TROY VETTESE

A Marxist Theory of Extinction

The Tragedy of Common Environmentalism

The same year the British parliament passes the 1773 Inclosure Act, the Tahitian sandpiper is extinguished as a species.

The Sixth Extinction, destroyer of worlds, is the annihilation of countless ancient and irreplaceable branches of the tree of life. Coeval with the birth of capitalism, the onset of the the Sixth Extinction began half a millennium ago, and is now proceeding at a furious pace comparable to the desolation of the last great die-off sixty-six million years ago. From the perspective of earthly life, capitalism differs little from colliding with a massive meteorite. E.O. Wilson, an influential naturalist, predicts that half of the world's flora and fauna will be extinguished by the century's end. Recent studies have estimated that mammalian species are disappearing one hundred to one thousand times faster than the natural rate. The drivers of the Sixth Extinction are myriad, but habitat-loss is its foremost cause, followed by poaching, though climate change will certainly play an increasingly important role. At least one mammal has already been extinguished by climate change, the Bramble Cay melomys in 2016, when rising ocean levels inundated this rat species' low-lying island home in the Great Barrier Reef.

Mammals, however, are only a tiny percentage of the animal kingdom, which is overwhelmingly invertebrate. Small creatures, like San Francisco's Xerces Blue butterfly (gone in 1941), have borne the brunt of the cataclysm: as many as 130,000 invertebrate species have vanished since the early-modern period, some seven per cent of all animal species. Yet apart from notable efforts like *Extinction* by Ashley Dawson and *Tragedy of the Commodity* by Brett Clark, Rebecca Clausen, and Stefano B. Longo, Marxists have neglected the debate over extinction, ceding the field to an unholy alliance of neoliberals and racist Malthusians.

The dominant framework for thinking about extinction, as well as many other environmental problems, has been the 'tragedy of the commons'. Garrett Hardin, a biologist, coined this phrase in 1968, using it as the title of a short essay he published in *Science*. It described an imaginary commonly-held pasture, where unscrupulous herders grazed more cattle than the grass could endure. 'Ruin is the destination toward which all men rush,' he concluded, 'each pursuing his own best interest in a society that believes in the freedom of the commons. Freedom in a commons brings ruin to all.' In this framework, what is rational for the individual – cheating – is irrational for the group, a contradiction that can only be suspended through the implementation of property-rights. Hardin invoked other examples where overuse degrades a commonly-held resource, such as free parking, campgrounds, pollution and fisheries. In the latter instance, 'maritime nations … bring species after species of fish and whales closer to extinction' because of the 'freedom of the seas'.

'The Tragedy of the Commons' remains a canonical text of centrist environmentalism. Perhaps because the text is invoked more often than read, or perhaps because of taboo, it is often left unsaid that Hardin's allegory is extremely brutal, even fascist. Most people know that he advocated privatisation to remedy the tragedy of the commons, and a few more know he also suggested user-fees, but what is less-often discussed is the third proposal of 'coercive' population control, coupled with the dismantling of the welfare state. In his mind these issues were conjoined because

state assistance might support 'the religion, the race, or the class ... that adopts overbreeding as a policy.' Later, he rearticulated the 'overbreeding' of undesirables as the 'passive genocide' of whites.

Such sentiments were not mere momentary lapses of judgement. As an ardent white supremacist, he advocated population control for people of colour (but not for whites – he himself had four children) and restrictions on immigration to the US (especially from Latin America) to obviate the creation of a 'chaotic Norte Americano Central'. He expounded these ideas until the end of his life in fascist publications like *Chronicles* and *The Social Contract*.

Hardin may have been one of the ugliest protuberances on the body politic of mainstream, white environmentalism, but he articulated the logical end of a shared ideology. In 1968, the year he published 'Tragedy of the Commons', it was revealed that the US government had sterilised thousands of Puerto Rican women over the preceding two decades, affecting a third of the population. On the mainland five years later, the involuntary sterilisation of two Black girls, Minnie and Mary Alice Relf, brought to national attention that the federal government annually underwrote the sterilisation of 100,000 to 150,000 poor people as a condition for further welfare assistance. As many groups supported coercive population control, they hesitated to criticise these outrages, a stance that alienated Black and Latinx social movements for a generation. Subsequent debates over immigration only worsened matters. In the 1970s and 1980s, Zero Population Growth, the Sierra Club and prominent businessmen co-founded the Federation of American Immigration Reform (FAIR), a group designated by the Southern Poverty Law Center as a hate group. FAIR focused on fighting Mexican immigration: one of its major early campaigns sought to prevent the counting of undocumented migrants in the 1980 US census, to starve welfare programmes of funding. Hardin sat on FAIR's board of directors.

