water, and fewer of many
other environmental assets. Perhaps this is condemning them to an
impoverished lifestyle’.

The rapid pace of contemporary carbon-emitting fossil-fuel combus-
tion results in the threat of diminishing supplies of usable, economic
fossil fuels for future generations and of filling the atmosphere with carbon and acidifying oceans, thereby excluding future generations from benefitting from cost-free waste sinks that the present generation enjoys, and foisting onto the former dangers and costs of more frequent and intense hazards of nature like hurricanes, floods, and wildfires. To avoid overheating the atmosphere by more than 2 °C since pre-industrial time, humanity has a limited carbon dioxide budget to emit (Berners-Lee and Clark 2013). The more the present generation engages in fossil-fuelled practices and high emissions, the less of the budget is left for latecomers, especially future generations. The 1 °C increase already documented by 2015, with two-thirds occurring since 1975, indicates the present generation monopolized much of the carbon budget thereby closing off most of it to future generations. By refusing mitigation measures like a price on carbon pollution, the present generation is forcing latecomers (future generations including their grandchildren) to either suffer the consequences or pay a much higher price for carbon pollution. If the maximum emissions allowable by 2050 for a 2 °C temperature rise are all done by 2030, which appears likely, either no emissions will be allowed between 2030 and 2050 or the harm of a greater than 2 °C temperature rise will be suffered. Monopolising the atmospheric sink now means latecomers will be excluded from using it. Within the present generation, there are huge inequities in the carbon budget being spent, with giant corporate polluters and large individual ones using most. Mitigating fossil-fuelled climate change will require undermining monopolization of the limited carbon budget so that latecomers can have more equitable shares. The carbon budget should be seen in terms of struggle to maintain or usurp its monopolization. The longer the excess of emissions over carbon withdrawals festers, the worse consequences will be, and the sooner the atmosphere and oceans will have to be closed off as sinks.

Global warming will also result in future cohorts losing benefits of glaciers providing fresh water year-round, of Arctic ice cover reflecting the sun’s radiation back into space, etc. Near-term economic interests are prevailing over long-term human interests, thereby risking the future to maintain present fossil-fuelled practices where monopolization of benefits is widespread. It constitutes a ‘failure of foresight’ that
likely will lead, according to climate science, to the ‘incubation’ of future ‘man-made disasters’ (Turner and Pigeon 1978). Current fossil-fuelled practices—characterized by some groups monopolizing a disproportionate amount of wealth, depleting finite raw materials, and filling up limited pollution sinks in nature’s commons—threaten to exclude latecomers and especially future generations from benefits presently enjoyed from self-sustaining dynamics of the natural world. ‘Long-term’ can be operationalized as the length of a human lifetime, about eighty-five years to 2105, which corresponds to the time frame when global warming is predicted by science to become severe. The fact children born today risk being gravely affected before they die demonstrates ‘long term’ is not far away.

Countries that became wealthy early disproportionately added to the stock of greenhouse gases in the atmosphere, whereas those developing now are increasing their current emissions but have relatively low cumulative emissions. ‘China produces 22 per cent and the USA 18 per cent of current emissions, whereas the USA is responsible for 27 per cent and China for only 9 per cent of cumulative emissions’ (Heal 2017: 76). This leads to inequities of binding targets for current emissions for all countries. A Brazilian official criticized this as like a person arriving late for a meal, takes only a coffee, but is expected to pay the full share of the bill.

**Closing off Nature’s Resources to Other Species**

A growing population of high consuming humans, some more than others, is monopolising the biophysical resources of the planet, including those on land, lakes, rivers, oceans, as well as the atmosphere as a carbon pollution dump. This deprives other species of resources and habitats needed to survive, and led to about one million species currently threatened with extinction, many in a matter of decades, a far higher rate than in the past, and the rate is accelerating (IPBES 2019). Fossil-fuelled global warming is destroying habitats of species as disparate as polar bears and ocean coral. Deforestation of massive tracts of Alberta’s Boreal forest caused by extraction of oil from its bituminous sands has devastated the habitat of its caribou herd, and decimated the herd. ‘Even for global
warming of 1.5 to 2 degrees, the majority of terrestrial species ranges are projected to shrink profoundly’ (IPBES 2019). Present fossil-fuelled temperature rise is just a slight foretaste of planetary heating that will certainly increase by 2 °C and could rise by 5 degrees, yet already half of the species are failing to cope with it (Wiens 2016). Bar-On et al. (2018) estimate that:

