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The Extractivist Paradigm

Arctic Resources and the Planetary Mine

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Our current world is an extractivist world. We are all entangled in it, some of us more than others. At the same time, minerals and other extractable resources have been the companion of humans for eons, and they are essential for understanding how the modern world became what it is. Humans have become an extractive species, alongside being a harvesting one. For hundreds of thousands of years, “humanity” was a planetary handful living off live organisms they could find or kill. They also used minerals for colors and tools (Goody, 2012). Mines for red ochre have been found in Swaziland that are more than 40,000 years old, possibly 80,000. Other mines, almost of the same age, both pits and subterranean, existed in what is today’s Egypt, Australia, France, Spain, Belgium, Poland, Hungary, and North America. Over the last ten thousand years of the Holocene, humans gradually started herding and domesticating animals, growing their own food and thus expanding in numbers. Metals became part of the tools of sedentary life forms, and technologies of smelting were in wide use in the Ancient world on several continents thousands of years back (Killick & Fenn, 2012; Hansen, 2017; Humphris et al., 2018; Bebber et al., 2019).

Nonetheless, it is only in the last millennium, and in particular the last two hundred years, that humans have extracted mineral and fossil resources from the earth on a major, and rapidly accelerating, scale. The growth in the extraction and use of minerals, including rare earth minerals, has been astronomical. Global data collected since 1913 by the British Geological Survey show that production of major metals such as copper and iron grew by a factor of 7 and 5, respectively between 1913 and 1970, and again by a factor of 3 and 4, respectively, between 1970 and 2019. In other words, in a little over a century the use of both metals grew by approximately a factor of 20. If we extend the period of comparison back to 1880, the total amount of metals extracted has grown by a factor of 100, with iron making up the bulk of it (IMRB, 1921; IGS, 1978; Brown et al., 2021¹).

This pattern of recent and dramatic growth is most pronounced for strategic metals and rare earth elements, many of which were discovered and/or used

actively only in the twentieth century for a range of military and industrial purposes. Growth rates of these elements have been even more dramatic, especially in recent decades, not because of any general shortage – these “rare earths” are not rare at all but quite dispersed – but because of the many hazards and the environmental, health, and social consequences of extracting them (IMRB, 1921; IGS, 1978; Klinger, 2015; Brown et al., 2021). If we look at the special case of fossil fuels, numbers show that more than 80 percent of all fossil coal used and almost 100 percent of oil and gas have been extracted since 1900. In total this means that of all fossil fuels used more than 95 percent have been used after 1900 and more than 50 percent after 1990 (Ritchie & Roser, 2020).

Mainstream capitalist and socialist societies today live off extraction in ways and with an intensity that would have been incomprehensible to past humans. The industrial revolution was founded on iron and steel. The profound dependency on minerals and fossil fuels is relatively recent, and it has accelerated dramatically since the middle of the twentieth century. Metals are all around us. Any large building holds hundreds or thousands of tons of steel. Millions of miles of communication cables are made of copper. The cell phones in our pockets have rare earths, gold, cobalt, and lithium inside and come at considerable environmental and energy costs (Jardim, 2017). Even artificial intelligence, touted as the immaterial, low-cost future of data, is full of metals and requires constant energy charging and is more realistically understood as, after all, just another technology of physical resource extraction (Crawford, 2021).

Arctic Extractivism

The everyday facts mentioned earlier are not specifically about the Arctic, but they are relevant for understanding the Arctic and its role as part of the modern global excavation and circulation of minerals. A central point of departure for this book about resource extraction in the Arctic is how firmly the dangerously growing human impact on our small planet is tied to a *framing mind of resource extractivism*. For a few generations, expansion of resource extraction and circulation has been a fundamental modus operandi for economic growth and diplomatic and military forms of geopolitics. An element of this *extractivist paradigm* has become its increasing decoupling of the extraction site from the cultivation of human settlement. This is an old trope in the discussion of mining and extraction, gaining ground in the critique of “boom and bust” bonanzas in the nineteenth century, such as gold rushes in Alaska and Yukon, the rapacious Bering Sea seal fur hunting, and since then a stereotype (Morse, 2003; Brockington, Duffy & Igoe, 2008; Bridge, 2009; Demuth, 2019). Despite the critique and the well-known downsides of being rich in natural resources, sometimes called the

“resource curse,” that tend to keep resource-rich communities and nations in poverty (Humphreys, Sachs & Stiglitz, 2007; Ross, 2012; Smith & Waldner, 2021), this framing mind has showed few signs of waning. On the contrary, the territorial decoupling has continued and expanded into new ways of extracting resources without sustainable physical presence and lasting responsibility, presenting not just a threat to local sites and communities but also a much less fortunate route forward for the human–earth relationship than the one projected by the United Nations Agenda 2030 goals and institutions.

How should we understand this? In the theoretical literature, there is an increasing openness to regard extractivism as a historically expanding phenomenon, underpinned for several decades by a globalizing logic. One of the foremost voices in this field, Alberto Acosta (2013, 2020), provided this definition of extractivism: “we will use the term extractivism to refer to those activities which remove large quantities of natural resources that are not processed (or processed only to a limited degree), especially for export.” First emerging with European colonial expansion five hundred years ago, “extractivism is not limited to minerals or oil. Extractivism is also present in farming, forestry and even fishing” (Acosta, 2013: 62). Other authors have suggested extractivism doesn’t stop there (Engels & Dietz, 2017). Once the extractivist mind frame has become established in a region it tends to spread and serve as a paradigm for economies and societies. These societies, and in particular certain places and regions, thus enter problematic and hard-to-abandon *extractivist trajectories*, a notion that resonates with the resource curse discourse.

Naomi Klein, in *This Changes Everything: Capitalism vs. the Climate* (2014), expanded the definition of extractivism to include social and relational dimensions:

Extractivism is a nonreciprocal, dominance-based relationship with the earth, one purely of taking. It is the opposite of stewardship . . . the reduction of life into objects for the use of others, giving them no integrity or value of their own . . . It is also the reduction of human beings . . . into labor to be brutally extracted, pushed beyond limits.

She also argued that extractivism is “directly connected to the notion of sacrifice zones – places that, to their extractors, somehow don’t count and therefore can be poisoned, drained, or otherwise destroyed” (Klein, 2014: 169).

