GENOVA UNIVERSITY PRESS

Publifarum

https://riviste.unige.it/index.php/publifarum

Pensare l'Antropocene: prospettive linguistiche, letterarie e artistiche

A cura di Chiara Fedriani e Chiara Rolla

The Condition of the Anthropocene

Adam Arvidsson

Per citare l'articolo
Adam Arvidsson, «The Condition of the Anthropocene », *Publifarum*, 41, 2024, p. 190-208.

Abstract

This article reviews social theory debates around the Anthropocene. A concept originally from the geological sciences, the Anthropocene has gained salience across the Social Sciences and Humanities as a marker for the condition where human activities have become the dominant force shaping Earth's environment. The rival concept, the Capitalocene emphasises the historical role of capitalism in commodifying natural resources, exploiting cheap labour, and prioritizing short-term gains over long-term sustainability. The concept of the Plantationocene further refines this critique by focusing on the systematic exploitation of land and people that began with European colonial plantations, thus extending the genealogy of the Anthropocene further and wider. In contrast, the Chthulucene emphasizes the deep interconnectedness of all living systems. It calls for reimagining human-environment relationships through cooperation and symbiosis, fostering a more sustainable and interconnected future in an increasingly complex world.

The Anthropocene denotes the period in planetary history when human beings have become the most important force of planetary transformation. True, humans have altered their environment at least since the agricultural revolution in the Neolithic, and perhaps even earlier. Some even suggest that the global warming resulting from the intensification of agriculture some 3000 years ago played an important part in postponing a new Ice Age and thus prolonging the favourable conditions of the Holocene (the period preceding the Anthropocene, running from the last Ice Age to, most would say, the industrial revolution of the 1750s). However, all agree that the onset of the industrial revolution entailed a qualitative change. Sometime in the late 18th century, all the curves depicting human impact on the planetary environment (greenhouse gas emissions, water consumption, population size, urbanization, agricultural land use etc.) begin to take off, to reach their 'hockey stick' phase of acceleration in the 1950s.[1] In other words, the industrial revolution transformed humanity from one actor among many others, to a significant actor, or perhaps an 'overwhelming' one, to cite the title of a paper by climate scientist Paul Crutzen, the man who contributed to popularize the concept of the Anthropocene in the 2000's (together with ecologist Eugene Stoermer). This growing significance is reflected in the ways in which the concept of the 'Anthropocene' was originally formulated in the

geological sciences. Here 'the Anthropocene' refers to the assumption that future geological sediments from our era will be dominated by residues of human activities - from abnormally high atmospheric CO2 levels, via the proliferation of plastics to residues of uranium isotopes generated by nuclear explosions to the massive presence of fossilized chicken bones that result from the contemporary proliferation of intensive poultry farms. (Poultry being now produced in 'geologically significant amounts'.)[2]

From a point of view of human cosmology, the Anthropocene signifies a fundamental change of paradigm. We can no longer think of ourselves as relatively insignificant actors who inhabit a natural environment endowed with infinite resources and that remains largely immutable (at least from the point of view of human time scales). Instead, we must realize (practically, and not just theoretically) that 'nature' is at least in part our construction. With a growing share of the landmass of the earth dominated by human technostructures (in the form of agriculture, urbanization or mining and other extractive industries), with a 'sixth mass extinction' resulting from human activities, and with massive and unprecedentedly rapid global warming, we humans are actually practicing terraforming, to use a term from science fiction movies. But we are doing it without a plan. (Or perhaps we are doing it with the wrong kind of plan, one oriented towards the short-term accumulation of wealth and profits, and not the long-term 'stewardship' of common resources like the earth and its climate). In any case, it is obvious that we have developed the technological power to irreversibly change the planet's biosphere, but we do not have the cognitive and organizational tools to do so in a rational way. And since we are unable to exercise rational, far-sighted and sustainable dominion over the planetary environment, our activities risk undermining the very basis of what we understand as human civilization. This is true in a very practical sense, we risk transforming the status of the planet from that of the Holocene, which was particularly hospitable to the development of human civilization, to a different state, which might be less hospitable to us. (Predictions suggest that global warming might render the equatorial eras of the planet unlivable by the mid-21st century and that the capacity of the oceans to support commercial fishing might end by about the same time, to name just a few examples.[3])

It follows that we urgently need a new politics for the Anthropocene (and not just more or less superficial calls for 'sustainability', 'green transition' or 'corporate social responsibility'). Such a politics needs to start from a problematization of the reproduction of our conditions of existence. In order to do so however, we need to rethink a number of fundamental assumptions. One such assumption is the idea that humanity, and human society is ontologically separate from its environment, or as it used to be called, from 'nature'.