- The biomass of all wild mammals combined is now 10 times less than the biomass of humans.
- The wild mammal biomass has been cut by 85%.
- Domesticated cattle and pigs outweigh wild mammals by 14 to 1.
- Domesticated foul (especially chickens) outweigh wild birds by 3 to 1.
- Total plant biomass (especially trees) has declined by half.

Monopolization by humans also involves exploiting bodies of other species for meat, eggs, milk, etc., and reconfiguring their lives in factory farms to produce food at least cost but maximum disruption for those species being exploited. The Anthropocene involves monopolization of the planet’s resources by human agriculture, domestication of livestock, industrialization, deforestation, and fossil-fuelled practices. The issue is one of scale. Humans are predators, but the scale of human predation in the Anthropocene amounts to the monopolization of habitats and bodies of other species to an exceptional degree. The quantity of human monopolization of nature’s resources has become a qualitative difference in kind. The Anthropocene is characterized by emerging relations of social closure between human populations distant in space, between generations distant in time, and between humans and other species.

Response by the Excluded and Backlash from the Manipulated

Is this new type of monopolization in the Anthropocene usurpation-free? How could future generations, not even born, undermine monopolization of biophysical resources they will need that are being depleted and pollution sinks being filled by the present generation: ‘how to address
and account norms of justice to subjects who do not live yet and therefore have no voice of their own in decision-making which affects their conditions of life dramatically’ (Beck 2015: 82)? Similarly, the vulnerable poor in distant lands have little leverage to challenge the monopolization of nature’s materials and its pollution sinks, especially in nature’s commons such as oceans and atmosphere everyone shares. How could Madagascar, whose per capita emissions are infinitesimal, undermine American and Chinese monopolization of the carbon sink in the sky? Other species are helpless when confronting the enormous technological power of humans. McKibben’s law of climate change—the less a person, company, country, or species did to cause it, the harder it is hit—seems iron clad. Where will usurpation of environmental social closure come from, if at all?

**Purposeful Reaction**

Intentional usurpation of social closure constitutes one reaction. Responses come from environmental, ecology, and conservation movements (Greenpeace, Earth First, Sierra Club, and environmental justice movements). The world wildlife and animal rights movements support species unable to speak for themselves, including species losing their habitats, animals in factory farms, and fish in aquaculture. Organizations like Oxfam advocate for future generations and poor countries. They demand action to limit degrading the global environment all humans need, including future generations, even if this means reducing privileges of monopolizers. A recent social movement, called Extinction Rebellion, responds specifically to the fossil-fuelled climate crisis. Environmental movements are similar to the feminist movement, labour movement, civil rights movement, etc., opposing specific forms of exclusion.

Impact scientists (Schneider 2009) have another crucial usurpationary role by making visible temporarily invisible dangers of present socioeconomic practices, both globally and in the future. This lays the foundation for changing those practices. Impact science was essential to revealing depletion of the ozone layer invisible to the naked eye, which led to the Montreal Protocol to eliminate CFCs. Similarly, impact science is needed
to make visible slow-onset fossil-fuelled, global warming. It usurps privileges of chemical, coal, oil industries, and their consumers to pollute without paying. Impact science is transformative by adding an important dimension to scientific applications: knowledge of consequences of production rather than the only pursuit of profit, consumer goods, and conveniences. It shines light on harmful outcomes of technology and demonstrates that science is not so pure as once believed. It undermines vested interests and predispositions, thereby giving science a subversive role. Impact science constitutes an important component of the pursuit of knowledge when adverse consequences of production science are invisible or creeping from latency to being manifest. This makes science ‘a contact sport’ (Schneider 2009): impact scientists versus production scientists.