In this book, we have chosen to make the *extractivist paradigm* a central feature. We do so partly because Arctic extractivism fits Acosta’s definition well. Arctic resource extraction has removed low-processed natural resources out of the region for export, and it has expanded (in fact it was always) beyond minerals and oil into forestry, fishing, energy production, and nowadays also wind, solar, and hydro. Indeed, it has extended further into aquaculture, tourism, and other largely exogenous operations. We can also see disturbing elements of the Arctic serving as

a “sacrifice zone,” in Klein’s language. Has the Arctic been a place that for its extractors somehow doesn’t count? At the least, we can say, as we shall encounter further in this book, that Arctic resource extraction has often taken place without much care and concern for community and for the long-term.

So, we propose in this volume that the current Anthropocene world of unbroken multigenerational, geo-anthropological expansion of tapping resources from earth, soils, organic matter, landscapes, animals, knowledge, and human bodies functions under a paradigm that is at the same time physical, ideological, epistemic, and normative. It is a *modus operandi* that is especially hard to deal with since it also brings profit to the exploiters and wealth and sovereignty to states. Historically, it has until recently been considered largely virtuous, pragmatically useful, and underpinned by a comprehensive framework of legal and economic principles and institutions (Sörlin, 2021a).

Against this backdrop, the following question can be asked: Is Arctic extractivism sustainable – and will it continue in its current forms? If not, how might its future be different than its past?

Anthropocene: Overheating, Terraforming, Undermining

Humans are an extractive species; despite that still today not all members of humanity consume minerals or fossil energy in large quantities. As for CO₂ emissions, the richest 1 percent of the US population (3.5 million people) emit 318 ton per person/year, which is 200 times the average emissions of the poorest 50 percent of the world population, close to 4 billion people (Alvaredo, 2018). Nonetheless, billions of people in average- and high-income countries emit a lot and use materials in the thousands of consumer products that most average income people use and circulate.

Extraction of resources is not only what drives engines through fossil energy and economies through minerals and other precious resources. It is also the main driving force of the Anthropocene. Resource extraction and its multifarious ramifications make up a very large part of the geo-stratigraphic markers that are the criteria of the Anthropocene: the millions of kilometers of tunnels and pits that penetrate the planet, literally undermining it; the billions of tons of gravel and sand that terraforming humans removed and whose weight now trumps that of naturally eroding materials; the compounds that rest in the trillions of shots from firearms that are randomly leaking out to soils of battlefields and shooting ranges; the human fluvial and sedimentation processes all over the globe; and the emissions from industrial production, building, and heating (Zalasiewicz, Waters & Williams, 2014).

They also encompass the transportation and travel that the extracted resources are used for, be they pollutants or circulating toxic substances in rivers, lakes, and

oceans, or airborne greenhouse gases driving climate change. Down the line in this world of “overheating” (Eriksen, 2016), glaciers and sea ice are melting, snow covers receding, seasons changing, species migrating, droughts intensifying, and fires and storms appearing more frequently, all adding to the stratigraphic signals (Zalasiewicz et al., 2019). Thus, there are a cascade of social consequences that stem from extractive economies, including unfair working practices, discrimination, and very uneven gender structures of local communities, alongside growth in wealth, although only fractions of it stay in the mining communities.

These changes and the quest for resources and access destabilize geopolitics and cast doubt over the impacts that the expansion of *capital*, rather than “humans” (*Anthropos*), wreak on the Earth system (Malm, 2016). An analysis of fifty-two peer reviewed articles on international relations (IR) in the Anthropocene literature suggested that one (of three) main discourses for “geo-political imagination” was “the extractivist world” (Lövbrand, Mobjörk & Söder, 2020). Such a world means continued expansion of resource extraction through mining, production of fossil fuels, rising global temperatures with their multiple disastrous effects (IPCC, 2021), rapid loss of global biodiversity (Dasgupta, 2021), sea floor ploughing, and deep sea mining (Childs, 2020). The starting date of the Anthropocene itself is debated, but since 2019, the Anthropocene Working Group, charged with reporting on the issue, officially favors “the base of the Anthropocene [to] be one of the stratigraphic signals around the mid-twentieth century of the Common Era.”² The issue of dating the Anthropocene has become an insight-bringing academic industry in its own right (e.g., Swanson, 2016; Ellis, 2018; Lewis & Maslin, 2018), although a consensus has now built around a mid-twentieth century start.

Extraction on a large scale signifies human presence on the planet with terraforming projects on a scale visible to the human eye from the distance of satellites, such as the 260 square kilometers wide Mar de plástico (“Plastic sea”) greenhouse in Andalucía, Spain. Or the largest open pit mining sites, such as Bingham Canyon Mine for extraction of copper in the Quirrh Mountains near Salt Lake City.³ Multiple studies in recent years testify to the fact that extractivism, including prominently mining, is a major factor in the Anthropocene. In the film *Anthropocene: The Human Epoch*, accompanied by a book from the same team (Burtynsky, Baichwal & de Pencier, 2018), the large majority of cases concern resource extraction, from elephant tusks in Africa to potash mines in the Ural Mountains to lithium in Chile’s Atacama desert to timber in Nigeria and British Columbia.

Examples abound from all continents. At Fourmile Creek catchment, Colorado, “mining impacts represent the dominant Anthropocene landscape change,” exceeding pre-nineteenth-century rates by at least fifty times (Dethier et al.,

2018). “Geoheritage sites” are increasingly identified all around the world to demonstrate the effects of humans on the geological scale, typically through mining and quarries (Margiotta & Sansò, 2017; Ruban, 2020). Even what has been called the “early Anthropocene,” Late Bronze Age to Early Iron Age, between 3,500 and 2,800 BCE, shows significant regional stratigraphic signals indicating an anthropogenic influence from mining and smelting in the Eastern Mediterranean, followed by excavation and burning of lead during the Roman period. In the iconography of the Anthropocene, the new earth forms are sometimes displayed as alluring aesthetics. Scaled down from the satellite to the rain forest or the Arctic shoreline, the open-pit mega-mines give many reasons for concern: pollution, contamination of groundwater from mining, devastating impacts on Indigenous and local communities (Demos, 2017) while at the same time providing employment, infrastructure, training opportunities, local multiplier effects, and resources and wealth for other communities, some far away.

