

## Introduction to the Italian edition of Ian Angus' book, Facing the Anthropocene

**Giuseppe Sottile**

Ian Angus's book was published in 2016. Since then there have been both new discoveries and important ratifications.

*GMO are an 'invention' of corporations,  
and therefore can be patented and owned.*

Ana Isla

*Nature too awaits the revolution.*

Herbert Marcuse [1]

Ian Angus's book was published in 2016. Since then there have been both new discoveries and important ratifications. On 21 March last year, the Anthropocene Working Group confirmed its intention to identify the era in which we are living as one following on from the Holocene and to name it the Anthropocene. The beginning of this new era has been dated to the middle of the last century, marking the start of what has been called the "Great Acceleration". We now wait to hear further from other bodies [2], but the AWG sees this as a fundamental geological change marked by a series of phenomena attributable to recent human activity and now allowing us to view "humanity" as a powerful and destructive geological force.

Basic natural cycles have been profoundly affected both by the processes of industrialisation and urbanisation and by military activities in the nuclear field. This has led to the global warming we are currently experiencing as well as to planetary devastation more generally; and many of these changes seem set to continue into the distant future. The most important primary marker signalling the division between geological eras can be found in the existence of radioactive fallout from nuclear explosions, which manifested on average once every 9.6 days during the period 1945-1988.

In addition vast fires have broken out in Russia, California the Amazon and, most recently and more dramatically, in Australia, as well as floods hitting South-East Asia. Around 10 million hectares of vegetation have disappeared because of the fires and an estimated one billion animals have died in Australian alone. Yet little attention is paid to these kinds of events, while minor day-to-day matters are what holds people's interest the most. The immersion of a society in a particular world view is

what makes it incapable of considering matters that are fundamental to its very survival. And the world view that informs our own time is a profoundly anthropocentric one.

We have recently gone through a period of coronavirus pandemic. All at once greenhouse gases and nickel and cadmium emissions went down. The air in big cities went back to being more breathable. In Venice we are told that for the first time in very many years fish could be seen in the waters which themselves seemed crystal clear and the swans were back in the canals; round Cagliari, with shipping having ceased, dolphins were seen; stags and deer reappeared in the cities around golf courses; and bird song replaced the sound of car horns. From all this maybe some people will have drawn the message that it is not work as such that ennobles humanity. Nature has shown us that the economy, at least a certain kind of economy, is bad for the health of the planet and for our own health. The planet has reminded us that we are living in a flimsily built castle with foundations of sand, alienated from nature itself. But the only worries have been those associated with the production of a vaccine and the effects on economic growth. There is already talk of a “new reset”, which perhaps will be called a “green” one. The blindness to what has happened is expressed in its description simply as an “enemy”, against which a “war” has to be fought. There is almost nothing to be found about the likely origin of the pandemic, which in the same way as SARS, BSE, bird flu, swine flu, etc. ought to raise serious questions about the way we treat and raise animals, especially since the rise and spread of industrial farming. There are few questions either about our destruction of the earth’s habitats and the grave imbalances it causes between man and nature. But we will look at this separately, with a view to illustrating how in a general way there is nothing at all “natural” in the way epidemics originate. They arise rather from an an ecocidal economic system. [3]

2018 saw the first protests by Greta Thunberg and the birth of the Extinction Rebellion movement, followed a year later by the new vegan movement, Animal Rebellion. [4] Here could be seen a kind of “historic welding together of the struggle against global warming with that of the defence of the animal world”. [5] While Occupy Wall Street represented a new departure in the political struggle against capitalism, just as in its own way is the case now for the “yellow vests”, the two “Rebellion” movements can be seen as something entirely new for their radical critique of the system, shining a light as they do on the catastrophic impact of that system on all life, both human and non-human. In their demonstrations, especially the original British ones, there have been many examples of slogans such as “Radical ecology, death to capital”, “Capitalism is organised crime”, “Business as usual is death”, etc., and the Extinction Rebellion website has declarations such as “We rise in the name of truth and withdraw our consent for ecocide, oppression and patriarchy” and “The third world war — of profit versus life — is already underway”. These movements have identified the system of corporate capitalism, which consolidated itself in the second part of the post-war period, as the true threat to humanity and the planet. This can be seen in the fact that many of their non-violent acts and acts of civil disobedience target the very symbols of that system (and also lead to many arrests).

It is no surprise that the authorities have gone as far as to label Extinction Rebellion a terrorist organisation (while some exponents from police corps have shown a partial understanding), and that “offences” associated with the defence of nature have for some time been considered particularly serious, especially in the United States and Latin America. This is also what has happened to Earth First and to protests by the indigenous movements. Such is the measure of the extent to which a movement is considered “dangerous”, gets ignored by the mass media and is subject to police

violence. All this is quite unlike what happens to mainstream environmental movements, which are actually needed by the system, conferring upon it as they do the appearance of liberalism. For their principles and organisation, movements like Extinction Rebellion should be seen as expressing a vision linking an ecosophical approach to elements of anarchism and socialism and standing out above the asphyxiating dead end approach of many other so-called opposition organisations of both nationalist and globalist hues. We can only hope for the growth of this kind of movement and their approach, combining ecological, anarchist and socialist elements.

Another of that movement's slogans is "System Change not Climate Change". Three recent studies [6] provide us with a coherent picture of the place of our own species in the ecosystem in the current phase of history. One of them looks at the quantity and composition of biomass in the biosphere in terms of gigatons of carbon. Another considers the process of annihilation of individual animal species, reflecting an aspect of what has been called the "sixth mass extinction", the one caused by the human species. [7] The third study concerns the impact on the environment of the production of meat, fish and dairy products both on an industrial scale and otherwise.

The first of these studies assigns to our species around 0.01% of the biomass. The large majority of the biomass consists of autotrophic organisms (the plant kingdom has around 85% of it), then there is bacteria (around 15%) and the rest comes from fungi, viruses, animals, etc. which form less than 10%. Animals form around 0.3% of the total, only a proportion of which are omnivorous or carnivorous. Perhaps the most surprising thing is that the biomass from farmed mammals and birds has now overtaken that from wild animals. This is because of the food habits that have been adopted by humans, especially since the second part of the post-world war period, and also because of the progressive reduction of habitats available to other species. [8] The second study presents an alarming picture of the effects on the biosphere and on certain animal species due to our own species imposing its *social organisation* on animal ecosystems. The third one stresses the absolute need to dramatically reduce meat, fish and dairy consumption and to understand that the capitalist industrial system is having a massively destructive effect on the environment as it churns out products which give an extremely low yield in calories and protein compared with the amount of land used.

What counts, therefore, in biomass terms, is the *wide ranging effect* of humanity at this stage of its development, with its habitat destruction, hunting, pollution, climate change and massively increased size of what is nowadays called its "ecological footprint". [9] In this scenario the countries having the greatest negative impact are the old industrialised ones.