The tragedy of the commons, for Hardin, was naturally transnational in scope. In 1974 he wrote 'Living on a Lifeboat', where he compared nations to lifeboats and refugees to people who

'fall out of their lifeboats and swim for a while in the water outside, hoping to be admitted to a rich lifeboat, or in some other way to benefit from the "goodies" on board'. In 1987 he told a journalist from the *New York Times* that he opposed aid to Ethiopia during its recent famine because the country 'has far too many people for its resources.' Despite the prevalence of this kind of rhetoric, environmentalists have never properly atoned for their xenophobia, nor forsaken hateful prophets like Hardin. Herman Daly, a founder of ecological economics and contributor to essay collections with Hardin, recently told an admiring Benjamin Kunkel in the *New Left Review* that he still desired coercive population-control, and that 'I don't believe in open borders.' Now, when an increasingly unstable global climatic system drives refugees from their homelands, Hardin's genocidal *Weltanschauung* must be expunged from the Left's environmental discourse.

No doubt Hardin was odious, but what's worse is that he wasn't very clever – he's no Carl Schmitt of US environmentalism. The 'Tragedy of the Commons' has gaps big enough to drive a herd of cows through. His fascist fable isn't historical or ethnographic, nor it does accurately describe how commons function or how they break down, flaws that Elinor Ostrom pointed out decades ago. That such an exercise in common sense earned her the Bank of Sweden prize demonstrates how entrenched Hardin's model is in economics, but Ostrom was hardly Hardin's only critic. Neoliberals, a clever bunch, recognised early on that the tragedy of the commons was an insufficiently rigorous framework, but were content to have it remain as fig-leaf covering their more nuanced work in environmental economics that still attracts too little scholarly attention. Nowadays, the only sincere fans of Hardin are naïve centrist environmentalists and neo-Nazis.

From a neoliberal perspective, a species should only be preserved – even if it is privately owned – if it is profitable, only if the market decrees it. Although conservative economists pen paeans to the market's sagacity in husbanding scarce nature, neoliberal economists are much blunter. From the point of view of capital, organisms have no intrinsic value – even the last few individuals

of a species – but are merely different capital assets in a varied and constantly changing portfolio. This characterisation of nature as capital comes from Canadian fisheries economist, Anthony Scott, whose insight has been picked up by other neoliberals like Friedrich Hayek and Dieter Helm (Oxford don and chair of the Natural Capital Committee). This logic is laid out clearly in Hayek's *Constitution of Liberty*, where he argued 'from a social as well as from an individual point of view, any natural resource represents just one item of our total endowment of exhaustible resources, and our problem is not to preserve this stock in any particular form, but always to maintain it in a form that will make the most desirable contribution to total income.' Yet, it was another Canadian fisheries economist, Colin Clark, who laid out the logical terminus such arguments in the starkest fashion in the 1973 article 'Profit Maximization and the Extinction of Animal Species'. 'Roughly stated,' he wrote, 'the following are shown to be both necessary and sufficient conditions for extinction under present-value maximization: (a) the discount (or time preference) rate sufficiently exceeds the maximum reproductive potential of the population, and (b) an immediate profit can be made from harvesting the last remaining animals.' For Clark these two factors mattered much more than whether a creature were privately or commonly owned; privatisation was no salve for extinction.

Although neoliberals have hardly hidden how they view nature, as just another asset, it has taken the Left far too long to realise that this is where the centre of debate lies. Capital's control over flora and fauna is not as a special branch of the economy requiring its own theory, but just as industrial as the manufacture of steel and microchips. This insight is elaborated by Kenneth Fish in his *Living Factories* – perhaps the best book in Marxist animal studies. Fish characterises genetically modified organisms (GMOs) as 'factories – living factories. Microbes, plants and animals, indeed life itself, was, through techniques of genetic engineering, being harnessed as a fore of industrial production.'