Planetary Mining

Resource extraction is a key foundation of modern civilization as we know it, with consumption patterns, industrial production, huge material circulation, a massive increase of mobility, and more generally our present social and economic conditions. Resource extraction is directly linked to the massive growth of wealth and health improvements that, although they too are very unevenly distributed, have catapulted human population into a 500 percent increase since 1900 and have grown global GDP by 5,000 percent during the same period.⁴ In addition, it has been suggested that democracy has only been feasible at the cost of compensation to voters through a share of the growth, hence bringing reasonable stability in otherwise turbulent and the heavily militarized twentieth and twenty-first centuries. This argument for “carbon democracy” (Mitchell, 2011) obviously has its counterpart in carbon dictatorships that remain numerous. Most of the latter are based on oil, requiring centralized infrastructures and predominantly based on export markets and with relatively small workforces that can be incentivized with good pay and fringe benefits, often fly-in-fly-out. Coal miners, and miners in general, on the contrary came in large numbers and were unionized but are also more likely to be sedentary and rooted in local communities. They have predominantly leaned to the left and been among the most militant labor groups, in Europe often Communist (Eley, 2002).

But the issue of resource extraction is in fact larger than that and has been growing even more with recent global production forms and geopolitics of climate and resources. There is now an acknowledged tension between majority

democratic rule, extractive economic benefits, and long-term governance of the environment and climate for the common good (Di Paola & Jamieson, 2018). In Western countries, the fact that climate change requires urgent action is acknowledged mostly by the younger cohorts. The majority of those who are sixty-five and older are more complacent (Runciman, 2019). The prevailing extractivist paradigm does not make this tension any easier to deal with. Entire populations, not just workers in the fossil sector or elderly voters, are in some sense bribed or doped with the boosted wealth that extractivism also brings; Norway is a case in point (Norgaard, 2011; Anker, 2020). Increasingly, miners, especially coal miners, now lean toward populism and side with others, often other white men, in wanting the extractivist and fossil regime to stay, or at least its comfortable lifestyles and privileges, or indeed an entire extractivist social order not be abandoned – but in the case of coal mining it also plays an essential part in the energy mix, including in countries such as Poland, China, and India (Allen, 2021; Malm & the Zetkin Collective, 2021). Democracy under deep extractivism has profound challenges but also continues to generate opportunities in an array of places, and across geographical and social scales.

The recent rise of Arctic resource extractivism follows the ongoing reconfigurations of the global geography of mining. The mine, once a local site, a hole in the ground with a limited set of involved parties, has grown into a complex network of globalized relationships connecting banks and other networks of financial intermediation, mining machinery manufacturers, ports, ships, ocean trade corridors, and industries everywhere. These are what Martín Arboleda (2020) has called the “sprawling supply chains and complex infrastructures of connectivity” that have transformed the multiple local excavation sites into a “planetary mine” (Arboleda, 2020: 16–17; the concept originally from Labban, 2014) into which the individual mines fit, regardless of their physical location. These connectivities reach literally around the globe, increasingly defying the colonial geopolitics of previous centuries and instead fitting into the huge expansion of economies on all continents but in particular in East Asia. As Arboleda points out, the planetary mine is also “excavating the planetary,” rather than just a set of single mining sites. The recently emerging form of globally integrated extractivism thus reaches beyond previous conceptualizations of globalization, such as “time-space compression” (Harvey, 1990), “spaces of flows” (Castells, 1989), or “liquid modernity” (Bauman, 2000). Emphasizing the material, the planetary mine metaphor rather reflects the growth of global extraction of anything from energy to soils, forests, oceans, animals, minerals – and humans, and how extraction is linked to climate and earth system crises as well as world trade and freedom of circulation, accelerating since the first decade of this century (Arboleda, 2020: 16–17).

The Extractivist Paradigm

This is the new extractivist paradigm: the intervention into natural resources on the planetary scale and with an increasing decoupling between resource extraction and local community building – in combination with the expansion of the extractivist logic to more and more domains, including immaterial resources. To talk about *the planetary* rather than *the global* also suggests the socio-natural dimension of this phase of globalization, which we might more appropriately talk about as “planetization” (Connolly, 2017). By using the concept planetary we also underscore that planetary mining belongs in the same category as the Anthropocene, suggesting a distinct relationship between the geo-scale impacts of human resource extraction and the global sprawl of extractive industries with their similar impacts on social relations, the geographies of labor, and the vulnerabilities of local communities and Indigenous populations.

In this brief version of the emerging human–earth relationship and the planetarization of extraction it is perhaps not the facts themselves that are worth noticing. Many of them have circulated in scientific discourse, policy, and media over the last several years. By now, as we are well into the Agenda 2030 decade – to reach seventeen UN-declared Sustainable Development Goals, SDGs, by 2030 – they build a comprehensive factual and conceptual narrative with considerable implications for policy and what we may term a knowledge-informed contemporary *Weltanschauung* (Castree, 2021).

This includes the framing thoughts and narratives that have emerged to present them and to point out new directions for global governance. They already have their planetary toolbox for solutions invented, packed, and ready for curing the suffering patient: The comprehensive SDGs and a Paris climate accord to keep global temperatures well below 2 degrees Celsius, preferably below 1.5. A growing number of science-based planetary guardrails and boundaries (Rockström et al., 2009; Steffen et al., 2015). Most of these items of planetary or earth system governance (Biermann, 2014, 2020) are of fairly recent origin, as is the modern version of the idea of the Anthropocene itself (Crutzen & Stoermer, 2000; on earlier versions see Glacken, 1956; Mitman, 2018) – they all date from the last couple of decades. The important thing is rather to take them under a common view: The Anthropocene understanding of the human–earth relationship stands in a direct relationship to the changing geopolitics of natural resource extraction and the global networks of the “planetary mine.”