This does not mean that population growth is not a factor, but just that the main problem lies in the way current human society interacts with what it is part of: the ecosystem. [10] Unfortunately, however, what we have in mainstream environmental thinking is a tendency to see population growth as the cause of negative consequences more rightly attributable to an economic system that considers infinite growth as an absolute given and with that the infinite exploitation of raw materials and energy as equally a given and a natural one at that. And in this same scenario, it is population growth that is seen as the prime cause of growing misery. But such misery has in fact come about through the workings of the economic system itself and has been made worse since the early 1970s by a period of particularly slow growth of capital accumulation (a sort of "unhappy degrowth"). This period has been marked by a series of grave economic crises, the most recent of

which even greater in relative terms than the depression of the 1930s and provoking the well known phenomena of privatisation of previously state-run sectors of the economy, of outsourcing and of speculation boom. [11]

Ian Angus edits the eco-socialist website *Climate&Capitalism*, which is allied with the American left journal *Monthly Review*, currently edited by John Bellamy Foster. These two voices, together with the long running eco-Marxist journal *Capitalism Nature Socialism*, present a critical approach to capitalism as a whole, dealing not only with the detailed economic dynamics of the capitalist system but also analysing its impacts on planetary ecosystems. The roles of nature and work – which O'Connor, echoing Marx, has termed the “conditions of production” – lead, according to O'Connor, to a “second contradiction” of capitalism, (i.e. between capital and nature), then to the not insignificant role played in the accumulation process by what James Moore has called “accumulation by appropriation”, and to the important concept of “metabolic rift” in Marx’s thought studied in the work of John Bellamy Foster – and echoed by Angus – and pointing up the vital contribution of Marx to a damning critique of capitalism on ecological grounds. [12]

In this area Foster shows how the original eco-socialist idea, that is the theory of “metabolic rift”, carried with it a consequence which rescues Marx from the charge levelled at him by some that he failed to pay attention to the devastating effects of capitalism on the cycles of nature, a charge first in fact levelled by writers putting forward an ecological critique of capitalism, for instance O'Connor himself. [13] So, for example, the rift identified by Marx in the nutrient cycle (nitrogen, potassium, phosphorus) – owing to the separation which had taken place in Britain between town and country as a consequence of primitive accumulation - led to British capitalism’s appropriation of guano nitrate from Latin America as well as bone waste from many different parts of the globe. Following on from this was the synthetic production of fertilisers and then the pesticides which have become fundamental to industrial agriculture and to the so-called “green revolution” up to this day. [14]

This metabolic rift is at the root of today’s ecological crisis side by side with the global warming caused by the carbon cycle crisis arising from “fossil fuel capitalism”. This also gives rise to eutrophication and acidification of water resources, loss of biodiversity, etc. We can therefore, for example, see how industrial production is the origin of both the metabolic rift in the reproductive cycle of fish in the Mediterranean [15] and the prolonged drought in the Middle East, which keeps on bringing millions of climate migrants to attempt to cross that sea.

The fact is that “the material exchanges” between man and nature exist as a social metabolism interacting with the metabolism of nature. But the material exchanges specific to capitalism have an ecocidal character, as they produce a metabolic rift which puts at risk the survival both of the human species and of species in general. This is especially the case in this current period of the “Great Acceleration”. So capitalism should be seen as a system that puts under the most extreme stress features which are part of the very fabric of human civilisation. [16] To be precise, the ecological catastrophe which is proceeding apace is not the outcome of some general abstract human activity but rather of an economic system that is *unsustainable by its very nature*. [17]

The reality is that not only capitalism but the whole of human civilisation is at a critical point. Capitalism has often found itself in crisis because of its frequent if not identical economic failures. The last was barely ten years ago, and here we are again. Now however we are facing not just a crisis but an event of the most momentous magnitude.

Bonneuil and Fressoz point out how “mainstream Marxists, by focusing on the labour theory of value and the distribution of the product between two classes, workers and capitalists, essentially saw only two factors of production: capital and labour. Whereas Marx and Engels were particularly concerned with the metabolic rupture between Earth and society that capitalism had produced, and certain Marxists such as Podolinsky sought to refound the labour theory on energy, Marxist economic science – until the recent emergence of a fruitful eco-Marxism – abolished the role of metabolism and energy, rejecting as ‘Malthusian’ (and thus conservative) any idea of limits to the planet’s resources”. [18] By contrast, Burkett and Foster underline how Marx’s economic analysis views capitalist production in both an economic and an ecological light.

An analysis that considers the well known “contradiction” between capital and labour must therefore be accompanied by an analysis of what has been called the “second contradiction”, that is the “crisis of underproduction”, It must therefore also consider the role of the metabolic rift at the current stage of capitalist development, We are facing a form of capital accumulation that is *terminal* or, as Moore puts it, “today the dialectic of capitalisation and appropriation has reached breaking point”. Foster refers to “a general, absolute law of environmental degradation”, Angus uses the term “exterminism”, McBrien writes of “necrosis”, and Kovel calls capitalism a cancer upon nature. [19] Seen in this light, the question of the economic nature of particular capitalist crises has little importance. What is important are the devastating effects that capital accumulation (i.e. investment in fixed or circulating capital) has on labour power and the natural world.

The question to answer is as follows: is a continuous process of capital accumulation compatible with the system’s ability to recycle, to conserve or to make up for the loss of the physical world (as well as for the degradation of the human world) and to remedy the impairment of natural processes which so far it has found no way of replacing or conserving? [20] The global expansion of capitalism has meant the destruction of the non-renewable natural resources which keep it going – not to speak of the devastating effects caused by waste and pollution – as well as negative consequences for renewable energy sources because of the impact on the natural cycles of the planet and on the whole balance of the biosphere. The quite monstrous tendency of capitalism seems to involve an attempt at indefinite replacement and renewal of existing natural (and human) resources, at trying to make more efficient use of them in this terminal phase of the system’s existence via geo-engineering techniques and by recycling the waste products with a view to reconstituting them through processes that aim to establish some kind of maniacal *domination* of man over Nature. [21]

We know that the world of science, with its innumerable researchers, is a *dépendance* of capital. For that reason it supports the ongoing madness rather than seeing it for what it is. Viewing the process in train as somehow natural and inevitable, their approach is to begin by first trying to remedy those problems that seem only the most urgent by the use of substitute or other technologies and then, if they can, to move to a progressive and complete “dematerialisation” of the economy.

The powers-that-be are therefore looking for solutions, rapid ones if possible. Some are moving towards drastic remedies, which involve establishing new “definitive” forms of control over the “conditions of production”, especially the physical ones. Financialisation of the ecological crisis, monetisation of ecosystem services, geo-engineering, the green economy: all these are seen as “new” tools for forms of accumulation, fictitious or real, and solutions which, while most likely illusory, are almost certainly dangerous. Moreover, the “world view” provided by the system of

capitalist control can only conceive of “solutions” compatible with its own existence, since its own limits appear to be those of the world itself.