GMOs, however, were only an extreme case of what capital seeks to do to all life. That is, capital erases distinctions separating

organism from machine. 'For all the technological mastery marked by the coming of the machine, then,' observes Fish, 'the significance of the factory for Marx lies in how it approximates a living organism, that most natural of beings.' Marx's comments on the factory being an 'organism', that it is 'dead labour' that comes 'alive' when attached to a 'force of nature', is less a metaphor than a near-literal description of machines as capitalist beasts of burden.

Subsume and Extinguish

Trochetiopsis melanoxylon, a 'dwarf ebony' plant endogenous to Saint Helena, becomes extinct in 1771. That year Richard Arkwright opens the first water-powered textile factory in Cromford.

Once Marxists see that capital seeks to transform flora and fauna into machines, then it becomes easier to see what capital's relationship to nature is, and how the Sixth Extinction is an inherently capitalist problem. Perhaps the most useful Marxist tools are 'formal' and 'real subsumption', both described in the 1864–6 *Economic Manuscripts*. Formal subsumption occurs when 'production processes with a different social determination are thereby converted into the production process of capital'. If in the pre-capitalist era an individual owned the means of production (for example., a yeoman farmer) or was bound to a superior through dense social ties (for example, a guild apprentice or serf), capitalism replaces these relationships with ones mediated through money. Yet, the work process changes little if labour is only formally subsumed. 'Despite all this,' Marx remarked, 'the change indicated does not mean that an essential change takes place from the outset in the real way in which the labour process is carried on … capital thus subsumes under itself a given, existing labour process, such as handicraft labour, the mode of agriculture corresponding to small-scale independent peasant farming.' Its basic form is cottage industry: the weaver works when she wants and at the pace she wants, often at home, meeting the capitalist infrequently for wages or supplies. This does not imply that that formal subsumption

is innocuous. As it is difficult to increase productivity without machinery, greater surplus value can only be increased absolutely by prolonging the working day.

Real subsumption begins when the capitalist introduces machinery, transforming production through the 'conscious application of the natural sciences, mechanics, chemistry, etc.' Instead of the worker using a tool with her hand as during formal subsumption, the worker now uses a machine powered by a 'force of nature' (*Naturkraft*), like hydropower or coal. These changes allow the concentration of labour and increase productivity, facilitating the deskilling and devaluing of workers, but, perhaps more significantly, it forces workers to toil at the machine's pace and thus the pace set by the capitalist herself.

Marx's conception of subsumption is dynamic: formal subsumption often comes first, but once machine-made commodities begin to compete with hand-made, then handicraft workers will likely be destroyed as a class. 'History discloses no tragedy more horrible than the gradual extinction of the English hand-loom weavers.' Most Marxists tend to hover here, out of concern for the hand-loom weavers and their unfortunate successors. Yet, just by slightly shifting one's perspective, it becomes possible to see what happens when capital extends its reach into the kingdoms of flora and fauna.

One can begin in the pre-capitalist stage of nature-human relations, say, between fur-bearing animals and indigenous peoples in North America. While people hunted deer, otter, muskrat, and most lucratively, beaver, it was illogical to hunt all such animals. This is because the hunters' needs were easily sated, it would take considerable effort to find the last surviving muskrat, otter or deer, and there would be no more for the future. Extinctions were thus rare in pre-capitalist societies (though mega-fauna extinctions thousands of years ago may be exceptions). Yet indigenous peoples' relationship with fur-bearing animals changed once they became part of the world-market during the seventeenth century, a historic shift detailed by Richard White in his classic study, *The Roots of Dependency*. Insatiable demand from European milliners

for furs spurred early corporations like the Hudson's Bay Company (founded in 1670, eight years after the last dodo was killed) to fan out across the North American continent. Corporations and merchants contracted out hunting to indigenous peoples, transforming beaver fur into a commodity that could be exchanged for kettles, beads, guns, horses, and knives. At this stage, however, indigenous trappers were only formally subsumed by capital, working when and where they wanted. Surplus value could only be increased absolutely, so capitalists tried to find more trappers and encouraged trappers to kill more beavers. Though they hunted more, the needs of many indigenous peoples were modest. Not for the first time, capitalists resorted to trading addictive commodities, alcohol in this instance, to expand the market. Eventually, too many animals were killed and crises ensued. Trappers could either travel inland or switch to other species, but these solutions remained within the realm of formal subsumption. Fur farms eventually would become a possibility, but this marked a leap to real subsumption.