The Arctic Extractivist Trajectory

The Arctic, a region of a mere four million inhabitants in a space five times the size of Europe, is now fully part of world affairs. In some respects, it arrived late,

for reasons of limited access, uncertain economic feasibility but also active seclusion by the Arctic powers, especially during the Cold War. Natural resources were always at the center of external interest in the region. Resource speculation about northern lands and seas has a very long history (Sörlin, 1988, 2017; Zeller 1989/2009; Bruno, 2016), but for a long time first-hand accounts were few, travel was complicated, and demand was low. Still, elements of the Arctic extractivist trajectory started early with Europe taking the lead (Kruse, 2016). Mining in Iceland (sulphur) and Fennoscandia (iron) go back to the Middle Ages. Commercial whaling and sealing started in the North Atlantic in the seventeenth century and in Beringia in the nineteenth (Arlov, 2003; Demuth, 2019). Regional species extinctions followed, and in the twentieth and twenty-first centuries increasing numbers of Arctic species have been, and are, facing imminent extinction as a consequence of extraction, climate change, or other factors (Wolf, 2010), more than 400 in Canada alone (Canadian Encyclopedia, 2015).

Mining in Arctic North America dates to the sixteenth century, although a more pronounced expansion takes place only in the nineteenth and especially the twentieth, when it is accompanied by a growth in oil and gas extraction (Haycox, 2002; Coates & Morrison, 2005; Piper, 2009; Keeling & Sandlos, 2015; Coates, 2018). A similar pattern of late but dramatic expansion takes place in Russia and the Soviet Union (Josephson, 2011, 2014; Högselius, 2012; Bruno, 2016). In Greenland, mining began in the middle of the 1800s (graphite, later gold, cryolite; Sejersen, 2015), and in Svalbard the first coal extraction started around 1900 and then expanded quickly, first with several states engaged but after some time with Norway, the USSR, and later Russia as the main players (Arlov, 2003; Avango, 2005; Avango, Hacquebord & Wråkberg, 2014; Kruse, 2016). Some of that extractive activity has now ceased, while some of it has been re-started in recent years.

In the extractive rushes that followed many of the resource discoveries, Indigenous people and northern settlers found work at the margins of the mining economy, some of it tied up with militarization and securitization. Effects were mixed but often negative. Typically, Indigenous land-based economies were eroded, and communities were ravaged by introduced diseases and their traditional livelihoods were disrupted. From the turn of the millennium 2000, a more than decade-long global “commodities super cycle” drove resource extraction even further with an already existing prospect of increased direct sea routes between expanding Asian economies and Arctic basin minerals and fossil fuels. Arctic Indigenous populations, like Indigenous populations elsewhere, are split in their positions on mineral and fossil fuel resource extraction. Nonetheless, concerns are deep over extraction practices and their low ethical standards and over the

long-term impacts on Indigenous communities (Lertzman & Vredenburg, 2005; Anaya, 2013; Wilson & Stammler, 2016). The acknowledgment of losses of independence, agency, rights, and ownership and control of lands and resources has led to questions of redress and compensation. Can losses and “scars” (Storm, 2014) in the past be acknowledged so they could “heal” in the future (Tsosie, 2007)? Could consultation and revenue-sharing (Nuttall, 2017) be a way to continue extraction and at the same time build community? This will be another theme of crucial importance for the current volume: the ethical and cultural-emotional dimensions of extractivism.

Each of these histories is important, moving, and rich in detail, and there will be many instances in this volume where we will encounter individual features of them, because they are also often profoundly different, linked as they are to legal frameworks and economic structures firmly set by national conditions in the past and the present over the huge circumpolar space. In particular, this is true of the five Arctic coastal states – Norway, Denmark, Russia, Canada, and the United States – where boundary zones, such as the Bering Strait, often brutally underscore the national differences (Dadykina et al., 2017; Demuth, 2019). From the Early Modern period we find many other nations also tapping into northern resources (Netherlands, Great Britain, Spain, Portugal, and Japan), particularly in marine resources that were more accessible and required less geopolitical muscle, especially around the disputed territory of Spitsbergen and the high North Atlantic (Bravo, 2006; Avango et al., 2014).

Long distance engagement happened to a smaller extent in terrestrial mining, but was still considerable. Swedish geo-entrepreneurs and British mining companies were active in Spitsbergen/Svalbard mining at an early stage, supported in Sweden by scientists who shaped the politics of prospecting (Wråkberg, 1999; Jones, 2008; Avango et al., 2014, p. 23), and fueled in Britain by a “myth of superabundance” (Macadam, 2011, chapter 4), especially of coal (Avango et al., 2011; Kruse 2016). More recently, China has entered into mining projects in Greenland and renewable energy production in Iceland. India, Korea, Japan, and some EU member states claim they can contribute with technology, logistics, transport, and industrial wherewithal as resources in the region are becoming more accessible (Hara & Coates, 2014). In this ambition, they make active use of history and precedent, claiming past Arctic presence through research or historical mining or whaling (Paglia, 2018). Deregulation has made prospecting a global market, and transnational companies, often based in Canada and Australia, operate on multiple sites across the polar cap, except in Russia, which upholds its resource nationalism on oil, gas, and minerals stringently (Baev, 2008; Koch & Perrault, 2019). Russia is also very active in Arctic marine extractivism, as is Norway (Dale, Bay-Larsen, & Skorstad, 2018) (Figure 1.1).