According to Marx, “The true barrier to capitalist production is capital itself.”, and the factor that today dictates the need to move on from that system of mass destruction is also the factor that stands in the way of it. To be precise, since the purpose of capitalist production is not the satisfaction of needs but rather net profit to be gained, it is profit that determines the very nature and quantity of needs as well as the purpose of the productive process. Here we are talking about medication, news, food, technology and transport as well as the mass production of armaments and pesticides, 5G technology, weather forecasting and “scientific” documentaries that depict nature as a perennial theatre of war with an unending catalogue of horrors, rather than the (endo)symbiosis and autotrophy which is in fact nature’s defining characteristic. What we have is production organised across immense corporate entities with lives of their own (from which derives so-called “consumer culture” defined by Foster as “economic Malthusianism”). This stretches as far as an imagined “need” for those well known “tools of mass destruction” which arises from speculation on the ongoing price of some raw material or on a particular financial index or on a state or states defaulting on their debts. Such is what passes for what we are called upon to consider “freedom”. The result is a social system that increasingly resembles a shanty town full of computers and smartphones.

But since this system, though totalitarian, is not omnipotent, we can also ask ourselves, as Guy Debord did, “When it falls, how much will it drag down with it?”. Here indicated are a few of the strategies it uses to survive.

a) Marx noted that “The process of production appears merely as an unavoidable intermediate link, as a necessary evil for the sake of money-making. All nations with a capitalist mode of production are therefore seized periodically by a feverish attempt to make money without the intervention of the process of production”. [22]

Financialisation of the ecological crisis operates by income sources being taken over for speculation purposes, thus increasing the quantity of debt. Underlying this is the need to manage ecological risk, since with global warming economic performance depends increasingly on climate conditions. This is part of a movement of capital investment in a speculative direction that has taken place since the 1970s in particular, when the system of fixed exchange rates was abandoned and the dominance of the financial sphere over productive capital began to emerge with exponential growth of the value of financial assets over GDP. Except that now not just the future of capitalism is at stake, but the future of the planet.

Weather derivatives, which have boomed since 2004 in the same way as “catastrophe bonds”, are instruments being used cope financially with climate change. They should be distinguished from simple insurance policies used to cover damage from calamitous events. Those on both sides of these contracts seek to “manage” the economic consequences of climate changes, which are themselves seen as inevitable. So, by indexing climate variables, for example average seasonal temperature, and pricing the values in the index, they can “package and trade in the weather” (thus “inventing” a reality). These instruments in their turn can be exchanged on other markets.

At the same time worsening of the conditions of production causes an increase in costs and an opportunity for profit. This financialisation, however, taking into account only the net market

position of weather derivatives, causes increased fragility in the chain of debt. We can also consider the so-called “carbon markets”: these too price a physical unit, a ton of carbon, and in levying a cost on greenhouse gas emissions, create the conditions for speculative profits to be made. That these carbon markets have had no effect on the reduction of emissions has been highlighted in various studies. [23]

It is clear that these are in no way “solutions”, but rather attempts at exercising a semblance of control over changing environmental conditions, which create in fact yet a further opportunity for gain by certain sectors of capital. This is, as indicated, speculative gain, which has the effect of reducing capital investment in production and so in capital accumulation. It is almost as though capitalism were devouring its very self. [24]

In addition to this, worsening of the physical conditions of production is giving stimulus to the phenomenon of privatisation of natural resources such as water which were once considered “common property”. The more goods are in scarce supply because of the process of the destruction of nature by capitalism, the more these goods become important factors in the accumulation process, not in themselves but because of the power relationships they confer. Scarcity of a good is a necessary (though not sufficient) condition for its privatisation or capitalist management, in just the same way as its wide availability is a necessary (though not sufficient) condition for its public management. If we had “clean energy” technology (e.g. low energy fusion or such) or made more efficient use of solar energy, this would not rule out privatisation of the process, with those energy sources being taken over via patents. This could happen, at least up to a point, since these technologies could almost be domestic in character in that they would not require those large power stations and transmission networks in which the fossil fuel business concentrates its energies.

b) Ecological modernisation of capitalism, the so-called “green economy”, seems to go hand in hand with the previously mentioned aspiration of the current economic system to make money without carrying out the process of production. So now – in the name of sustainable development – it seeks to carry out the production process “without using resources” (so-called “dematerialisation”) but by means of some supposed amazing new technology over the whole of the productive process, even if such technology is in reality mainly to be found in the field of information technology. [25] It must be remembered that the quest for efficient use of resources is part of the capitalist production process (as is well known, the cost of any “externalities” and wastage of resources falls on society at large), but that is simply to reiterate what is known as the Jevons paradox, meaning that any possible savings made in the use of raw materials and energy sources is accompanied by an overall increase in production and consumption (in both value and physical quantity, and in emissions too), which equals and indeed exceeds those savings. Such “endless growth” is in the very nature of capitalism. This means that even if we can imagine a growing use of renewable resources, there would be no let up in the need for capitalism to increase production and to carry on using non-renewable resources in the process. [26]

c) Modern philosophical and scientific thought began with a vision of nature and the cosmos as entirely passive matter which allowed man to torment it at will, and now, increasingly, the economic system we have presents man with “objective” permission to finish off nature once and for all. While the green economy is embedded in the tradition that sees market mechanisms as the solution using substitute resources and technologies to allow more efficient use of natural resources, the “ecological economy”, in its neoclassical approach, shows awareness of the impact of social and

economic factors on natural processes and factors; however that too is still primarily concerned with preserving the status quo. [27] With the current concern that shortages or degradation of natural resources may represent a constraint on the processes of economic growth, there is a whole sector of study that is involved in monetising, in giving an economic value to, what are called “ecosystem services”. These are seen as “natural capital” (e.g. pollination, available groundwater, natural capture of greenhouse gases, etc.). This is how “the relative contribution of natural capital to human wellbeing” is assessed, [28] and even this is then divided up into different types of capital, to thus make up the total quantity of ecosystem services. So this supposed method of resolving environmental problems puts a price on the natural processes we depend on as a way of valuing their costs, and this independently of the possible utilisation in capitalist terms which such valuation will lead to. And all this is done apparently with the best of intentions, even though it is in reality like trying to heal a sick man with precisely the thing that made him ill in the first place.

A Marxist approach lays bare all the limitations of giving “an economic value to ecosystem services”. The reality is that any attempt to “naturalise” an economy which itself has a capitalist nature amounts to a “historicisation” of nature, i.e. perceiving it as an economic category and from its historical rather than its “natural” aspect. [29] Nature is thus perceived in terms of natural income, natural capital, natural services, natural depreciation, natural supplies, etc. The argument is that there is no conflict between environment and economy with conceptual categories regarded as consistent with each other and seen as the very “nature of things”. In this view, ecosystem services contribute towards human wellbeing and are fundamental for the economy and the economy is about goods, monetary flows and the dynamics of production, distribution and consumption. So it is seen as legitimate that nature too should be subjected to the same kind of market valuation, which the market will be able to make use of in optimal fashion. [30] This is of course a false argument supported only by the premise that commodification is a “natural” thing. Once this argument is rejected, nature divests itself of its historical clothes, at least those in which it is currently dressed. [31]