The end of nature

From the very inception of modernity- indeed some would say from the beginning of (proto-) urban civilization with the agricultural revolution in the Neolithic- humans have thought of themselves as essentially separate from the world of Nature. This separation, while never 'real' in the world of empirical fact (we have indeed 'never been modern', as Bruno Latour famously wrote long ago) remained however a foundational myth in the modern imagination. With this we (with Latour) mean that human beings have always been immersed in a complex web of relations and interdependencies with other species- some symbiotic, some competitive: from the bacteria in our gut, to the food that we eat and the viruses that infect us. But human civilization has been based on the idea of a fundamental difference between the human (or social, or cultural) and the natural world. The former was understood as the domain of rationality and divine will, the later of chaos and disorder.[4] Indeed, religious historians have linked this separation of the domains of 'nature' and 'culture' to the rise of theistic religions, themselves linked to the agricultural revolution. The existence of a divine pantheon, often populated with anthropomorphic godly actors, represents an idea of human society as separate from a natural world of chaos, against which the gods often struggle. Paleolithic religious practices were supposedly animistic in nature and consequently not based on any rigid separation between nature and culture. As an illustration: Philippe Descola opens up his magnum opus *Beyond Nature and Culture* with a discussion of the worldview of the Achuar, living at the borderlands between Ecuador and Peru, for whom 'Woolly monkeys, toucans , howler monkeys- all the creatures that we kill in order to eat-are persons, just as we are.' Leaving aside the

question as to whether the ways in which members of the Achuar people explained their worldviews to an anthropologist visiting in the 1980s can be considered representative of Paleolithic cosmologies, the point Descola wants to make is that the modern representation of the world as strictly divided between human and non-human ,or natural 'Kingdoms' remains but one possibility. The fact remains however that more recent monotheistic religions have been based on an idea of the non-human, of nature, as essentially passive and open to human exploitation: that human beings and their institutions could legitimately act on a fundamentally passive Nature, which would not act back. (Of course traces of a pre-modern, animistic relation to 'nature' has survived long into modern times, in the form of the religious practices of marginal groups, like the 'natives' studied by generations of anthropologist, including Descola himself, or the folk magic largely, although not entirely, extinguished by the 'witch trials' and more generally the counter-reformation of early modern Europe. Recently these have seen a revival in certain forms of New Age religion.) [5]

The nature/society divide has not coincided with that between human and non-human life forms. Indeed many humans have been regarded as part of nature, and as such, as mere objects without rights, to be acted upon at will. This has opened up for an essentially unlimited transformation and exploitation of Nature- from the genocide of the indigenous population of the American continent following its 'discovery' by Europeans, via the trans-Atlantic slave trade and the extractive plantation economy it alimented in early modern times, to the massive extraction of fossil fuels and subsequent increase in atmospheric CO2 levels in the 20th century- that could occur, seemingly, with Nature reacting or responding in but limited and largely manageable ways. True, exploiting people who are not part of one's own social unit, and legitimizing such exploitation with appeals to their 'natural', non-human qualities is nothing new. Slavery was not invented by the Europeans but had been practiced since pre-historic times, also by pre-colonial African states. In European antiquity, Aristotle famously legitimized slavery with an appeal to the less-than-human nature of slaves. But the moderns systematized and expanded these practices on a novel scale. The systematic exploitation of nature became a fundamental precondition for modernity itself. [6]

Plantatiocene/ Capitalocene

This observation has led a number of scholars to propose alternatives to the concept of the Anthropocene. Simply calling our times the 'age of humankind' is too imprecise they suggest: it glosses over the fact that our terraforming impact is the result of specific human activities that are historically and socially situated. One such concept, the *Plantationocene*, focuses on the intensified and systematic exploitation of nature inaugurated by European expansion in the 'long 16th century' (ca 1450-1650) and institutionalized in the plantation economy that sustained the development of European modernity throughout the early modern period, the industrial revolution, and up until today. Before the factory, the plantation provided a first instance of systematic terraforming: combining forced or enslaved labor often transported from elsewhere with the intense cultivation of non-native crops, oriented to the export marked. Starting with the transformation of Maderia from an island full of trees to a deforested unit of sugar production manned by African salve labour, via the transformation of Caribbean islands like Jamaica or parts of the Southern US into mere units for production of agricultural commodities- sugar and cotton respectively- for the export market, to today's palm oil plantations in Indonesia, also staffed by hyper-exploited labour sometimes working in slave-like conditions, the plantation has provided a central institutionalization of the dominant impetus to transform the planetary environment into a passive 'nature' that can be objectified and exploited at will. [7]

The concept of the Planationocene has two chief virtues: it situates the material foundations of the modern project in the large-scale transformation of the planetary environment into units of agricultural production. This entailed the abstraction of historically and culturally situated units of land, crops and human beings and their transformation into 'natural resources' that can be recombined at will, regardless of their historical and ecological roots. Sugar, a plant endogenous to the Indian subcontinent, was transported to the Caribbean, worked by people from Africa to feed northern Europeans by means of imported foodstuffs like sugary tea, marmalade, and rum. This concept also highlights the non-European experience of modernity, the experience of enslaved Africans or decimated American (or Australian) 'natives' as

fundamental to any understanding of the condition of the Anthropocene (which instead has been criticized for the white and western bias inherent in its reliance on the universal concept of humankind, in the Greek: ἄνθρωπος = human being, or 'humankind'.)