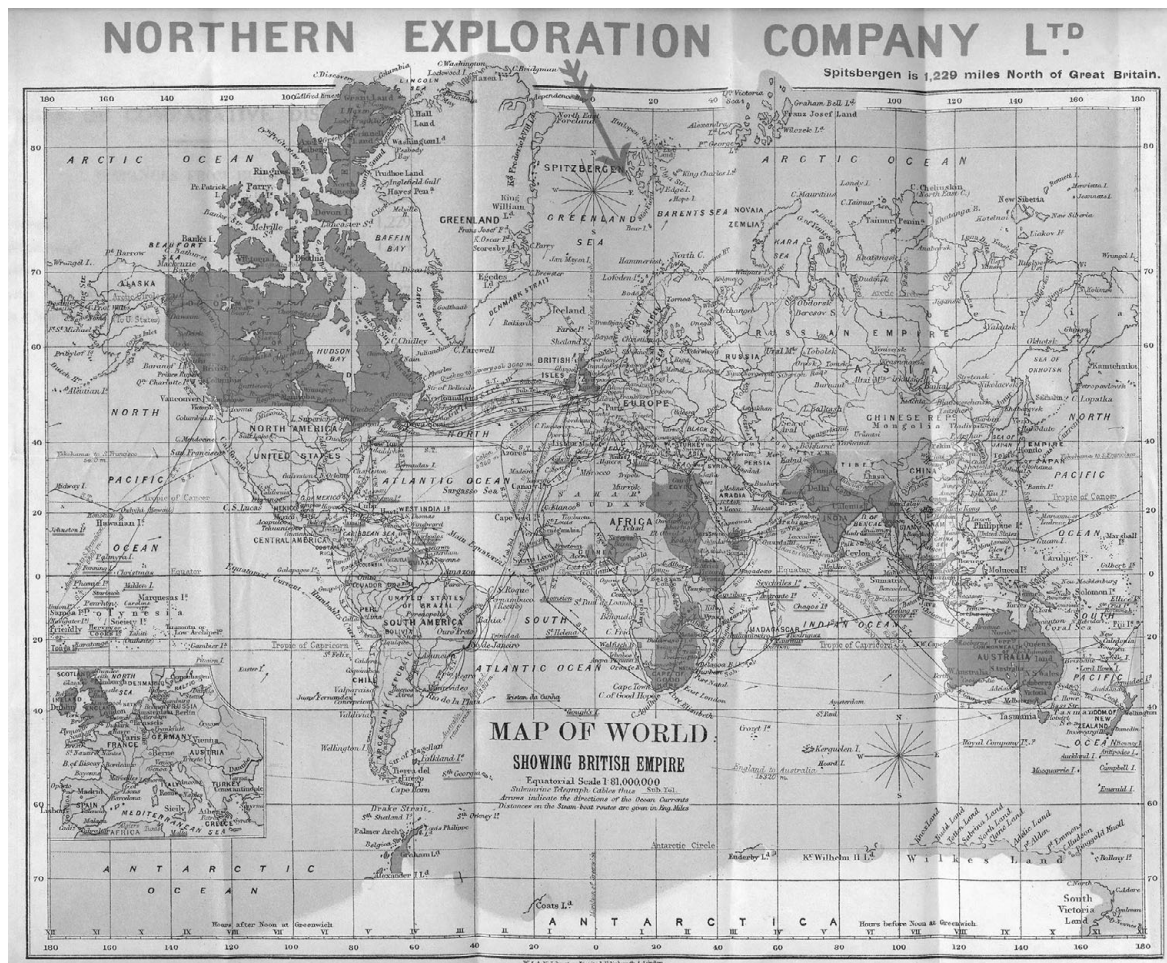


Figure 1.1 Map produced by the Northern Exploration Company during the First World War, indicating the firm's ambition to integrate Spitsbergen into the British Empire. Source: Coal and iron in Spitsbergen (1918) Pam (*32): 622.333, Scott Polar Research Institute Library, Cambridge. Reproduced with permission.

Arctic Hyper-Extractivism

These variations across time and space are important and will be highlighted in the chapters of this book. However, it is essential to observe that there is at the same time a common pattern for the entire region, namely the dependence of its extractive industries on developments elsewhere, around the entire world, for capital, regulation, often labor, and above all demand and markets. This underscores how well these industries align with Acosta's articulation and how well they fit the overarching Anthropocene extractivist paradigm. Arctic extractivism, its emergence, and especially its recent growth, post-1989 – both real and anticipated, sometimes hyped – are synchronized with the expansion of globalizing industrial capitalism and its institutions, and especially with its recent acceleration and with resource extraction extending to, and integrated with, the aforementioned “planetary mine.”

Its geophysical and environmental impacts in the Arctic itself follow the general pattern of the Anthropocene elsewhere (ACIA, 2004; Lenton, 2012; Carson & Peterson, 2016). External demand motivates this rush for resources, and markets and consumption elsewhere swing the Arctic into its *hyper-extractivist* role on the world scene, figuring, once again, largely as a resource frontier, boosted by coastal states and large geopolitical actors such as China. The Arctic is in this respect part of a much bigger whole. But it is a significant part because its properties of being rich in a plurality of extractive resources – from marine mammals to strategic minerals to fossil fuels – are extreme by most standards, especially if resource density is compared to demography and presence of cities and agriculture. The Arctic is sparse in population and vulnerable to climate change, trebling global average temperature rise, and rapidly losing summer sea ice (NSIDC, 2020). This makes Arctic global processes *hyper-visible* and the Arctic itself into a looking glass through which the workings of the contemporary world can be seen and, vice versa, a looking glass for the world to see extractivism in an oversize version. The Arctic Anthropocene may be small in numbers, but it is big in scale, impact, and as a specter (Figure 1.2).

Is Arctic extraction sustainable? As the world is looking for a transformation away from fossil fuels and toward a more strategic position vis à vis minerals, this question must be asked more critically and profoundly than before. At any rate, the extractivist paradigm is in change and, at least potentially, in a critical state. The Arctic is therefore a key place in a key moment to study global resource extraction. The world is destined to undergo a deep transition from a fossil fuel-based economy to something that may turn out to be a paradigmatically different phase of world history (McNeill & Engelke, 2014). The transition will have an impact on most extractive industries, although in different ways that we do not yet know.



Figure 1.2. Mining in the High Arctic: The Diavik diamond mine in Canada's Northwest Territories, approximately 300 kilometers northeast of Yellowknife and 220 kilometers south of the Arctic Circle. www.gia.edu/gems-gemology/summer-2016-diamonds-canadian-arctic-diavik-mine. Photo: courtesy of Diavik Diamond Mine. Photo reproduced from James E. Shigley et al., Mining Diamonds in the Canadian Arctic. *Gems & Gemology*, Summer 2016, 52 (2), www.gia.edu/gems-gemology/summer-2016-diamonds-canadian-arctic-diavik-mine

Some industries will likely benefit from the change – wind and solar power, strategic minerals. Others will likely suffer as coal does already in many parts of the world, and oil probably will in the not too distant future. Greenland, an area larger than Europe, with very large potential resources (USGS, 2008) has already announced it will no longer allow oil prospecting, and in 2021 a national election pivoted around the issue of mining (McGwin, 2021). Indigenous economies, based on fishing, herding, hunting, and tourism, face an uncertain future. With the transformation come not only economic change, political upheavals, or sustainability challenges but also concerns about social justice as global needs grow and renewable energy projects end up interfering with Indigenous rights to herd, while carbon and other natural resource footprints remain grossly unequal and widening (Alvaredo, 2018).