Marx wrote ironically that “So far no chemist has ever discovered exchange value either in a pearl or a diamond”, since there are use values which do not possess any exchange value, referring here to “all means of production supplied by Nature without human assistance, such as land, wind, water, metals in situ and timber in virgin forests.” [32] After having “dematerialised” the economy in the course of the 20<sup>th</sup> century with the development of national accounting methods (especially following the economic crisis of the 1930s), the attempt now is to “materialise” it. As Bonneuil and Fressoz have observed, “In our late modernity, the ‘invisibilizing’ of the limits of Earth is no longer just a result of an *externalization*... but on the contrary of a radical *internalization*. This internalization is expressed in the efforts to measure ecosystemic functions in terms of financial flows, making a nature that is liquid and capitalizable even in its most intimate processes.” [33] In the picture of orthodox theory which these studies are part of and in the picture of an energy-consuming system devoted to continual world growth (even if for quite some time it has been in a state of asphyxiation at a global level), such studies allow the putting together of statistical forecasts in terms of various services in the same way as the future of certain kinds of welfare can be predicted in a scenario of economic stagnation. In assigning a monetary value to natural resources, ecological economics seeks some kind of sustainable development, all the while concealing the problems of a capitalist system that is unsustainable.



d) But the thing to be most feared is geo-engineering, since it is the apotheosis, at one and the same time, both of the domination and the complete bankruptcy of a system which has gobbled up the natural and human elements necessary for its own reproduction. This started with the colonisation that ushered in the modern era. Geo-engineering is a combination of technologies aimed at reducing the amount of greenhouse gas present in the atmosphere, on the one hand by filtering solar radiation as it enters the atmosphere or increasing the reflective capacity (the albedo) of the earth's surface, on the other (negative emissions) by removing the amount of CO<sub>2</sub> produced by economic activity (using, for example, Sun Radiation Management, Carbon Dioxide Removal, Bioenergy with Carbon Capture and Storage). [34] This is despite the fact that the technologies supposed to reduce the effects of pollution (those externalities produced by the system) are of the most diverse nature themselves, from nano-particles substituting chemical fertilisers, to poplar trees that absorb plastic, to perennial polycultures, to walls made of vegetation to combat desertification and sandstorms, to synthetic meat, to pollinating robots, etc. etc.

In planning to tip calcium into the world's oceans to make them more alkaline and capable of absorbing more carbon dioxide, here too the attempt is to "heal" the planet in the same way as conventional medicine "heals" the patient, i.e. by treating the symptoms and in an entirely reductionist way. The potentially deadly effects of such technologies have been widely highlighted with serious consideration already been given to the highly interesting work done by Rosalie Bertell, which studies the impact of military activities from the second world war onwards on the biosphere, on the atmosphere and even on the radiation belt around the earth (Van Allen Belt). [35] It should also be noted, as Angus does, that official figures on greenhouse gas emissions and more generally on pollutants do not include the effects of military activity or commerce via sea or air. Capitalism's response to the ongoing ecological catastrophe is to look for solutions via the most extreme means of control over nature (and over humanity), whose effect would be to consolidate its geo-political power, i.e. that of a military-industrial kind. Capitalism is offering itself a fresh opportunity for growth built on its own ruins. It is, in fact, especially through geo-engineering that the system is bracing to demonstrate an ability to survive the impairment it is inflicting on natural processes. But this, according to the experts brings a serious risk not only of great harm to our ecosystems but also of the establishment of brazenly authoritarian decision-making processes.

It is also worth reflecting on how Burkett links the second contradiction to the first. The increase in costs caused by degradation of the conditions of production becomes at the same time an opportunity for capital accumulation (growth), i.e. the very thing that has produced the disaster in the first place. [36] Capitalism can only deal with its own disasters in a capitalist manner. This tautology constitutes an "inevitable world condition". Capitalism continues to show us that, however it acts, wherever it turns, a crime against something or someone will result. And, even as it runs on empty, it continues to use "technology" in an effort to gain more and more control over natural processes.

And all of this could happen in a scenario of ever worsening "climate wars" and of a tragedy which will see tens of millions of climate migrants across the world (see appendix) and exacerbation of the already seriously deteriorating conditions of human life on the planet.

We began by pointing out how well Marx had understood that capitalism was jeopardising the nutrient cycle in the British countryside. It sought to deal with this "metabolic rift" by developing synthetic fertiliser and pesticide use, thus leading to the victory of monocultures, the highest

expression of the destruction of biodiversity in agriculture. But this would produce, together with other factors, a breakdown of the process of pollination owing to the destruction of insect species, which capitalism now thinks it can remedy by a system of pollinating robots. [37] Capitalism creates situations which endanger the metabolism of the planet and thinks it can “resolve” them by transforming the Earth into something resembling an immense “technofossil”. It stands out clearly that the current technical and scientific system is entirely shaped by the requirements of capitalism and that, only by doing away with the current social set-up, will we be able to work out how to shape science and technology otherwise.

Ian Angus’s book, after explaining the historical origins of fossil capitalism in the post second world war period, focuses on the vexed question of possible alternatives, then providing an appendix on the misconceptions the term “Anthropocene” can lead to. The virtue of Angus’s work, belonging to an area of study which is much neglected in Italy, lies in its detailed portrayal of the impact of fossil capitalism on climate change and in its clear explanation of how the ecological crisis is the crisis of a particular social system with an *historical* character, yet at the same time is so devastating as to endanger the very existence of our species.

Thirty years on from the collapse of the Soviet bloc, the question that again presents itself, this time even more dramatically than when Rosa Luxemburg first voiced it, is “(eco)socialism or barbarism”. Angus points out how there was never an alternative to capitalism to be found in the USSR (much less China, past or present) and highlights the devastating impact on ecology of the Soviet system, characterised as it was by a productivism which made it, we would add, just an inefficient and corrupt form of state capitalism.

Some of the crucial matters raised by all this should now be put on the agenda with a view to highlighting their complexity. Marx wrote: “The workers ought to inscribe on their banner the revolutionary watchword: ‘*Abolition of the wages system*’”, but the history of the workers’ movement has actually gone in the opposite direction, taking the form of a struggle for “integration” within capitalism (viz Marx’s other observation that, the condition of the worker’s existence is “the sale of his labour power”). It was Paul Lafargue who, in the same historical period, wrote that in capitalism “work is the cause of all intellectual degeneracy, of all organic deformity”. Camatte, for his part, argued that “One can only speak of the victory of the proletarians to the extent that one simultaneously affirms that they will not realize it as proletarians, but in negating themselves, in posing man”. From Robert Kurz, of the *Krisis* group, comes the statement that it is the class struggle and democracy that have constituted the social dynamic and the political form of that integration within capitalism. And to give the last word to Moishe Postone here, that author points out that “the working class is an *integral* part of capitalism rather than the embodiment of its negation”, since it embodies, in terms of “value”, a particular and dominant form of “wealth” specific to capitalism. [38]

It was around forty years ago that the process of what may be called *de-integration*\* began with the decline in economic conditions and the gradual dismantling of welfare. The result of this is that wage and salary workers are now in large part left desperately hanging on to any kind of income they can get. So the welcome end of industrial capitalism will also signal the welcome end of the regime of wage labour. And all of this in a scenario of irredeemable *conflict between the continuation of capitalism and the continuation of the human species*, which depends, as does the

whole of the biosphere, on the safeguarding of all the underlying systems supporting life on the planet.