What is perhaps missing from the concept of the Plantationocene is a description of the social forces driving the modern urge to expand its transformation of the planetary environment into exploitable natural resources. Such an emphasis stands instead at the basis of an alternative concept: the *Capitalocene*. Equally ugly in its unbridled mixture of Latin and Greek roots, the concept of the Capitalocene emphasizes how the exploitative expansion of modernity is driven not simply by human nature, nor by any particular European 'settler mentality', but by the rise to dominance, in Europe at the time, of a particular way of organizing productive processes at the societal level: capitalism. While there have always been people interested in making a profit, and while the means of doing so- companies, manufacturers, trading houses- are at least as old as urban civilization itself, it is only with the crisis of European feudalism that we see the formation of a distinct capitalist class: a group of powerful merchants and financers, integrated across geographical distance through family ties and shared habits and worldviews and, above all, aware of their common interests in relation to kings and nobility: a 'class for itself', as Marx would have put it. The European capitalist class was able to take control of exiting state apparatuses, chiefly by financing wars and other sources of state deficits and use them to favor their interest in continuous capital accumulation. Contrary to other parts of the world where trade and commerce have been active and vibrant, like Ming China, the Islamic Empire or Mughal India, Europe comes to harbor the first truly capitalist social formation: one in which the interests of the capitalist class become hegemonic. As this hegemony is strengthened in the modern industrial era, virtually all social processes are subordinated to the overarching goal of furthering capital accumulation. Viewed this way the intensifying transformation of the planetary environment into natural resources- the Plantationocene- can be understood as a result of pressures to expand the circuit of capital accumulation outside of Europe itself. Through this spatial fix, to use anthropologist David Harvey's term, the Malthusian obstacles to capitalist expansion within Europe (like the need to feed a growing urban population) can be overcome by

including human and non-human resources form the rest of the world as manifestations of an objectified nature that can be exploited at will. Indeed, what economist Jason Moore calls 'Cheap Nature' has been and is still at the heart of the capitalist economy. With 'Cheap Nature', Moore suggests that capitalist accumulation depends on the ability not only to objectify the world as nature, but to make that nature artificially 'cheap' by avoiding its real costs of reproduction. Cheap labour is one such obvious category: Throughout the history of modernity vast numbers of people have been enslaved or otherwise exploited to keep the moderns comfy: from the transatlantic slave trade that fuelled American sugar and cotton plantations and gave the moderns cheap food and clothes, to the children that are exploited in today's Cocoa plantations or in mining the rare earth materials that go into your iPhone. Obviously, enslavement and intense exploitation are violent processes that tend to destroy the conditions for the reproduction of the populations subjected to this. The transatlantic slave trade destroyed a number of west-African indigenous communities and has left deep scars in US Black (as well as White) subjectivity that last to this day. Slaves, plantation workers or other hyper exploited labourers tend to live artificially short lives and be less prone to have children. Thus, the plantation, like, perhaps to a lesser extent, the factory sweatshop, consumes not only labour, but the human lives that support it.[8]

Cheap food is another obvious example: The post-War Green Revolution and the industrialization of agriculture has made food artificially cheap. Up until the Second World War food scarcity was a common occurrence, also in European cities, at least among the popular classes. (Walter Benjamin was astonished at the butchered cats for sale in Naples central grocery market when he visited in the 1930s). Now starvation is replaced by overconsumption, and related diseases like obesity and diabetes, not just in Europe and the United States, but increasingly in places like India, China and Thailand as well. This abundance of calories has been made possible through the systematic and hidden consumption of massive amounts of fossil fuel and nitrogen-based fertilizer along with biodiversity, water resources and soil capacity.[9]

Another obvious example is cheap energy. The industrial take-off in the late 18th century that intensified the impact of human terraforming was fuelled by massive use of coal. And one of the factors that favoured England as the 'cradle' of the industrial revolution, in relation to China- where levels of technological 'preparedness' were roughly equal in the mid 18th century- was relatively easy access to coal in open air pits. Oil became central to the industrial civilization that developed in the West, starting with the 'second Industrial Revolution' of the 1880s, to spread across the globe in the second half of the 20th century. Oil not only fuelled transport and energy production. Its introduction into everyday life promoted technologies like the automobile and related institutions like suburbia, supermarkets and shopping malls. Plastics made oil central to the whole ideology of 'consumer society' that kept that industrial civilization together and made it seem attractive to its new converts. At the same time, efforts to keep oil cheap have come at massive costs in terms of wars environmental destruction and violence against people who happen to live on oil rich lands, like, for example in the Niger delta.[10]