Extractivism and the Anthropocene complement each other in a lock step fashion. The latter is largely defined by the *impact* of mankind on the geological scale and defined by stratigraphic traces of a certain magnitude and persistence. The extractivist paradigm, on the other hand, can be defined as the generic practice

and the economic and ideological legitimation for the processes that actually *create and reinforce* the Anthropocene impact. The extractivist paradigm draws the focus toward the agential dimensions of the Anthropocene and not just its quantified impacts and consequences, such as the transgression of planetary boundaries or the wounds that extractivist activities left on the planet. It brings to the fore the need to recognize the cumulative impact and the consequences for those at the frontline.

So, the frame here is that extraction is an overarching driver of the Anthropocene, which also means that it is the parts of humanity that have been part of extractivism that are rising to become of particular interest, as the hotspots of global change. The agency of extractivism, both through demand and consumption, on the one hand, and through capital and much of the physical extraction labor has come from particular strata of the world, and only to a limited extent from inside the region. This has been a persistent pattern for centuries. Extractive industries thus carry a lot of responsibility for a particular view of the world as an object of extraction and the extension of this activity to include not just minerals and energy but also the various geo-spherical elements such as the biosphere, the atmosphere, the lithosphere, the cryosphere, and the hydrosphere. The technosphere (Haff, 2014) performs the work required, and it too now extends to the Arctic, making its previous exceptionalism less exceptional.

A Window of Opportunity?

This may seem all gloomy and with little prospect for hopeful change. If we raise our sights, however, we can also see that many social and political forces around the world wish to temper and indeed rework the operating space for *the extractive world order*. Achieving this is implied in the UN SDGs and the Paris accord, although with many gestures of loyalty to those nations and companies that remain deeply trapped in the quagmire of resource path dependency.⁵ It is not unrealistic to argue that we are in a moment of world history, and in the evolution of the extractivist paradigm, when new futures should be seriously considered. The Anthropocene moment, reinforced by the experiences gained in battling the Covid-19 pandemic, can be seen as a window of opportunity to rethink human relationships with everything of which we as humans are part.

The expansion into “virgin lands” – typically already populated – has been part of the nationalist territorial projects of many nations, not least precisely those that now occupy the Arctic rim. There is an extractive hinterland history to them all: empires and settler colonies such as Canada, Denmark, Russia, and the United States; and their latter day independent former colonies or subordinate territories such as Alaska, Norway, Finland, Iceland, and Greenland, which is still only partially independent. The majority of these countries and regions have based

much of their identity on techno-agro-economic expansion into presumably empty and at least available territory – the opening of the West (USA) and of the East (Russia); there were frontier lands to be conquered and domesticated. Sweden and Norway had their directions north (terrestrial and marine, respectively), Denmark too. The north became the calling and the national anthem of Canada (Grace, 2002). Both Russia, with the Northern Sea Route and its extractivist bonanza that started in the Soviet period, and the United States, with Alaska's forests, gold, and Northern slope oil, shared in the northern quest. The Arctic is a very special and persistent case of "resource colonialism" (Avango, Högselius, & Nilsson, 2018), partly internal, partly external. It is also subject to angry criticism from some Indigenous groups that "green colonialism" (Fjellheim & Florian, 2020) is used to promote new forms of extraction, such as wind and solar energy, that, if beneficial in other ways, tend to disregard cultural and social impacts.

The shrunken, vulnerable, and overheating planet we have increasingly found we are trapped on is quickly becoming a very different place than the one for which modernity's imperial-extractivist imaginaries were once constructed and where they were central to ideas of civilizational progress and wealth. This understanding will have profound consequences for the way we think about the Arctic and extractivism, not just in academia. Perhaps this is especially true for the humanities and social sciences. The planetary has indeed become a "humanist category" (Chakrabarty, 2019) fitting the Anthropocene trope. The contours of a corresponding "Arctic humanities" (Sörlin, 2015; Dodds & Sörlin, 2022) can also be glimpsed on the horizon. Increasingly, and to a large degree in this volume, the Arctic is also seen as a humanist category. In it, words such as value, ideas, culture, anticipation, power, politics, will, greed, emotion, heritage, fate, and future play major roles, alongside the geological and economic dimensions of extraction. It should be highly relevant for the study of resource extractivism, which is only in one aspect a physical undertaking. It is not even only human. We are talking about an inclusive more-than-human and more-than-social way of looking at resource extraction, which is expanding from its previous domains of engineering, geology, and resource economics to the wider issues of societal transformation to address major human–earth challenges. This calls for a broader and deeper agenda of analysis where no field of knowledge must be excluded.

This volume speaks to critical policy dilemmas linked to resource extraction and extractive industries in the Arctic in a context that is global. The Arctic Ocean, although the smallest of the global oceans, is a major factor in the global climate system. The Arctic holds massive energy and mineral resources, the details of which are not known, although according to data by the United States Geological Survey, it amounts to a very large undiscovered potential of the oil and gas reserves of the world, in the order of 25 percent (USGS, 2008). It also has a

significant share of strategic and rare earth minerals, some with a long history of regional extraction (Morse, 2003; Nielsen & Knudsen, 2013; Bjørst, 2016; Vikström & Högselius, 2017; Vikström, 2020). This large presence of extractivism occurs in a region of only four million inhabitants, where there are many dozen first nations and possibly as many as ninety Indigenous languages spoken, plus several national and settler languages (Arctic Council, 2021). Largely inaccessible to non-residents in the past, the region is now within reach through airports and sea routes. Tourism with roots in the nineteenth century has been a growing source of income, particularly post-1989 when the Cold War ended and the region started opening up.

Arctic communities, many Indigenous, others ethnically diverse, are unique and irreplaceable. They are rich in traditions, some of them with roots dating back thousands of years. Their livelihoods are dependent on functional ecosystems and traditional ways of life just as much as they represent modern life forms and are embedded in the extractivist technologies and economies.