However, since capitalist society is monolithic, homogenous and internally all-pervading, unlike previous modes of production in which the conflicts between different classes were clearly delineated, “end of the world” and “end of capitalism” in Angus’s view (and he echoes Jameson in this) are seen by people as one and the same thing, meaning that a profoundly political question is perceived as part of the natural order of things.

In recent times, various alternatives have been discussed, especially in the English-speaking world. Eco-anarchism, in its “primitivist” incarnation and without claiming to engage with the question of primitivism itself, has been active in putting forward arguments explaining the destructive origins (the “*pars destruens*”) of the present social set up. Their approach has been to use much of the anthropological research done over recent decades to highlight how what we call, for want of a better word, *civilisation* is in fact a form of *domination* of some men over others and of men over nature that began to a certain extent with the birth of agriculture and in particular with the domestication of animals.

For the primitivists, this damning of capitalism is also a damning of human civilisation as such and of everything that it contains: technology, symbolic culture and the whole idea of work. However they seem to have no practical alternative to suggest other than a “return” to a somewhat prehistoric condition, while, as things stand, the real challenge is to find a *post-civilisation* solution. [39] The current economic system and its technological framework impede potential use of alternative energy (including renewables) and different technologies arising from that, as well as a different way of feeding ourselves that would allow us to dispense with, say, hunting and fishing and the adoption of both past and present forms of “organic” agriculture. All this would have as its goal a new kind of return to nature rather than imagined escapes to other planets in the old spirit of conquest and domination.

In some sense we need to return to an “uncivilised” state to combat the *necrophilic* practice characterising our “system” in previous centuries. In this context, “antispeciesist” ideas coming from eco-anarchist, Marxian and other quarters seem to provide some interesting ways forward, complementing as they do much earlier contributions from Bookchin’s social ecology movement. [40] According to Vaneigem, “Both in the world and in ourselves, we are at a crossroads between two civilisations. One of them is close to bringing about its own ruin and to creating a universe made sterile under its icy shadow, while the other points forward to the first glimmers of a new life with a humanity reborn, fully alive and creative, the fragile sapling of a new evolution in which all that is left of the former ‘economic man’ is a shrivelled old branch”. [41]

The way forward (the “*pars construens*”) can be glimpsed in some of the models of economic cooperation proposed in recent decades. In particular there is the model put forward by Albert, outlining a socio-economic system with planning at a council level as an alternative to markets and so-called “central planning”. This is organisation “from below”, self-management by both “workers” and “consumers”, something that embodies more than any other form of organisation Marx’s “economy of associated producers”. [42] This lays the foundation for an authentic form of “direct democracy”, since the conditions would no longer exist for dominion of some men over others. This includes class relations, the division of labour, and the existence of institutional

structures whether public or private. Work would be the free exercise of every person's abilities in social interaction with others, nor would it take a commodified form or involve any kind of power structure. As Kovel points out, "It was the class-state nexus that determined the fateful move from aboriginal society to what we call civilisation". [43]

The eco-socialism envisaged by Angus insists on certain features of radical ecology and the need for a social revolution to bring about an *eco-socialist society*. He identifies the capitalist system as the trigger for that turning point in planetary evolution known as the "Anthropocene" and advocates a society that will create the conditions for real, unalloyed sustainability, a society whose associated producers will manage rationally the man-nature metabolism. We must hope, says Angus, for the growth of a "workers' movement" with an ecological character, since the system that presides over the despoiling of human conditions on the planet is also the same system that causes despoiling of the environment. They are therefore two sides of the same coin. The capitalist social metabolism is the expression neither of a *generic* productive process nor of a *generic* labour process, but rather of a commodified form of labour which is an ecocidal part of that metabolism. This is precisely what Marx's labour theory of value insists upon. As O'Connor makes clear, "it has become obvious that much capitalist technology, forms of work, etc., including the ideology of material progress, have become part of the problem not the solution." [44] Angus thus proposes a whole series of radical measures to be adopted urgently in order to combat what is happening and, in their absence, will just carry on happening.

While it is impossible not to feel a certain pessimism about being able to end the holocaust that is taking place, eco-socialism presents itself as the only alternative to allow a return to the earth appropriate to the conditions of our time. Anything else – barring some kind of miracle – should, as Adorno insists, make us feel ashamed that, given the hell we have created, we "still have air to breath".

This makes it all the more essential for us to turn to the wisdom that preceded our "blind belief in unlimited progress" and that still holds true in the appeal it makes to the way of life of indigenous cultures:

For many years we, the indigenous leaders and peoples of the Amazon, have been warning you, our brothers who have brought so much damage to our forests. What you are doing will change the whole world and will destroy our home – and it will destroy your home too. We have set aside our divided history to come together. Only a generation ago, many of our tribes were fighting each other, but now we are together, fighting together against our common enemy. And that common enemy is you, the non-indigenous peoples who have invaded our lands and are now burning even those small parts of the forests where we live that you have left for us. President Bolsonaro of Brazil is encouraging the farm owners near our lands to clear the forest – and he is not doing anything to prevent them from invading our territory. We call on you to stop what you are doing, to stop the destruction, to stop your attack on the spirits of the Earth. When you cut down the trees you assault the spirits of our ancestors. When you dig for minerals you impale the heart of the Earth. And when you pour poisons on the land and into the rivers – chemicals from agriculture and mercury from gold mines – you weaken the spirits, the plants, the animals and the land itself. When you weaken the land like that, it starts to die. If the land dies, if our Earth dies, then none of us will be able to live, and we too will all die. Why do you do this? You say it is for development – but

what kind of development takes away the richness of the forest and replaces it with just one kind of plant or one kind of animal? Where the spirits once gave us everything we needed for a happy life – all of our food, our houses, our medicines – now there is only soya or cattle. Who is this development for? Only a few people live on the farm lands; they cannot support many people and they are barren. So why do you do this? We can see that it is so that some of you can get a great deal of money. In the Kayapó language we call your money *piu caprim*, “sad leaves”, because it is a dead and useless thing, and it brings only harm and sadness. When your money comes into our communities it often causes big problems, driving our people apart. And we can see that it does the same thing in your cities, where what you call rich people live isolated from everyone else, afraid that other people will come to take their *piu caprim* away from them. Meanwhile other people starve or live in misery because they don’t have enough money to get food for themselves and their children. But those rich people will die, as we all will die. And when their spirits are separated from their bodies their spirits will be sad and they will suffer, because while they are alive they have made so many other people suffer instead of helping them, instead of making sure that everyone else has enough to eat before they feed themselves, which is our way, the way of the Kayapó, the way of indigenous people. You have to change the way you live because you are lost, you have lost your way. Where you are going is only the way of destruction and of death. To live you must respect the world, the trees, the plants, the animals, the rivers and even the very earth itself. Because all of these things have spirits, all of these things are spirits, and without the spirits the Earth will die, the rain will stop and the food plants will wither and die too. We all breathe this one air, we all drink the same water. We live on this one planet. We need to protect the Earth. If we don’t, the big winds will come and destroy the forest. Then you will feel the fear that we feel. Then you will feel the fear that we feel.