The bubble of Modernity

The transformation of the planetary environment into Cheap Nature was premised on the nature/culture distinction that was central to the modern project. However, the production of Cheap Nature also served to solidify this distinction, making it real and tangible. Since the industrial revolution- at least, but perhaps even earlier- the modern project has sought to externalize the insecurities of nature from social life as far as possible: Death, disease, starvation, violence and physical danger have been subject to processes of control and domination and, in so far as possible excluded from the everyday experience of the people living the modern experience fully. At the heart of the modern project has been the attempt to create a 'bubble' – in Slotterdijk's sense- of artificial security in a 'natural' world perceived as inherently violent and chaotic. As Robert Muchembled shows, levels of inter-personal violence in Europe start declining in the first half of the 17th century, coinciding with the establishment of the plantation system as a source of Cheap Nature and the expansion of the state apparatus and its ability to control and discipline the population that follows from this. Indeed, the two processes are deeply interlinked. In the 18th century, the growth of market society,

itself enabled by the inflow of wealth from the colonies and the plantation system, fundamentally restructure social relations in the European countryside and concentrates wealth to the cities that attract large amounts of rural migrants, principally young, dispossessed and desperate and, hence, prone to violence and theft. The answer to this is a growing valorization of private property and the intimate sphere of the family, both in terms of its legal protection and in terms of its moral significance as the foundation for an orderly and settled existence. Alongside, the 18th century sees the rise of a number of novel penal philosophies and related institutions like the police, prisons, factories and poor houses that strive to take the desperate, and violence-prone poor off the streets and transform them, as far as possible, into orderly citizens. The decline of interpersonal violence – or perhaps its growing institutionalization: in the 1970s one in four European homicides happened within the family (most of them feminicides) – continues with the development of industrial civilization in Europe and its subsequent globalization (in India, for examples, homicide rates have declined from 5 to 3 per 100.000, between 1990 and 2020, by comparison the figure for 13th century London was 45, and Oxford 110). In recent decades declining rates of interpersonal violence have been partly reversed, particularly in parts of the world, like Mexico, European suburbs and parts of the former industrial areas of the US, which are now exiting the protective bubble of modernity. [11]

The dynamics of disease eradication follows a similar pattern. Early modern European cities like London, Paris and Naples, themselves built around the new extended commercial flows of the plantation economy, were the unhealthiest ever recorded. For example in late 18th century London about one fifth of the population was infected with syphilis, and life expectancy was around 30. Syphilis became a main health problem in Europe form the 17th century and on (allegedly the popular saying, 'see Naples and die' comes from the fact that gentlemen on the Grand Tour were likely to contract syphilis in the city's abundant brothels). The possibility that syphilis originated in South America points to a new global dynamic of germs and diseases. To this we can add a shift in diets from locally produced foods to the products of an increasingly globalized agricultural system more prone to generate and diffuse new diseases. As Gandy synthesises this shift: 'The rise of global capitalism, and the concomitant surge

in the urban prevalence of diseases such as smallpox, syphilis and typhus, also had consequences at a global scale, in particular through the spread of syphilis from the New World to Europe, and then via European colonial contact to Asia and Africa.' The growing emphasis on public health that marked the early 19th century was in part a response to this new situation.

Initially public health measures were focused on protecting the settled bourgeoisie from the danger of contagion inherent in urban crowds, and in particular proletarian crowds. The urban poor were understood to be sources of contagion and the most common objects of isolation, quarantine and similar measures, against which they frequently rebelled. Cholera in particular became symbolically equated with the revolutionary threat of the urban masses, and like revolution, had to be eradicated at the source, or kept out of the modern world entirely: the politics of the mid-19th century *cordon sanitaire* was to protect the European mainland from the cholera-laden colonies of Asia and in particular India. Indeed, even though colonial authorities in post-1857 India were aware that their 'modernizing' politics, particularly in relation to urban settlements, water and sanitation issues and the expansion of railways risked favouring the spread of cholera on the subcontinent '*this topic never got attention in British India. Rather Indians were accused of being unhygienic and resistant to education*.' [12]As in the case of the European urban proletarians, colonial subjects were considered inherently prone to disease and contagion on account of their inadequate socialization into the ways of modernity. It was only in the 20th century, and in particular after the Spanish flu epidemic that the conception of hygiene was extended to the working classes as well. Sanitation, clean water, the modernization of working-class housing, universal healthcare along with vaccinations managed to drastically reduce mortality rates in Europe, from around 35 per 100.000 in the Italian 1930s to around 10 in the post-War years. [13]