As global economies and geopolitics shift, resources of the Arctic have become ever more attractive to both Arctic states and international investors and consumers. Their extraction is a prime interest for Arctic states, for non-Arctic states with strategic and economic stakes in the region, and for the Arctic communities themselves that in some cases benefit from extraction but in other cases are negatively affected. Indeed, in some cases non-extraction is a strong interest, or an extraction that at the very least has the sustainability of Arctic communities as a firsthand goal. How extraction is conceived makes a big difference, as does where it occurs.

In the warming post-Cold War situation, it was for a time commonplace to see a new resource frontier take shape with typical boosterism. However, development has been slower than expected, which should remind us that current processes need to be read against the background of a long extractivist history, with cycles of extraction, export, and degradation. These cycles hardwired Arctic resource extraction to a physical geography of infrastructures, ports, airports, pipelines, roads, and railways but also to urban centers with modern communication/digital networks in some parts of the Arctic, predominantly outside the region where capital, expertise, and political wherewithal exist, arguably creating a “path dependency” toward resource extraction and cementing a peripheral role for the Arctic in the global economy (Bennett, 2016).

Can Path Dependencies Be Broken? Aims and Themes

This volume aims to establish and explain the complex and intricate policy and public dilemmas that arise from this situation. Its first and foremost aim is to *make*

the situation legible and lay out the dilemmas and difficulties that resource extraction and geopolitics face in the region in our present time. This work will be undertaken against a backdrop of substantially growing knowledge about the Arctic over the past few decades, a large part of it from the social sciences and humanities. We have learned a great deal from research across all knowledge fields about security and international relations; about social change in the Arctic, legal frameworks, ecosystems, and climate change; and about the history of the region, politically, ethnically, culturally, economically, linguistically, and environmentally. We also know much more about how the present Arctic emerged as an integrative part of a planet under considerable stress and with actors at all levels constantly adapting to changing geopolitical framings and pressures. We are already well into the fourth decade since Glasnost was announced and more than thirty years have passed since 1989 – and now we face a revanchist Russia seeking to restore its great power status.

The volume's second aim, therefore, is to provide a more *nuanced understanding of the current Arctic as an integrative region in an extractivist planetary mine*. It is an understanding that must take a distance (Wormbs, 2018) to several rosy "Arctic futures" as they were presented in the recent past (e.g., Emmerson, 2010; Smith, 2011). The "new" Arctic we see may be more accessible and "modern," and regarded as an object of investment, initiative, and of tension and conflict (Evengård, Larsen, & Paasche, 2015). Nonetheless, it comes across as a region with considerable challenges. Inequalities are wide and growing. Governments, which have widely adopted Arctic strategies for resource development, security, and governance since the end of the Cold War nevertheless lack appropriate strategies for managing human and social development. Long-term views are rare, and sustainability, although frequently called upon in strategy rhetoric, is far from likely, especially if extractivism is going to expand further on its current unsustainable course (Fondahl & Wilson, 2017; Sörlin, 2021b).

Its third aim is to *critically examine resource extraction*. In a period of uncertain global and regional geopolitics, Arctic states remain highly dependent on resource extraction. What is the future of a region that lives off minerals and fossil fuels, and had hoped to expand their role in global and national economies, if and when these doors are closing? The question is relevant. The current situation is that the Arctic is already undergoing profound transformations. Traditional resource extraction projects have been in some cases put on hold or stalled because of concerns over costs and ownership. New kinds of extractive futures are suggested, with tourism and research as central features of the new extractive paradigm. On the other hand, the Arctic coastal states are taking their oil drilling and other extractivist ventures further north – Norway being a pioneer in this regard.

In doing so they face growing resistance and friction both on old and new fronts. The Biden administration in the United States has already rolled back oil-drilling, forest clearing, and road building permits that Donald Trump gave in Alaska (NYT, 2021; Washington Post, 2021). Activists and local communities protest extractivist projects across the circumpolar Arctic. Even some banks are now refusing to fund investment in northern projects.

The Norwegian government was taken to court again in 2021, this time by climate activists backed by Greenpeace to the European Court of Human Rights (ECHR), for its extraction of oil in Arctic waters (Reuters, 2021). Around the world, legal interventions against extractivism, especially climate related, are growing rapidly (Ebbesson, 2020–2021; Walker-Crawford, 2020). Legal experts are contemplating the concept of “ecocide,” championed by Olof Palme in his opening speech at the UN conference on the human environment in Stockholm 1972 and pioneered by Scottish barrister Polly Higgins (2011; Higgins, Short, & South, 2013), as an addition to the Rome Statute and in continuation of the conceptual innovations from the twentieth century: crime against humanity (Hersch Lauterpacht) and Genocide (Raphaël Lemkin) (Sands, 2016; Main-Klingst, 2021). Around the world, we see how rivers and other ecosystems are attributed legal personality.

Exploring *how to reframe and re-purpose extraction*, and out-phase and terminate certain forms of it, is a fourth aim of this book and one of which there is already considerable experience. Norwegian philosopher Arne Naess took a pioneering interdisciplinary team of thinkers and academics to Svalbard in the middle of the 1990s and proposed that the future of the region was no longer coal or mining but tourism and science. He also supported dog sledding tourism (Buzza, 1994). A quarter century later his initiative seems timely, even far sighted, as transitions are now happening that lead away from coal extraction (Paglia, 2020). On the other hand, new extractivism is also happening, perhaps at an even higher rate on Svalbard and elsewhere. We will look into cases where this has already happened, with varying degrees of success, and by and for whom, and we will consider the potential and politics of future projects aimed at re-purposing-mines.

Will these changes be in line with the transformations required to bring down CO₂ emissions, reach SDG goals, and comply with the Agenda 2030? Could the compass turn 180 degrees and the European Arctic become a vanguard of fossil free and sustainable mining? These are intriguing questions and interesting prospects. On the other hand, the growing geopolitical tension and raised security stakes in the region which are reminders of the Cold War position of the Arctic as a potential theatre of the Third World War (Doel, 2003; Farish, 2010), unfortunately make it less likely.

The Book: A Brief Outline

This book arrives during a time of uncertainty in the world and in the Arctic. Transformations are on the agenda, but inertia still reigns. What we offer in the following four sections and twelve chapters are ideas, insights, and knowledge from many years of research into Arctic resource extractivism spurred and ignited by recent developments.