Political and business leaders with sufficient foresight to consider the long term also attempt to restrain fossil-fuelled pollution so that windfalls for the wealthy and minor benefits for the present generation will not damage the environment of the poor and future generations, including their own grandchildren. Populations in flooded and drought stricken lands are already being driven to migrate to less vulnerable, more prosperous locations where global environmental problems like climate change were largely caused by extensive rise of fossil-fuels. This migratory pressure will likely intensify as vulnerable environments are further degraded by fossil-fuelled global warming. These climate refugees challenge the ethics of exclusionary citizenship rights and privileges of closed borders.

Monopolization is often not resisted if there is upward mobility, especially of the intergenerational kind. Comparison with one’s parents and the recent past can be more influential than comparison with the wealthy. If there is opposition, it cannot be presumed that the target of revolt will be the main monopolizers. Grievances can be hijacked by skilled demagogues gaining the confidence of the dissatisfied by promising near-term benefits but worsening long-term degradation of the environment future generations will need. Hence it could foment more revolt in the long run. The 2016 American election was instructive, where a bipolar reaction to social closure intensified by globalization, international trade agreements, automation, wage stagnation, and downward intergenerational
mobility emerged in the form of diametrically opposed social movements led by plutodemocrat Donald J. Trump and democratic socialist Bernie Sanders. Fossil-fuelled environmental damage similarly threatens to produce downward intergenerational mobility, which in turn has the potential to incite demands for change, but its direction remains to be socially constructed.

The institution having most potential to mitigate monopolization and develop equitable sharing of benefits and risks consists of governance. Studies comparing environmental performances of societies documented that social democratic countries outperformed others (Yale University 2012, 2018; Germanwatch 2012, 2019). Social democracy deploys governments, trade unions, etc., to redistribute wealth more equitably within its borders thereby countering monopolization by the wealthy and reducing inequality of opportunity, and is typically more inclusive of the needs of future generations and poor countries because of environmental considerations.

**Reaction by Nature’s Dynamics Being Manipulated**

Another response does not involve intentions. Since monopolization of environmental resources is based on manipulating nature’s biophysical dynamics, the most consequential reaction will likely come from nature itself. Unlike the poor and future generations, it does not need other humans to act on its behalf. Nature’s dynamics have the power to undermine the most powerful institutions. The earthquake and tsunami that devastated devoutly Catholic Lisbon in 1755 not only killed people and destroyed buildings but also shook the power of the Catholic Church: if they were God’s punishment for sin, as Jesuits claimed, why did they destroy churches and spare brothels (Zebrowski 1997)? If this natural disaster was capable of undermining a religious monopoly, then an unnatural disaster (Abramowitz 2001) of nature’s forces unleashed by economic pursuits has the potential to destabilize drivers of those pursuits. Nature is an actant whose dynamics strike back against their manipulation by humans (Tenner 1997; Clark 2011). The nature-is-like-putty assumption that humans can reconstruct nature without concern is
a misrepresentation. Nature instead reacts to its manipulation by humans by biting back, rebounding, backlashing, boomeranging, recoiling, etc.

There are many examples of nature’s dynamics striking back at their manipulation. The innovation of antibiotics caused the emergence of antibiotic-resistant bacteria. The social practice of smoking cigarettes causes runaway cancer cells in the lungs. Many apparently successful innovations later proved to be so harmful because of nature’s backlash that they had to be abandoned: DDT, CFCs, and asbestos products. Airplanes and ocean tankers result in many benefits, but the former carry infectious diseases (COVID-19) and the latter transport ecosystem-damaging invasive species (zebra mussels). BP claimed the blowout protector on its oil-drilling rig was failsafe, yet it was overwhelmed by deepwater pressures of the Gulf of Mexico (Freudenburg and Gramling 2011). NASA stated the Challenger Space Shuttle was safe to launch, but physical forces on the O-ring led its rocket to explode (Vaughan 1996). Disaster researchers (Turner and Pidgeon 1978) have repeatedly found that nature’s dynamics presumed harnessed can slip their leash. They investigated how the incubation of disaster was socially constructed by underestimating the power and autonomy of nature’s forces.