The politics of public health are illustrative of the fact that the category 'the moderns' does not encompass everyone who lives in chronologically modern times. It is an exclusionary category. At first it encompassed only propertied whites, then it came to include white proletarians as well, to gradually open up to encompassing a wider range of people across the globe. Conversely, death, disease and starvation continued to be a feature of life among the people who were not properly modern: inhabitants of the

cholera ridden Indian subcontinent who for a long time in the 19th century faced severe quarantine requirements to enter the European mainland; the starving children of the 'Third World' that provoke our conscience on television at Christmas time, and the various other 'distant' sufferers who, ever since the rise of the press in the 19th century, have functioned as an Other to the moderns, an object of pity or philanthropy perhaps, but not people the moderns would want among them. In fact, this 'other' has been crucial to the maintenance of the modern project. Modern society, safe, controlled, well-fed and largely predictable, presupposes a nature (made up of non-humans as well as some humans) that can be freely objectified and exploited, as well as a range of 'suffering others' whose plight can justify the expansion of the modern projects civilizing mission.

The End of Cheap Nature

As we discussed above, the construction of a modern bubble of safety has depended on what Jason Moore and others have called 'Cheap Nature'. Now we are beginning to reach a point where the continued creation of such cheap resources is no longer possible. We are reaching the End of Cheap Nature, to once again quote Jason Moore, and we are likely to see the accumulation of a number of negative feedback loops as we move further into the 21st century. (Indeed it is worrying how such projections keep closing in on the present: In the 1990s when climate change first came on the mainstream agenda its effects were supposed to kick in by the end of the 21st century; in the 00s, people started talking about the 2050s, in 2010 the UK government report *2030: The Perfect Storm* further anticipated things, and now many are suggesting that things are already happening, we are already living the onset of the Anthropocene, at a practical and not simply theoretical level, now, in the 2020s.)[14]

The Covid pandemic can be seen as one such feedback mechanism. It caused economic, social and political havoc, along with massive amounts of physical and existential suffering for two years. And we will have to get used to the idea that there will be another pandemic in our time, and for the foreseeable future pandemics will be more and more recurrent. It is an inevitable fact, and this pandemic had been foreseen for a long time. In fact, the number of viruses that have managed to make

the leap from wild ecosystems to humans has rapidly increased in recent decades, as has their lethality and virality. This development is a structural effect of the organization of the global agri-food economy. More and more agri-food products derive from large farms or industrialized crops, and these monocultures exercise a growing pressure on ecosystems that until recently were left relatively untouched, as in the case of palm plantations that now grow rapidly in the former ancestral forests of Malaysia, Indonesia and the Brazilian Amazonia.

As Rob Wallace explains in his *Big Farms Make Big Flu*, the expansion of agribusiness radically intensifies the process of creating zoonotic diseases (diseases with animal origins) that has been in motion since the agrarian revolution some 10,000 years ago (when, according to James Scott new pandemics were likely an important cause behind the rapid and seemingly inexplicable abandonment of urban centers in Neolithic Mesopotamia). The more humans live in close contact with animals, the more likely a virus is to make the leap. The more large populations of genetically identical animals with shortened life expectancies (15,000 chickens in a coop, where each individual is replaced every 30 days) are concentrated, the more likely it is that a virus will evolve to become more contagious and lethal. In an era marked by a growing demand for agri-food products, a consequent expansion of monocultures through land grabbing and transformation of ancestral forests, an increase in the scale of slaughtering and preparation plants, and, in addition, unprecedented global connectivity, new waves of highly viral and deadly pandemics become virtually inevitable. In fact it is telling how the politics of public health have witnessed a paradigm shift since the 1990s: from focusing on external threats to a modern world were the 'microbial threat' was considered virtually over, to 'preparedness' in relation to largely unpredictable global pandemics, likely to break through the porous membrane of the modern bubble and subject its denziens to new levels of insecurity.[15]

Indeed, without resorting to anthropomorphisms and New Age speculations, but keeping with the sober point of view of cybernetics, we can suggest that viruses will be an important component of the feedback mechanisms that, in this century, will contribute to radically counterbalance the impact of the moderns on the biosphere. Viruses and pandemics will certainly be a part of this adaptation. But there will be many other mechanisms as well. Global warming itself will have radical and largely