*We, the peoples of the Amazon, are full of fear. Soon you will be too.*

Raoni Metuktire chief (*cacique*) of the indigenous Kayapó people.

Capitalism has always had the ability to make us believe that the worst is still to come. If the worst has already come, we can perhaps counter it with a tale that, if it were given the title “News from Nowhere”, would tell how man started to leave nature alone, freeing the animals, plants and himself from every enclosed space, cage, prison, extermination process and, in an orderly way, after millennia of living “life sentences”, [45] started to live again properly. After all that has happened, this possibility, even if it is no more than a possibility, could be the next stage in human existence.

**Giuseppe Sottile - 2020**

## Notes

[1] Ana Isla, (ed.), *Climate Chaos*, Inanna, 2019, p. 21; Herbert Marcuse, *Counterrevolution and Revolt*, Beacon, 1972.

[2] Subcommission on Quaternary Stratigraphy, <http://quaternary.stratigraphy.org/working-groups/anthropocene/>, which lays out the consequences for the planet of industrial activity and nuclear testing. See also Jan Zalasiewicz et al., «When did the Anthropocene begin?», *Quaternary International*, Vol. 383, October 2015.

[3] See <http://chuangcn.org/2020/02/social-contagion/>, and the interview with Rob Wallace, «Da dove è arrivato il Coronavirus, e dove ci porterà?», *infoaut*, 16 March 2020, as well as some suggestions for not returning to “normality” in «Five proposals for a better world after the pandemic», *Climate&Capitalism*, 20 April 2020. The WHO monitored 1483 epidemic events in 172 countries between 2011 and 2018, all arising from the serious impact that our societies are having on the planet, starting with the effects of industrial agriculture.

[4] This movement insists on the effect that the monstrous industrial production chain with its killing of tens of billions of animals and sea creatures has on global warming in creating greenhouse gases. In this connection an important study (on the “bovine complex”) is Jeremy Rifkin, *Beyond Beef: the Rise and Fall of the Cattle Culture*, Dutton, 1992

[5] See Bailador, <http://bailador.org/blog/wp-content/uploads/2019/10/18-Bailador.-Animal-Rebellion-.pdf>

[6] See Yinon M. Bar-On, Rob Phillips, Ron Milo, «The biomass distribution on Earth», *PNAS*, 21 May 2018; G. Ceballos, Paul R. Ehrlich, R. Dirzo, «Biological annihilation», *PNAS*, 10 July 2017. The most troubling thing is not only the number of species or the number of individual creatures in specific populations that are disappearing, but rather the speed with which it is happening; J. Poore, T. Nemecek, «Reducing food’s environmental impacts through producers and consumers », *Science*, 1, June 2018.

[7] Justin McBrien, however, sees it as the “first extermination event”. And it certainly is a result of the capitalist social system. In fact to call it the “sixth extinction” is to make it sound somehow politically “natural” or “neutral”, i.e. to treat it in the same way as some inadvertent natural event that could not be foreseen. See «This Is Not the Sixth Extinction», in <https://truthout.org/articles/this-is-notthe-sixth-extinction-its-the-first-extermination-event/>.

[8] According to Wallace, “Planet Earth has now become Planet Agricultural Enterprise, both in terms of biomass and of amount of land used” (see note 3 above).

[9] Crucial evidence of this comes from studies on the extraction and use of raw materials and energy (not counting air and water) which measure in physical units, rather than in purely monetary terms, the physical impact and the metabolic effects of the industrial economy on the whole of the planet. Since the 1950s and the “Great Acceleration”, there has been a global metabolic transition

spearheaded by fossil fuels, in which the physical balance sheet (flows of materials in and out) evidences the devastating world dominance of the industrialised economies and, in more recent years, of China and India (a form of physical imperialism that can be weighed in tons). See Anke Schaffartzik et al., «The global metabolic transition», *Global Environmental Change*, Vol. 26, May 2014.

**[10]** Ian Angus, Simon Butler, *Too Many People?*, Haymarket Books, 2011.

**[11]** See: Paolo Giussani, «La crisi e il saggio del profitto», 2012, <https://www.sinistrainrete.info/marxismo/1847-paolo-giussani-la-crisi-e-il-saggio-del-profitto.html>; «Capitalism is dead», <https://www.sinistrainrete.info/teoria/1115-paolo-giussani-il-capitalismo-e-morto.html>. Up-to-date political and economic analysis from a Marxian perspective can be found on the Countdown website: <http://www.countdownnet.net/index.php>

**[12]** James O'Connor, «Capitalism, Nature, Socialism: A Theoretical Introduction», *CNS*, Vol. 1, 1988; G. Ricoveri (ed.), *Capitalismo, natura, socialismo*, Jaca Book, 2006, pp. 24-33; Jason W. Moore, *Ecologia-mondo e crisi del capitalismo*, Ombre Corte, 2015 and *Antropocene o Capitalocene?*, Ombre Corte, 2017; John Bellamy Foster, *Marx's Ecology*, Monthly Review Press, 2000. For an overview, see <https://monthlyreview.org/commentary/metabolic-rift/>. For a comparison between the respective positions of Moore and Foster, see Moore, «Transcending the Metabolic Rift», *Journal of Peasant Studies*, 13 January 2011 and Foster, «Marx and the Rift in the Universal Metabolism of Nature», *Monthly Review*, 1 December 2013. For an effective critique of Moore's position, see A. Malm, «In Defence of Metabolic Rift Theory», Verso, 16 March 2018 and John Bellamy Foster, Paul Burkett, «Value Isn't Everything», *Monthly Review*, 1 November 2018.

**[13]** On this question and its relevance, from a wide range of eco-socialist literature the following stand out: Paul Burkett, *Marx and Nature*, Haymarket Books, 2014, pp. vii-xiii; John Bellamy Foster, Paul Burkett, *Marx and the Earth*, Haymarket Books, 2016, pp. 1-15. Foster, pointing to how Marxian ecological arguments were expressed by some writers in the last century, especially in the 1960s and '70s, dates the beginning of a second wave of eco-socialism to the publication of Burkett's book in 1999, and then of a third phase also contributed to by Burkett with the publication of his *Marxism and Ecological Economics* (Haymarket Books, 2005).

**[14]** Marx notes that “the capitalist system runs counter to a rational agriculture, or that a rational agriculture is incompatible with the capitalist system (even if the latter promotes technical development in agriculture) and needs either small farmers working for themselves or the control of the associated producers” (*Capital*, Penguin, 1991, Vol. III, p. 216).

**[15]** Stefano B. Longo, «Mediterranean Rift: Socio-Ecological Transformations in the Sicilian Bluefin Tuna Fishery», *Critical Sociology*, Vol. 38, 2010.

[16] J. Bellamy Foster, «Capitalism and the Accumulation of Catastrophe», *Monthly Review*, Vol. 63, December 2011.