Real subsumption occurs once capital masters a plant's or animal's biological functions, allowing it to be manipulated like any other machine. It is now possible to raise productivity, allowing capital to squeeze more relative surplus value from workers. Aquaculture illustrates the shift from formal to real subsumption: as populations of many fish species have crashed since the 1990s, there has been a shift to raising fish as livestock. Farmed fish are fed more frequently and richly than they would eat in the wild to fatten them faster. Their size can be further increased through hormonal treatment that can accelerate growth; hormonal treatment can even change a fish's sex, which could be advantageous if there is pronounced dimorphism in a species. Genetic intervention, via selective breeding or genetic engineering, is also possible, like the trademarked AquAdvantage salmon of AquaBounty Technologies. Within the factory setting of aquaculture, labour becomes more efficient, say, through the automation of feeding to replace hand-feeding. The scale of production can be expanded by concentrating fish far beyond what would be possible in the wild, with all of the attendant problems this brings in terms of waste and disease. The

latter can be partially mitigated by plentiful resort to antibiotics, while the former can be a burden imposed on others.

One can distinguish three intermediate forms between formal and real subsumption, which could be termed 'ranching', 'kidnapping', and the 'factory in the jungle'. Ranching occurs when it is cheaper for a capitalist to only partially subsume the life-processes of an organism. For example, the Texas longhorn cattle were prized during the late nineteenth century because they could fend off predators with their impressive ossein headgear and were hardy enough to survive off prairie scrub. Their life cycle was almost feral until the animals were rustled and driven to the railheads in Kansas. The longhorns' hardiness was a 'free gift of nature' that lowered costs; it was useful to capital until it became more profitable to subsume more aspects of cattle, so they grew faster or bore more muscle. Eventually, such artificial creatures reached proportions where they needed to be kept in feedlots, rather than let out on the range. Fish hatcheries were similar to the longhorn's pattern, as fingerlings are bred and then introduced into rivers or lakes to replenish original, decimated populations. While their births are unnatural, the fish look after themselves for most of their lives, and capital requires labour only at the end to catch, kill, and commodify. This was a half-way step to aquaculture.

Kidnapping is the mirror-image of ranching, because opposite moments of a creature's life-cycle are subsumed: that is, adolescence rather than birth. An illuminating case study in *The Tragedy of the Commodity* traces this process in the tuna trade. As tuna cannot reproduce in captivity, fishers try to capture and cage wild juvenile tuna so they can be fattened for the market. Thus, it is a mix of formally-subsumed fishing and really-subsumed aquaculture. Of course, this hybrid form only hastens a species' decline, as it allows little opportunity for reproduction. Due to a combination of overfishing and kidnapping the Mediterranean tuna population steeply declined during the 1990s and 2000s. Globally, populations of various tuna species have dropped seventy-four per cent since 1970. This figure obscures regional variations and it is worst in the Pacific Ocean, where blue and yellowfin populations have

completely collapsed to only two or three percent of their historic populations.

In the third intermediate variant, the jungle factory, the life-cycle of the hunted organism remains wild, but hunting undergoes real subsumption. Formally subsumed fishing endured for centuries in British waters because it was generally not very effective, though the hunting of several cetacean species in the North Atlantic was exceptionally lethal. As late as 1882, the influential biologist Thomas Huxley could declare in his inaugural address of the London Fisheries Exhibition that 'probably all the great sea fisheries are inexhaustible'. Yet only eight years later, scientists expressed concern for declining fish stocks due to the rapacity of steam-powered trawlers, a technology then less than two decades old. In the twentieth and twenty-first centuries, real subsumption of oceanic hunting was taken to ludicrous extremes. Whalers and fishers pilot powerful boats more like battleships than the modest schooners in the age of sail. They are armed to the teeth with exploding harpoons, satellites measuring surface temperatures, 'fish-aggregating devices', sonar and spotter-planes. Slaughter and butchery can take place on the ship itself and, thanks to massive freezers, these floating factories can stay at sea for months. The brutal efficacy of industrialised trawling, a hobby horse of the *Economist*, has forced even that mouthpiece of *bien pensant* neoliberalism to concede that 'modern fishing is really analogous to mining: fish are pulled from the sea faster than they can be replenished'.