unpredictable effects on most processes of modern society: further lowering of agricultural productivity, intensification of storms and extreme weather events, still new pandemics when ancient viruses and bacteria wake up with the melting of permafrost in the Siberian tundra, more pressure on aquifers by now at the point of exhaustion, with the wars and conflicts that ensue. The acidification of the oceans resulting from massive use of fertilizers and the reduction of biodiversity that follows from industrial agriculture will significantly reduce ecological resilience. To this we can add the social effects unleashed by these changes, famines and conflicts generated by drought and the collapse of traditional life forms (the war in Syria was partly due to the a fact that a decade of drought in the countryside had driven recent migrants, to the cities, poor, desperate and easily radicalized); the collapse or in any case reduced capacity of states and public systems (we already saw it with Covid) and serious disturbances to globalized economic systems. This is not the place to provide a catalogue of the horrors that await us, there are many others. The point is instead that we have already entered the future, in an era when 'nothing will be the same again' and where our mental schemes, our traditional ways of conceiving nature, society, economic and political processes, and our own way of life will change dramatically.
Indeed, what we are likely to face is a collapse, or at least a massive reduction of the bubble of safety that modernity has erected, and the need, for a growing amount of people, to face insecurity and complexity anew. As a geological fact the Anthropocene signifies that the magnitude of human impact on its environment is such that the reactions that this generates are no longer local nor manageable but systemic and fundamental. In the Anthropocene humans can no longer ‘act on’ nature without considering that it will ‘act back’ and that its reactions might be far more transformative or powerful than what humans have been able to put in motion, so far.

Complexity and insecurity

The necessity to consider also the non-human consequences of human action (as well as the human origins of many natural events, like pandemics) essentially collapses the form of rationality that stood at the basis of modern society. Ever since their separation from nature, the Moderns have lived by their fundamental faith in the one-

dimensional relation between cause and effect, exemplified by the 'instrumental rationality' that Max Weber saw as central to the modern mind. The idea that there is a single and calculable relation between cause and effect made possible the orientation towards the future that stood at the heart of modern society. In modern times, the future was in a sense known: Even though it could not be known in detail, a limited range of possible future states could be extrapolated from the present. In Frank Knight's terms, the future was a matter of risks, or 'known unknowns' as he called them. Such risks can be calculated and hence acted on (just as an insurance company can calculate and hence price the risk of automobile incidents). This way the future, or at least its general direction, could be 'incorporated' into the present; it could be controlled and made an object of present-day decision making. This ethos of calculability began to collapse already in the 1980s with the coming to the fore of what, for a lack of better terms, was called post-modernity.

Indeed the condition of the Anthropocene poses the issue of risk in an entirely new way. Sociologist Ulrich Beck highlighted the issue of risk in late modern societies, writing in the mid-1980s (his *Risk Society* came out just after the Chernobyl disaster). To him, risks were still marginal issues (although he predicted that they would become more prevalent in the future) largely amendable to the control and management on the part of the State and its capacity for rational planning. According to Beck, the politics of risk was largely about raising awareness of things like environmental destruction or the dangers of nuclear power and pushing the state to deal with such issues. Today, as Beck later acknowledged, we tend to deal with insecurities rather than risks- unknown unknowns, to use Knight's terminology, which per definition are beyond the capacities for rational planning on the part of the modern state and its agencies. (At the same time, slowing economic growth resulting from the End of Cheap Nature, tends to make those agencies less resourceful- this was obvious during the Covid pandemic when, in Italy, the number of beds in emergency care units were less than a half of what they had been in the 1980s.) The insecurities of the Anthropocene also tend to become intrinsic to the framework of everyday life itself- a new normal marked by the precarities of a flexible labour market, geopolitical instability and the increasing frequency of natural disasters.

The condition of the Anthropocene thus provides an intensification of Beck's 'risk society', it shatters the illusion of calculability and confronts us with the future as pure uncertainty, an 'unknown unknown' that cannot be predicted or acted on. As Beck himself would write while revisiting his thesis in the light of the 2001 attacks on the New York World Trade center, or 9/11: '*The speeding up of modernization has produced a gulf between the world of quantifiable risk in which we think and act, and the world of nonquantifiable insecurities that we are creating.'* [16]

From this perspective we have to realize that everything is inter-connected and interacts, often in unpredictable ways. This insight stands at the basis of a third concept sometimes used to think about our condition: the *Chthulucene*. Launched by Californian philosopher Donna Haraway, the concept of the Chthulucene seeks to draw attention to the hidden and invisible connections that, long obscured by the one-dimensional thought of modernity, now make themselves apparent as both threats and possibilities. The concept is based on the Greek *χθών,* signifying earth and in particular 'the netherworld', what goes on under the surface. This is of course also the etymology of Lovecraft's famous ancestral monster Cthulhu, from which however Haraway wishes to dissociate herself. The inspiration is rather anthropologist Anna Lowenhaupt Tsing's work on mushrooms and in particular her use of mycelia, the vast underground 'networks' created by mushrooms, as a metaphor for the kinds of hidden connections and co-operations that we now need to focus on. In Haraway's work the concept of the Chthulucene has had mainly positive connotations: it helps us focus on hidden potentials for collaboration and symbiosis, allowing us to explore novel connections, in between as well as within species, as possible new ways of living together. It orients us towards making 'kin, not babies' as her slogan has it. That is, to explore unconventional relations and alliances rather than to simply reproduce the forms of relationality and affect that came with the modern era and its rigid prescriptions for gender and sexuality within the context of the nuclear family. While the very Californian invitation to 'drop out' of modernity and 'tune in' to the vast potential of earthly symbiosis is certainly attractive, and perhaps useful as a device for novel forms of politics in the Anthropocene, the other side of such hidden and unexpected connections is of course complexity. To Niklas Luhmann, who introduced the 'second-order cybernetics' of biologists Francisco Varela and Humberto Maturana