[17] In the comparison between Moore and Foster, that is between “metabolic rift” and “world-ecology”, the two writers have a differing approach to the need to abandon “the organisation of nature” (Moore) , “the social metabolism” (Foster) that is the mark of capitalism. In the wake of Marx, Foster’s insistence on the “universal metabolism of nature” expresses effectively the situation of planetary crisis which puts at risk processes essential to the continuation of life. In this connection it seems appropriate to refer to Marx’s idea (not found in Moore) of “a difference of existence” (K. Marx, F. Engels, *Collected Works*, 1975, Vol. 3, p. 88), at least in the sense that one of the two processes (i.e. the natural metabolism) precludes the other (i.e. the capitalist social metabolism), just as use value has no need of value-form, or labour of its commodified form. The reason for this is ontological. In the case of Moore, this seems to vanish behind the “historicity of natures”. At the same time his insistence on this historicity serves as an attempt to save the dialectic from a presumed dualism. While it is true, as Moore also argues, that capitalism itself produces the perception of a nature separated from the social realm, it is equally true that the ontological need to

do away with it arises clearly only if one sees nature as existing in its own right, that is as a relatively ahistorical phenomenon and detectable, for example, in terms of “net primary production” of biomass. Marx himself considered the cycle of nutrients as an “eternal natural condition”, an “organic social renewal prescribed by the natural laws of life” and human labour itself as part of this: “labour ... is an eternal nature-imposed necessity, without which there can be no material exchanges between man and Nature, and therefore no life” (K. Marx, F. Engels, *Collected Works*, Lawrence & Wishart, 2010, Vol. 35, p.53). Foster does not see nature as separate from society, but sees things rather in terms of a social metabolism setting up a kind of “dysbiosis” in the universal metabolism of nature. This arises from the separation of men from their means of subsistence, from the conditions of production, which are then forced together again in the form of capital. Moore himself recognises this in, his use, for example, of the curious expression “Nature is finished. Capital is founded on the infinite” (*Ecologia-mondo*, op. cit., p. 160).

[18] Christophe Bonneuil, Jean-Baptiste Fressoz, *The Shock of the Anthropocene: The Earth, History and Us*, Verso, 2016, Chap. 9. It must be pointed out, however, that Marx and Engels rejected Podolinski’s “embodied energy” hypothesis and for many good reasons. In this connection, see John Bellamy Foster, Paul Burkett, *Marx and the Hearth*, op. cit., Chap. 2. There is also the fact that, in Marxian terms, the sole source of value in capitalism is human labour (being abstract labour). This depends on the specific nature of the capitalism applies to that system alone. As Postone has shown in his critical analysis of traditional Marxism, the category of value is a historically specific category (Moishe Postone, *Time, Labour, and Social Domination*, Cambridge University Press, 2003).



[19] Jason W. Moore, *Antropocene o Capitalocene?*, op. cit., p. 133; John Bellamy Foster, Brett Clark, Richard York, *Ecological Rift*, Monthly Review Press, 2011, pp. 207-211; Robert Biel, *The Entropy of Capitalism*, Haymarket Books, 2013, Chap. 5; McBrien, op. cit.; Joel Kovel, *The Enemy of Nature*, Zed Books, 2008, 121-123. As is well know, Marx likened capitalism, the monstrosity that has shattered each and every element of any sustainable economy, to a “vampire”, which “vampire-like, only lives by sucking living labour, and lives the more, the more labour it sucks.” (Collected Works, Lawrence & Wishart, Vol. 35, 2010, p. 241). This is also true for every natural element. Foster talks about “an absolute general law of environmental degradation under capitalism” as the “dialectical counterpart within the ecological realm of Marx’s absolute general law of capital accumulation”, in the sense that that law is incorporated into it. While the one is the traditional expression of dominion over labour, the other represents that dominion over the “conditions of production” as a whole. Just as the one produces social degradation, the other produces environmental degradation, the thing that stands out the most today, putting at risk as it does the very existence of life on the planet (*Ecological Rift*, op. cit., Chap. 10; *Marx and the Earth*, op. cit., p. 6).

[20] The reference by O’Connor (op. cit., p. 14) to “.., ‘external physical conditions’ or the natural elements entering into constant and variable capital” is especially relevant here.

[21] Not only is capitalism exhausting its own reserves of fossil fuel, but it is strongly eroding the biomass generated annually by solar energy (which all the renewables come from). Of the 1000 gigatons of carbon estimated to have existed two thousand years ago, only 550 still remain. 11% of them have disappeared since 1900 and have done so at a net rate of 1.5 gigatons per year in recent times. In this connection, see John R. Schramski et al., «Human domination of the biosphere», *PNAS*, Vol. 112, No. 31, 2015, which provides a careful and conclusive analysis of energy stocks and flows over the planet, even though it lacks any social contextualisation to identify where and how specific types of energy are being used.

[22] K. Marx, F. Engels, *Collected Works*, Lawrence & Wishart, 2010, Vol. 36, p. 64.

[23] Daniel Tanuro, *L’impossibile capitalismo verde*, Alegre, 2011; Various Authors, *The Global Fight for Climate Justice*, Resistance Books, 2009, Chap. 5.

[24] On the nature and function of speculative capital, see P. Giussani, «Crescita speculativa», 2001, <http://www.left-dis.nl/i/specul.htm>

[25] L. Reynolds, B. Szerszynski, «Neoliberalism and technology: Perpetual innovation or perpetual crisis?», in M. Ylönen, L. Pellizzoni (eds.), *Neoliberalism and Technoscience: Critical Assessments*, Routledge, 2012

[26] John Bellamy Foster et al, *Metabolic Rift*, op. cit.; J. M. Polimeni, K. Mayumi, M. Giampietro, B. Alcott, *The Jevons Paradox and the Myth of Resource Efficiency Improvements*, Routledge, 2015. The statistics on the enormous growth of extraction and use of materials in the “metabolic transition” period of the later post-war years illustrate this clearly, showing how increased efficiency corresponds to increased use of materials. It needs to be pointed out that efficiency in the use of resources required historically by the accumulation process has brought with it a reduction in the productiveness of capital in value terms, that is in terms of the ratio of net product to fixed capital, leading to a historical tendency to a fall in the rate of profit. This was even more pronounced in the economies of the former Soviet bloc

[27] A different approach is to be found in, for example, the writings of Giorgio Nebbia and also the CNS – Ecologia Politica website (<http://www.ecologiapolitica.org/wordpress/>). Keeping a “physical account of the economy”, as we have seen, has the advantage of being able to show the precise impact of the production of commodities on ecosystems in capitalism, something that is bound to be missing in any scenario of purely monetary economic accounting, whatever the theoretical system used. It should not be forgotten that some economists consider the effect of climate change on agriculture to be very small indeed, as agriculture accounts for a maximum of 5% of GNP in the industrialised economies. In reality conventional economic analysis is a kind of dream world that has transformed the planet into a nightmare: the monetary growth shown in the various economic indicators (beginning with the growth in the secondary bond market) has brought with it a corresponding devastation of human and natural resources, one capable of being formulated into a law.