Fossil fuels propel engines which shrink time and space, but also cause global warming, which increases the frequency and intensity of hurricanes that strike cities like New Orleans (Katrina) and New York (Sandy), of wildfires in Portugal, California, Australia, etc. Freudenburg et al. (2009) refer to this as catastrophes in the making, and fossil-fueled global warming could be the biggest of them all. Fossil-fuel combustion causes global warming which melts permafrost thereby letting loose previously stored greenhouse-gas methane and melts the Arctic ice cover letting in more of the sun’s radiation previously reflected back into space. This constitutes a positive feedback loop whereby nature itself then intensifies global warming. First-order fossil-fuelled global warming threatens to cause second-order runaway global warming by nature’s dynamics, unleashing more frequent and intense hurricanes, wildfires, droughts, floods, ocean level rise, etc. The Inuit Nobel Peace Prize nominee Sheila Watt-Cloutier (2019: 011) stated: ‘In order to arrest this dangerous trajectory, the world has to take note of what is happening in the Arctic – because what happens in the Arctic doesn’t stay in the Arctic. It’s the
planet’s air conditioner, and as it melts, it causes havoc on the world’. Fossil-fuelled social practices threaten to cause a reaction by nature’s forces that could undermine many human activities. Their enormous consequences may let loose more powerful forces of nature having the capacity to undercut those practices. There is a serious contradiction inherent in monopolising nature’s resources and closing them off to other forms of life in that it threatens to undermine the very services that nature’s species and its autonomous dynamics have provided free of charge for humans in the Holocene, which have enabled human development. Human monopolization of the planet threatens to backfire with a loss of ecosystem services for humans.

Because nature’s forces let loose by human practices are so powerful and global, even the principal monopolizers and beneficiaries are threatened in the long run. Rising ocean levels because of fossil-fuelled global warming are causing storm surges that flood luxurious Miami Beach, where the porous soil would make a seawall ineffective. At the least, the backlash by nature’s forces puts human innovation on a costly treadmill to keep up with nature’s novel constructions. Paradoxically, it is not the failures of science and technology to manipulate nature’s dynamics that unleashes nature’s dangerous side effects, but instead their successes.

**Usurpation by Environmental Regulation; Monopolization by Deregulation**

Regulations, especially environmental regulations, are indirect ways of combatting monopolization. They entail a cost to the industry involved and its wealthy owners, but provide bigger benefits for society and its average citizens. In the USA the nonpartisan White House Office of Management and Budget (OMB 2018) monetized, in constant dollars, benefits, and costs of regulations from 2006 to 2016. It estimated that rules reducing toxic emissions from power plants cost that industry $9.6 billion but brought air quality benefits worth between $33 and $90 billion. They were beneficial to ordinary citizens, especially those living
near polluting power plants and highways, but at a cost to wealthy owners of those industries. They constitute usurpation of the industry’s entitlement to pollute, which had been externalized and paid in terms of harm to the health of average Americans. Similarly, regulations increasing fuel economy standards cost industry between $0.8 and $1.1 billion but provided between $6.7 and $9.7 billion in benefits. The regulations consist of a downward redistribution of wealth. Moreover, environmental regulations shift costs to immediate pollution prevention from much higher but belated costs of pollution itself. The OMB (2018) also documented that environmental regulations caused no detectable harm for economic growth or national employment during that decade, although they may have incited shifts from one industry or location to another or had short-term consequences. The propaganda that regulations kill jobs was refuted; other factors are far more important.