into the social sciences, a world where connections are hidden is by definition a complex world which is essentially unknowable. Indeed, through autopoiesis, or self-creation, systems, whether biological, social or of other kinds, go on living (or operating) by creating mechanisms that are able to reduce the complexity of the world into ordered (meaningful in the case of social systems), models that allow them to make decisions and keep operating. Such mechanisms- fascinated by the rise of digital technologies by the time of his writing, Luhmann uses terms like 'codes' or 'programs'- necessarily reduce the complexity of the world into, at times complicated, but still limited and partial perspectives. Every system thus 'creates' its environment, as that limited 'slice' of the world that it has 'selected' as the domain with which it is able to interact. The point of this convoluted passage is to suggest that the concept of the Chthulucene does not only draw attention to the potential inherent in exploring novel interconnections, it also highlights the fact that the condition of the Anthropocene essentially overwhelms the capacity of the 'system' of modernity to orient itself on Earth. The future of the Chthulucene- or whatever we wish to call this epoch that we are entering- might be novel, surprising and unexpected, but it is also fundamentally unknowable and, as such, essentially insecure.[17]

[1] For an extensive overview of socio-economic and earth-system trends related to the Anthropocene, including an overview of debates on periodization in the natural and social sciences, see Bonneuil, Christophe & Jean-babtist Fressoz, *The Shock of The Anthropocene*, London; Verso, 2017.On the environmental consequences of neolithic agricultural practice, see, for example, Scott, J. *Against the Grain. A Deep History of the Earliest States*, New Have, Yale University Press, 2017.

[2] Stoermer, E. F., & Crutzen, P. J. (2000). 'The "Anthropocene"'. *IGBP Newsletter*, *41*, 17-18; Steffen, W., Crutzen, P. J., & McNeill, J. R. (2007). 'The Anthropocene: are humans now overwhelming the great forces of nature?' *Ambio-Journal of Human Environment Research and Management*, *36*(8), 614-621. On the chicken bones, see Bennett, Carys E., Richard Thomas, Mark Williams, Jan Zalasiewicz, Matt Edgeworth, Holly Miller, Ben Coles, Alison Foster, Emily J. Burton & Upenyu Marume. (2018) 'The broiler chicken as a signal of a human reconfigured biosphere.' *Royal Society Open Science* 5 (12), 180325.

[3] Bratton, Benjamin, *The Terraforming*, Moscow; Strelka Press, 2019; Shulmeister, James, 'Will the tropics eventually become inhabitable?' *The Conversation*, September 15, 2020, https://theconversation.com/climate-explained-will-the-tropics-eventually-become-uninhabitable-145174; Gustin, Georgina, 'Climate change threatens the world's fisheries', *Inside Climate News*, Sept 29, 2019, https://insideclimatenews.org/news/29092019/ocean-fish-diet-climate-change-impact-food-ipcc-report-cryosphere/ ; Kiran Stacey, 'Where will humans live if the earth becomes inhabitable?', *Financial Times*, Sept. 12, 2019, https://www.ft.com/content/5312d95a-b796-11e9-8a88-aa6628ac896c

[4] Latour, Bruno, *We have Never Been Modern*, Cambridge; Harvard University Press, 2012; Chakrabarty, Dipesh (2016), 'Humanities in the Anthropocene: The crisis of an enduring Kantian fable.' *New Literary History*, *47*(2), 377-397.

[5] Descola, Philippe, *Beyond Nature and Culture*, Chicago; The University of Chicago Press, 2013, p.3. For an overview on debates on palaeolithic religion and the neolithic 'revolution', see for example, David Graeber & David Wengrow; *The Dawn of Everything. A New History of Humanity,* London; Penguin, 2021, Dickson, Bruce. *The Dawn of Belief: Religion in the Upper Paleolithic of Southwestern Europe*. Tuscon (AR); University of Arizona Press, 1992. On the eradication of animistic traditions in the European counterreformation see Silvia Federici, *The Caliban and the Witch,* New York; AutonoMedia, 2004, on their return in New Age format; Colin Campbell, *The Easternization of the West*, London; Paradigm, 2007.

[6] Claude Meillassoux, *L'escalvage en Afrique précolonial,* Paris; Maspero, 1975, Heath, Malcolm. "Aristotle on natural slavery." *Phronesis* 53, no. 3 (2008): 243-270. On the transatlantic slave trade and its consequences, see for example Wolf, Eric, *Europe and the People without History*, Berkley; University of California Press, 1982.