In Part I the ambition is first of all to set the stage and present the long history of resource extraction in the circumpolar north, especially mining. While acknowledging tremendous diversity, across time and between different parts of the vast region there are also some similarities. First of all, the strong presence of Arctic extractivism has exerted path dependency on most actors in and outside of the region (Sörlin et al., 2023, see Chapter 2). At the same time, this helps explain the vulnerability of modern Arctic communities and the lack of fundamental reorientation into a post-extractivist mode. Where such ambitions have started, as for example in the transnational, but Norway-administered, island region of Svalbard, the irony is that the new sources of income that are replacing it – long distance tourism, science, and onsite scientific education – tend to reproduce “extractive” patterns, reinforcing the sense of path dependency (Sokolíčková & Eriksen, 2023, see Chapter 3).

Part II explores more thoroughly the details and mechanisms whereby the extractive logic and the path dependency play out in reality. This is demonstrated through case studies of areas in the Nordic countries – Arctic Fennoscandia – where Sámi reindeer herding is under increasing pressure from an ever-growing range of resource extraction. It comprises minerals, large-scale forestry, hydropower, and wind power but also tourism, and most recently the cold climate, which has spurred the location by tech-giants of server halls and also spurred massive investment in electricity-demanding battery factories and fossil-free steel production. The “multiple pressures” brought by these extractive activities taken together are typically disregarded in impact assessments that were not designed to evaluate complex issues about the future of cultures and livelihoods but only the legal status of a particular project. Ironically, even the mechanisms for influence by the Sámi, such as frequent consultation meetings, add to the burden that along with climate and environmental change risks Indigenous and regional sustainability (Österlin et al., 2023, see Chapter 5; Rosqvist et al., 2023, see Chapter 6). Efforts have been tried, however, for example scenario workshops with popular participation (Nilsson & Sarkki, 2023, see Chapter 4) to remedy problematic trends and identify both risks and opportunities.

Part III deepens the analysis of how consultative decision-making on resource extraction takes place with an emphasis on cultural and emotional registers.

The reader is sitting in on a contemporary, online negotiation process engaging international mining and prospecting companies, local inhabitants and stakeholders, and the Greenlandic government. This multi-site ethnography, about a proposed extraction site in southern Greenland, demonstrates the complex forces of the powerplay in a game of deep uncertainties, opposing interests, and, not least, the strong impression that these things combined build an unnerving tension and obvious lack of fairness into the putatively democratic and participatory process (Bjørst, Sejersen, & Thisted, 2023, see Chapter 7). Yet another layer of meaning-making is offered by an analysis of the rich underground lore and artistic expression. Officially, northern resources have always been associated with hopes of wealth and progress. In reality, though, both the far North and the subterranean world are mysterious and enchanted mindscapes. Such beyond-the-rational affective potential can help explain both excitement and controversies around underworld extraction (Herva, Komu, & Paphitis, 2023, see Chapter 8).

Part IV brings the trajectory through to the tail end of extraction. Here we encounter abandoned mines and mines that are being re-purposed, either during the extraction phase or after it. In-depth case studies are presented from Canada, Svalbard, Norway, Finland, and Sweden. Some of the abandonment processes stand out as harsh and uncompromising, whereas others come across as more benign and genuinely transformative and caring for the community. What the chapters in this section (Flyen et al., 2023, see Chapter 9; Avango et al., 2023, see Chapter 10; Malmgren et al. 2023, see Chapter 11) demonstrate is how lowly regarded these processes of closing and re-purposing have been in the past. With the transformation of economies toward tourism and heritage, these are now becoming more valued by community members and national governments. This goes hand in hand with a less universal appreciation of new mining projects across not just Indigenous but also other residential communities. Old mines can take on new significance.

Finally, in Part V, the extraction trajectory is taken another step further. Is there a future “beyond mining” and what would it look like (Lien, 2023, see Chapter 12)? It is hard to conceive in a region that has since time immemorial lived off resources and in periods really thrived. It is also hard to align with the juggernaut expansion of the “planetary mine” to every corner of the planet. Path dependencies remain powerful (Sörlin, 2023, see Chapter 13). Still, questions about a potential post-extractivism belong in a book about the paradigm of extractivism. They are raised probingly and with an open mind. In the words of Naomi Klein (2014: 169): “Even such traditionally destructive practices as logging can be done responsibly, as can small-scale mining, particularly when the activities are controlled by the people who live where the extraction is taking place and who have a stake in the ongoing health and productivity of the land.”

Notes

- 1 Historical data on metal production provided by <https://ourworldindata.org/grapher/metal-production-long-term> gives similar results, with a somewhat less pronounced growth for copper. They use as sources the Clio Infra project hosted by the International Institute of Social History (IISH) in Amsterdam, www.clio-infra.eu/, and the US Geological Survey, <https://minerals.usgs.gov/minerals/pubs/commodity/>
- 2 The Anthropocene Working Group, a subcommission of the International Commission of Stratigraphy, suggests the following as examples of what could constitute the Anthropocene in contrast to the Holocene:

An order-of-magnitude increase in erosion and sediment transport associated with urbanization and agriculture; marked and abrupt anthropogenic perturbations of the cycles of elements such as carbon, nitrogen, phosphorus and various metals together with new chemical compounds; environmental changes generated by these perturbations, including global warming, sea-level rise, ocean acidification and spreading oceanic ‘dead zones’; rapid changes in the biosphere both on land and in the sea, as a result of habitat loss, predation, explosion of domestic animal populations and species invasions; and the proliferation and global dispersion of many new ‘minerals’ and ‘rocks’ including concrete, fly ash and plastics, and the myriad ‘technofossils’ produced from these and other materials.

<http://quaternary.stratigraphy.org/working-groups/anthropocene/>
- 3 https://en.wikipedia.org/wiki/Artificial_structures_visible_from_space.
- 4 <https://ourworldindata.org/grapher/world-gdp-over-the-last-two-millennia>
- 5 It has been pointed out that the 6th Assessment Report from the IPCC (2021) in its *Summary for Policymakers* made no reference whatsoever to fossil fuels as causes of anthropogenic climate change. “You’ll find out *what’s* happening to the climate, but you won’t find out *why* it’s happening or *who* is responsible. It’s all just ‘Humans,’ ‘emissions,’ ‘activities,’ and ‘influence’.” Atkin (2021)

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