[28] Robert Costanza et al., «Change in the global value of ecosystem services», *Global Environmental Change*, Vol. 26, May 2014, p. 153.

[29] Paul Burkett, «The value problem in ecological economics», *Organization & Environment*, Vol. 16, No. 2, June 2003. The assumption is that natural processes can be translated, as in orthodox economic theory, into exchange values, but in fact the latter presuppose social relations of exploitation.

[30] See Robert Costanza et al., op. cit., p. 154, where we are told: “‘the environment versus the economy is a false choice’. If nature contributes significantly to human well-being, then it is a major contributor to the real economy.” This statement has meaning only in reference to a specific historical context. Unless we take account of history, that is of the system in which we are living, then it has no meaning at all.

[31] Burkett notes how the category of “natural capital seems to usefully reconcile ecological values and ‘practical’ economic concerns” (*Marxism and Ecological Economics*, op. cit., p. 114).

[32] K. Marx, F. Engels, *Collected Works*, Lawrence & Wishart, 2010, Vol. 35, pp. 94, 214.

[33] C. Bonneuil, J Fressoz, *op. cit.*, Chap. 9

[34] In this connection see: [www.igbp.net/](http://www.igbp.net/). Vandana Shiva refers to it as “ultimate hybris”. On (and against) geo-engineering, see <https://www.nogoeingegneria.com/>. One recent idea has been to capture carbon dioxide and turn it into solid carbon at an ambient temperature, and then use it as a source of energy (see <https://www.nature.com/articles/s41467-019-08824-8>).

[35] Rosalie Bertell, *Planet Earth. The Latest Weapon of War*, The Women’s Press, London, 2000.

[36] Paul Burkett, *Marx and Nature*, Haymarket Books, 2014, pp. 193-197. It is precisely this contradiction, furthermore, that allows capitalism to secure conditions of accumulation following the “the absolute general law of environmental degradation”, using bio-engineering and geo-engineering, etc. Capitalism thrives on its own demise. Phases two and three of Foster’s eco-socialism therefore obviate the need for phase one.

[37] Each year around four million tons of pesticides, manufactured by a small number of large multinational chemical companies, are poured over the land. Yet this obvious crime against life itself is regarded as no kind of criminal activity.

[38] Karl Marx, Frederick Engels, *Collected Works*, 1985, Vol. 20, p. 149; Karl Marx, Frederick Engels, *Collected Works*, Lawrence & Wishart, 2010, Vol. 35, p. 647; Paul Lafargue, *The Right to Be Lazy*, Forgotten Books, 2018; Jacques Camatte, *Capital and Community*, Unpopular Books, 1998, p. 164; Robert Kurz, *L’onore perduto del lavoro*, Manifesto Libri, 1994; Moishe Postone, *op. cit.*, p. 17. On the question of work and its abolition see: Bob Black, *L’abolizione del lavoro*, Nautilus, Turin, 1992; Peter Hudis, «Marx’s Concept of Socialism», in Matt Vidal et al. (eds.), *The Oxford Handbook of Karl Marx*, June 2019; Uri Zilbersheid, «The Vicissitudes Of The Idea Of The Abolition Of Labour In Marx’s Teachings — Can The Idea Be Reviewed? », *Critique*, Vol. 32, No. 1, 2004, where the author points to how Marx and Engels envisaged the abolition of labour and a planned “non-work” society. If the idea of the abolition of labour is to have meaning, this can only come from labour being regarded from the very start as an instrument for socially organised production with the absence of any kind of exploitation. Non-exploitative activities or production can be nothing less than activities that constitute an end in themselves and therefore require different technologies. In such circumstances labour (or work) no longer presents itself as “an eternal nature-imposed necessity”. On the topic of “integration”, see Paul Mattick’s useful essay: “The Limits of Integration,” in *The Critical Spirit: Essays in Honor of Herbert Marcuse*, ed. Kurt Wolff and Barrington Moore, Jr., Beacon Press, 1967, pp. 374-400. Wider critical perspectives on

the question of replacing capitalism, given that neither “the misery of the masses” nor the system’s

“destructive progress” can be any kind of way forward, are to be found in Un omaggio a Paul Mattick: <http://conessioniedizioni.blogspot.com/2012/10/un-omaggio-paul-mattick-aavv.html>

[39] For this discussion, see in particular the work of John Zerzan. A useful critical assessment of the primitivist position in the current state of society is to be found in Brian Tonak, «The dangerous folly of eco-primitivism: a reply to John Zerzan and Derrick Jensen», *Climate&Capitalism*, 10 April 2020. Among advocates of a society which would be free of all forms of oppression while using the technological and scientific gains already in existence was Wilhelm Reich, a figure who found himself equally persecuted for his ideas in both a dictatorship and a democracy.

[40] Steven Best, *The Politics of Total Liberation: Revolution for the 21st Century*, Palgrave Macmillan, 2014; Bob Torres, *Making a Killing*, AK Press, 2007; *Liberazioni – Rivista di critica antispecista; Animali e comunismo*, Antagonism Press, 1999, <https://www.antropocene.org/index.php/rassegna/46-bestie-da-soma-capitalismo-animali-comunismo>; 18 Theses on Marxism and Animal Liberation, <https://mronline.org/2018/08/28/18-theses-on-marxism-and-animal-liberation/>. There exists a large and powerful ecosophical literature, both religious and non-religious, which, to have any appreciable impact, needs to put forward an explicit and wide-ranging critique of the capitalist system’s radical opposition to the principle of respect for every form of life and existence which is fundamental to ecosophy. For an intelligent and detailed discussion of the origins of the practice and ideology of man’s dominion over Life and Nature in the western world, see Enrico Giannetto, *Un fisico delle origini*, Donzelli, 2010.

[41] Raoul Vaneigem, *Noi che desideriamo senza fine*, Bollati Boringhieri, 1999, p. 19.

[42] Detailed arguments for this way forward are to be found in two books by Michael Albert: *Moving Forward: Program for a Participatory Economy*, AK Pr Distribution, 2001; *Parecon: Life After Capitalism*, Verso Books, 2003. For further discussion of this topic, see <http://www.parecon.org>. See also the models of democratic planning proposed by Pat Devine in «Participatory Planning Through Negotiated Coordination», *Science & Society*, Vol. 66, No. 1, 2002, and in «Democratic Socialist Planning», *The Oxford Handbook of Karl Marx* (edited by Matt Vidal, Tony Smith, Tomás Rotta, Paul Prew), Chap. 40, Oxford University Press, 2018. On socialism as “an economy of associated producers”, see *Studi sulla crisi*, No. 8, Asterios (forthcoming).

[43] Joel Kovel, *op. cit.*, p. 129. Models and working examples of “eco-socialism” are discussed in this work.

[44] J. O’Connor, *op. cit.*, p. 16.

[45] These expressions come from Theodor. W. Adorno, *Minima Moralia*, Einaudi, 1994, p. 19 and «Fin de partie e il mondo di Beckett», in Samuel Beckett, *Molloy Malone muore l’Innominabile*, Sugarco, 1965, p. XXXVII.