[7] Wolford, Wendy (2021) "The Plantationocene: A Lusotropical Contribution to the Theory." *Annals of the American Association of Geographers,* 111 (6): 1622–39. https://doi.org/10.1080/24694452.2020.1850231, on cotton see Beckert, Sven. *Empire of Cotton: A Global History*. New York; Vintage Books, 2015, on sugar, Mintz, Sydney W., *Sweetness and Power: The Place of Sugar in Modern History*. New York; Penguin.

[8] Moore, J. W. (2017) 'The Capitalocene, Part I: on the nature and origins of our ecological crisis.' *The Journal of Peasant Studies*, *44*(3), 594-630; Moore, J. W. (2018); 'The Capitalocene Part II: accumulation by appropriation and the centrality of unpaid work/energy.' *The Journal of Peasant Studies*, *45*(2), 237-279. Patel, R., & Moore, J. W. (2017) *A History of the World in Seven Cheap Things*. University of California Press. On contemporary slavery see Qui, Jack. "Goodbye iSlave." Chicago; University of Illinois Press, 2016.

[9] Benjamin, Walter & Asja Lacis, *Napoli porosa*, Napoli; Dante e Descartes editori, 2020, on famines and the consequences of the Agro-industrial complex, Roberts, Paul. *The End of Food*. Houghton Mifflin Harcourt, 2009.

[10] On the role of coal in the Great Divergence, see Pomerance, K. *The Great Divergence. China, Europe and the Making of the Modern World,* Princeton; Princeton University Press, 2000. On the politics of coal in the English industrial revolution, Malm, Andreas. *Fossil Capital: The Rise of Steam Power and the Roots of Global Warming*. London; Verso Books, 2016. On the cultural role of Oil in the modern imaginary, Matthew Huiber, *Lifeblook. Oil, Freedom and the Forces of Capital,* Minneapolis; University of Minnesota press, 2013.

[11] Robert Muchembled, *Une histoire de la violence. De la fin du Moyen Age à nos jours*, Paris; editions du Seuil, 2008. On Indian homicide rates see Knoema World Data Atlas, https://knoema.com/atlas/India/Homicide-rate#:~:text=In%202020%2C%20homicide%20rate%20for,per%20100%2C000%20population%20in%202020

[12] Landers, J. *Death and the Metropolis: Studies in the Demographic History of London, 1670–1830*. Cambridge University Press, 1993; Szreter, S. and K. Siena, 'The pox in Boswell's London: an estimate of the extent of syphilis infection in the metropolis in the 1770s.' *The Economic History Review* **74**.2, 2021, pp. 372–99; Otter, C. *Diet for a Large Planet: industrial Britain, food systems, and world ecology*. Chicago Il; University of Chicago Press, 2020, Gandy, M. 'The Zoonotic City: Urban Political Ecology and the Pandemic Imaginary.' *Int. J. Urban Reg. Res*., 46, 2020, pp. 202-219.

[13] On historical mortality rates, see Muchembled cit. On the politics of the 19th Century Cordon Sanitaire, Alex de Waal, *New Pandemics. Old Politics. Two Hundred Years of War on Disease and its Alternatives*, Cambridge; Polity Press, 2021.

[14] John Beddington, *A Perfect Storm*, YouTube, Jan 6, 2011, https://www.youtube.com/watch?v=9rXjmr64KjU . For an apocalyptic scenario for the 2020s, see Bendell, Jim. *Deep Adaptation: A Map for Navigating Climate Tragedy.* Institute for Leadership and Sustainability (IFLAS) Occasional Papers Volume 2. University of Cumbria, 2018, https://insight.cumbria.ac.uk/id/eprint/4166/

[15] Wallace, Rob. *Big Farms Make Big Flu: Dispatches on Influenza, Agribusiness, and the Nature of Science*, New York; NYU Press, 2016. On neolithic zoonosis, see Scott, cit, pp. 93-115, on 'preparedness', Lakoff, Andrew. 'Preparing for the next Emergency.' *Public Culture* 19, no. 2 (2007): 247–71.

[16] Beck, U. (2002). The terrorist threat: World risk society revisited. *Theory, Culture & Society*, *19*(4), p.40. Similar origins of future studies; Beck U. *Risk Society,* London; Sage, 1992.

[17] On the Chthulucene, see Haraway, D. (2015). Anthropocene, capitalocene, plantationocene, chthulucene: Making kin. *Environmental humanities*, *6*(1), 159-165. On 'autopoietic systems theory', Luhmann, N. Social Systems, Palo Alto; Stanford University Press, 1995, on the biological roots fo the concept, Varela, Francisco G., Humberto R. Maturana, and Ricardo Uribe. "Autopoiesis: The organization of living systems, its characterization and a model." *Biosystems* 5.4 (1974): 187-196.