Conversely, deregulation and failure to regulate pollution contribute to monopolising wealth by externalizing costs of pollution thereby increasing profitability. They involve an upward redistribution of wealth. Much like the wealthy and conservative politicians struggle against taxes and against antitrust legislation, they also fight environmental regulations because such regulations reduce their capacity to monopolize wealth and constitute usurpation of it. The first executive order of Donald Trump as American President was to deregulate the coal industry, allowing it to pollute profitably. This was followed by more environmental and socioeconomic deregulation measures and tax reductions, all of which disproportionately benefited the wealthy. Government regulations and taxation are weakened by the actions of the monopolizers. Frederick Koch Sr. built a fossil-fuel behemoth, which sons Charles and David inherited and developed into the second-largest privately held company in the USA with annual revenues of US$ 110-billion, making the Kochs the third richest family in America and Charles and David two of the wealthiest people in the world. The Koch brothers then used their profits to lobby to reduce taxation and deregulate fossil fuel pollution. Monopolization of wealth and power gives the monopolizers the capacity to
influence governments to set rules in their interests, to abolish regulations such as antitrust and environmental protection rules that restrain their monopolistic and polluting practices, thereby creating slow-onset risks for everyone.

Environmental regulation promotes a more inclusive sharing of environmental benefits, even between generations and between those distant in space, thereby constituting an indirect form of undermining monopolization. Deregulation, on the contrary, constitutes a subtle type of monopolization by intensifying the externalization of environmental costs to be paid by victims. Placing a price on carbon pollution, either through a carbon tax or cap-and-trade, to include environmental and health costs in the price of fossil fuels reduces their profitability. However, it would bring long-term benefits to the population of mitigating global warming. Opposition to pricing carbon pollution is led by the fossil-fuel industry (e.g. Koch Brothers in the USA) and conservative politicians. Opposition to governments imposing a price on carbon pollution is leading some environmental economists to propose instead government regulations to phase out coal plants, enact strict rules to reduce emissions from gasoline vehicles, and implement upstream regulations decreasing emissions in the extraction, upgrading, and transport of fossil fuels (Jaccard 2018). If set at levels to mitigate global warming, these measures would result in keeping more fossil fuels safely in the ground and have long-term benefits for the population, but would eliminate the profitable coal industry and diminish the value of the oil industry. Such regulations would obstruct the path of least resistance to profitability so they incite deregulation political lobbies. Despite his market optimism, Rand (2018: B4) explains as follows how dominant fossil-fuel companies resist environmental regulations. ‘If you make lots of money doing something, it’s natural to want to keep doing the same thing. Dominant market players will try to defend and extend the status quo. That strategy works well - until it doesn’t’. Struggles over environmental regulations involve dynamics of social closure, namely appropriating near-term economic opportunities versus inclusion in long-term enjoyment of environmental resources and the benefits and opportunities of a clean environment.
Big Win–Little Win or Big Win–Lose?

The social closure framework fits the empirical evidence of the concentration of wealth, specifically the monopolization of fossil-fuel wealth. It explains inequalities of opportunity, particularly emissions-generated global warming closing off life chances to latecomers (future generations, the poor) and other species. But if the most talented create wealth making everyone more affluent, and if they can technologically solve environmental problems, then it is a win–win outcome (Norberg 2003, 2016; Lomborg 2001, 2007), or more accurately big win–little win. The most talented cause a rising tide that lifts all boats and merit enormous rewards. What’s wrong with that, and with the trickle-down theory describing it?

One criticism is that wealth appropriated by a tiny minority but somewhat beneficial to everyone is often temporary, followed by disastrous recessions if regulations are lax for risk makers, as occurred in the 1930s and 2008. Then everyone suffers, except the monopolizers if everybody becomes dependent on their institutions judged too big to fail and have to be subsidized to stay afloat. Moreover, win–win is often a mirage. The benefits of globalization since the 1980s were concentrated in the fortunes of the wealthiest shareholders whereas workers’ wages in developed countries stagnated, which workers see as a loss. Inequality is corrosive to society; relative deprivation breeds resentment and conflict. Monopolization of resources and rewards produces major inequalities of opportunity, especially if differential resources are passed between generations (Corak 2013). These result in inequities from a moral perspective and wastage of human capital from an economic viewpoint. Attempts to justify the concentration of wealth by meritocratic discourse are refuted by objective differences in life chances. Some people are unusually talented, but there is little evidence that inequality overall is meritocratic.