Vegan Communism

Karl Marx died 14 March 1883. A hundred and fifty-one days later, the last quagga died in a Dutch zoo.

An analysis of formal and real subsumption, as well as their intermediate forms, reveal specifically capitalist mechanisms of extinction. Capitalists may try to proceed from formal to real subsumption once a species' numbers become depleted, but

the life cycle of the creature may be too delicate to bear capital's embrace, like tuna. Capital may not even bother if there is a suitable substitute available, such as the Texas Longhorn that replaced the bison. If a creature is controlled via real subsumption, then it is not threatened by extinction except if it is dissolved through cross-breeding as aurochs were, in 1627. Once intensive husbandry such as salmon aquaculture or feedlot cattle begains, capital will attempt to increase relative surplus value by increasing productivity. Just as a nineteenth-century factory worker's productivity increased by operating steam-powered machines of greater horsepower that consumed ever more coal, the real subsumption of nature allows the concentration of *Naturkraft*. The massive, artificially sustained population of livestock, numbering near fifty billion, rely on fossil-fuelled crops to be kept alive in such numbers. They are living factories, which is why researchers from the Worldwatch Institute count livestock respiration as greenhouse gas pollution – as if it were expelled by machines – noxious vapours that compose fifty-one per cent of total emissions.

Real subsumption has allowed the expansion of animal industry, and it is this process that overwhelmingly propels the Sixth Extinction. Animal industries require more than four billion hectares, almost half of the Earth's inhabitable surface. Such a huge amount of land-theft has already caused countless extinctions, but more will come if the meat industry doubles, as it is projected to by 2050. It's not much better in the sea, because many popular fish, especially tuna, are voracious carnivores, making it about as strange and inefficient for humans to eat them as if we munched on a tiger-salad sandwich. For every 1,000 tonnes of tuna biomass (about two adult fish), a tuna feedlot operation requires fifty to sixty tonnes of fishmeal per day. Such food is growing scarce as aquaculture and tuna-kidnapping grows, forcing capital to plumb ever greater depths and trawling the mesopelagic layer hundreds of metres deep, cutting new swathes of extinction. In this way, it's possible to see the effects of the intermediate forms. Ranching increases pressure on other creatures, as the commodified animal takes massive amounts of space, while kidnapping not only puts

pressure on both the subsumed animal and the surrounding ecosystem, and the third form, the jungle factory, accelerates the decay of any mode of production that only formally subsumes nature. All these forms of subsumption must be reversed if there is to be any hope to halting the Sixth Extinction. This means giving back at least half of the Earth, including half the sea, to nature. Right now, only a sixth of the world's landmass has any protection, and only a twenty-fifth of the sea.

Marxists should fervently oppose capital's ruthless domination of nature, of turning all the world into a factory, mall, or garbage dump. Through subsumption capital estranges both humans and other creatures from their species-being – from how they should naturally live. The Left must reject the neoliberal *Weltanschauung* that nature is just another form of capital: rather, the Left must endeavour to support nature's self-actualisation too. What this might look like it is too early to say, given the dearth of Marxist work on the topic; but at the very least more space must be made for wild flora and fauna, and this means livestock must be reined in. While the analysis sketched out here applies to plants as much as it does to animals, given the wastefulness of converting grain to animal flesh and milk, avoiding animal products at least minimises one's complicity with the subsumption of nature. Becoming vegan is the simplest and most effective action an individual can take to reduce one's environmental impact, though of course, no Marxist would be content with mere 'lifestyle' politics.

Whatever form the future's communist society will take, its emergence must be complemented by the abolition of animal industries, to be replaced by community-run organic vegan agriculture, so that humanity treads lightly in the global biosphere. Socialist mastery over nature, as the technophile Left advocates, would not halt the Sixth Extinction. Instead, humanity's relationship to nature should be guided by humility, empathy, and restraint. It is the Left's concern whenever any creature is subsumed within capital's maw to be enthralled or extinguished, dooming half of creation to oblivion.