Another criticism is becoming more significant. Big wins for present-day monopolizers and small wins for the rest of the population risk coming at the cost of big losses. These consist of exclusion of future generations from the benefits, opportunities, and services of the present bountiful environment in an intensifying dynamic of social closure. Although fossil fuels are abundant, it will not be worthwhile extracting
them if the energy extracted barely exceeds the energy required to extract, upgrade, refine, and transport them. Hughes (2009) and Davidson and Andrews (2013) documented that the energy return on energy invested (EROI) is decreasing. The giant Ghawar oil field in Saudi Arabia came into production in 1951 yielding 100 barrels of oil for each energy-equivalent barrel input to extract it. After seventy years of extraction, it and other giant oil fields are in decline, with extraction propped up by technology that temporarily maintains extraction but hastens the arrival of steep decline. The energy yield for heavy oil, deepwater oil, oil from the Arctic and Siberia, etc., is dramatically lower than the initial Ghawar yield. Hydraulic fracking currently yields large amounts of tight oil and natural gas from shale, but these deposits become depleted rapidly and new drilling has to be continually done to compensate. Fossil fuels are on a drilling—depletion treadmill. Although appearing counterintuitive in an era of shale gas and oil abundance, the prediction of peak oil has not been refuted and has, according to estimates, only been postponed until after 2030. The likelihood of present high consumption closing off hitherto easily accessible oil to latecomers remains, for both the poor and future generations. The fossil-fuel industry has been exploiting the most accessible deposits, leaving future generations’ only inaccessible ones both geographically and technologically.

Even more important is the availability of safe carbon sinks (Jaccard 2009). Presently, carbon pollution is treated as cost-free and danger-free dumped into the atmosphere and descending to oceans, but they remain finite as pollution sinks. They are presently monopolized by fossil-fuel companies and high consumers. Big market winners cause big pollution by their consumption and decisions as managers. Economists (Jaccard 2005, 2009; Nordhaus 2013) advocate either government regulations restricting carbon emissions or an escalating price on carbon to include pollution costs in the price of fossil fuels. These are necessary to reduce their consumption and leave raw materials and pollution sinks, which are bequeathed by nature’s dynamics, to latecomers. But rare indeed are countries that have implemented a price on carbon pollution, especially its required escalating feature, and it continues to accumulate filling the atmosphere.
Sustaining the big win–little win treadmill of consumption would require certainty there are no biophysical limits to economic growth. Anything less would result in degrading the global environment thereby closing off opportunities to future humans, and possibly tipping humanity’s only planet into a less advantageous state. The analogy of a rising tide lifting all boats should be replaced by a more appropriate one. Market-driven carbon emissions resulting in sea level rise risks leaving well-protected yachts unscathed but sending vulnerable tiny boats crashing against the rocks. Excessive fossil-fuelled practices in the near term are causing long-run harm by polluting the commons needed by all.

In principle, near-term economic interests and long-term environmental interests are reconcilable, and some countries, especially social democratic ones, are accomplishing reconciliation partially. These have regulations limiting monopolization and promoting inclusion, redistribution and equality of opportunity. They also have regulations to safeguard the biophysical commons needed by everyone. Inclusionary social democratic values and practices are extended to mitigating the closing off of biophysical resources and opportunities by one generation at the expense of future generations. However, these are exceptions. As the increase in emissions demonstrates, near-term fossil-fuel interests of extractors and consumers are globally trumping long-term environmental needs of future humans. This constitutes practices of monopolization and exclusion, namely social closure, whereby future dangers and needs are discounted to attain near-term economic goals. Near-term economic wins are pursued despite the risk of long-term loss of opportunities for latecomers, namely the poor and future generations.

Notes

1. The following summary is obviously too brief, so the reader is encouraged to consult Murphy (1988) and the aforementioned texts. They constitute a few examples of the construction and use of the closure theoretical framework, not an exhaustive list, since this study’s objective is not an overview but rather to open up a new environmental dimension of that framework.
2. Monopolization and exclusion are not eliminated by market competition, but are more complex in terms of temporary, space specific, or technological monopolistic niches.
3. This shows that the example of multibillionaire investor Warren Buffet paying a lower rate of income tax than his secretary is not unusual.

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