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Marxism and ecology

# 1973: The dialectic of growth

- Features - Ernest Mandel Archive -

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In these notes, remarks in square brackets are added by the editor. Marked with an asterisk \* are fragments from Mandel's lecture at the congress.

There is a fairy tale that Marx was first of all an admirer of technology and that he considered it 'the foundation of what exists and the engine of the future'. [1] Although this fairy tale has been refuted countless times, people continue to believe it. It reared its head again following the publication of the Meadows Report and Sicco Mansholt's famous letter to the European Commission, in which this report is included. [2] Nevertheless, nothing could be further removed from the thinking and tradition of Marxism than this attitude, although we have to admit that quite a few 'terrible vulgarizers' who invoke Marxism are partly to blame for this fairy tale.

In Marx's eyes, the human being is the goal of humanity. Here, the human being is not some abstract principle that is supposedly more important than people. Moral or divine principle, 'economic growth', 'uninterrupted progress' and 'the meaning of history' are not principles elevated above the human being.

By 'human being' Marx means all humans, and not just 'races', nations, or individuals who are considered 'superior'. Thus, humanity's only destiny is to realize the full potential of everybody, to fully develop the human personality of all, considering people simultaneously as individuals and as social beings. After all, in the final analysis, humanity's wealth consists of the wealth of human relations, in other words, of social relations.

Marx does indeed attach great importance to the development of the productive forces – the phenomenon today summarized as 'economic growth' – but he does so with a view to this ultimate destiny of humanity: the human being. It is obvious that without a secure material infrastructure, the 'rich social individuality' of all cannot develop. [3] Marx firmly rejects a communism of poverty or asceticism, precisely because he is aware that such 'communism' would disfigure human beings, make it impossible for them to develop their talents, imprison them in the environment in which they happen to be born, subject them to the tyranny of unrestrained natural forces, and, precisely because of this poverty, deprive them of the material means to fully develop their knowledge and needs.

According to Marx, the development of productive forces – economic growth – creates the possibility of a double emancipatory movement. It makes possible increasing emancipation from natural as well as social constraints. As humanity has overcome natural constraints to a certain degree, natural constraints are increasingly being replaced by social ones.

Material production must go beyond the minimum necessary for the survival of the community. There must be a significant and permanent surplus of food, there must be a guaranteed social surplus product: these are the material presuppositions that must be met if a developed division of labour is to emerge. Only then do specialized professions and complex techniques emerge that are no longer simply handed down orally – writing, civilization, the first forms of science, literature.

Only when there is sufficient free time can there be craftworkers, artists, scientists, philosophers. But at the same time, with the separation between intellectual and manual labour (a separation necessary for the specialization and development of intellectual labour), we also see the slave-drivers appear, the police and professional soldiers, the tax collectors who withdraw the surplus product from the producers, the owning classes who appropriate most of this surplus product (and on this basis sustain the 'intellectual producers'), as well as the legal experts who justify the exploitation. These and other phenomena of alienation form the foundation of the state.

For Marx, the liberating potential of economic growth means only that when a certain level of material wealth is reached, the separation between producers and managers, between intellectual and manual labour, between urban and rural is no longer a necessity. It can gradually disappear. Once this level is reached, not only a small minority of men and women, but all individuals can be freed from the obligation to do heavy, exhausting and mechanical work and escape the tyranny of the social division of labour. This is all Marx claimed.

It would not have occurred to him to describe economic growth as the sole purpose of humanity's salvation, as something which human beings should pursue without any limitation in time or without any consideration for the quality of life. Nor would it have occurred to Marx to make the development of the productive forces an end in itself rather than a means to ensure the development of people. And it certainly would not have occurred to him to think that a communism of abundance, made possible by modern technology, is the automatic result of this development. The simplistic equating of the maximum development of productive forces with the maximum development of human possibilities is not what Marx had in mind. [4]

On the contrary. From the moment a certain material basis has been established, the most important task in Marx's eyes becomes a social one: the radical transformation of the social structure and of the mentality of people. [5] If this transformation is not carried out, a further development of material production threatens to worsen rather than improve the conditions for human progress.

In this sense, Marx brilliantly anticipated the issue of the 'quality of life' and revealed earlier than anyone else the dangers that capitalist production poses to ecological equilibrium. One hundred years before today's environmentalists, he declared that capitalism can only develop the productive forces at the expense of the two ultimate sources of all wealth: nature and human beings. [6]

## Capitalism and economic growth

In all pre-capitalist societies, the social surplus predominantly takes the form of use values. The owning classes who lead the economic organization (in primitive communist societies: the clan and tribal communities) have an interest in developing production only within the limits of their own capacity to consume, i.e. only to the extent that they can appropriate these use values. This capacity to consume is not only physiologically but also socially limited. The limitation results from the constriction of needs, the lack of knowledge of products and the underdevelopment of human capabilities which result from the given socio-economic structure. [7] As a rule, the result is a very low growth rate as well as a very low rate of development of the forces of production.

In the capitalist system however, the social surplus takes the monetary form of surplus value. Moreover, it is no longer primarily intended for unproductive consumption by the owner classes, but it serves accumulation. Competition and class struggle force capitalists to convert a significant part of this surplus value into added capital. This same competition – in other words, the private ownership of the means of production – forces capitalists to constantly reduce the cost price of commodities. This is why capitalism is the first system of production in human history which through its own logic – its own laws of development – shows a tendency to constantly develop

technology, increasingly mechanize labour, and to apply scientific knowledge to material production. In this way, capitalism is the first social system that is forced to constantly develop the material forces of production and is characterized by virtually uninterrupted economic growth.

Obviously the rising capitalism of the 19th century did not bring about a higher – let alone optimal – development of the productive forces when compared to the declining capitalism of the 20th century. A system based on private ownership and the compulsion to maximize profit goes hand in hand with a huge waste of material and human resources. Wage labour; the class structure of bourgeois society, economic crises caused by overproduction, the side effects resulting from competition (bankruptcies, inefficient use of capacities); wars; the social constraints on needs and consumption; the underdevelopment of peoples and entire continents: all this shows that this economic growth is far removed from what science and technology would objectively make possible in the context of a rationally planned economy. Since the beginning of the imperialist era, the gap between realized and potential economic growth has only widened further. Waste is becoming more and more monstrous: there is a permanent arms economy; agricultural products are deliberately destroyed; and certain industries such as mining are being wiped out.

Nevertheless, even in its downturns, capitalism retains by its very nature a growth potential that is incomparably greater than that of pre-capitalist societies. The need to make profits and to accumulate surplus value for capital impose imperative demands on material production. And whatever deformations the nature of production may cause, this potential is no less formidable during the decline of capitalism than it was during its turbulent rise. On the contrary, Marx predicted that the productive forces released by capitalism – particularly through the application of science to production – could turn into destructive forces, if capitalism is not destroyed. [8] That prediction has taken on its full meaning in our time, an era overshadowed by the atomic bomb and what ecologists call the 'great fear for the 21st century'.

## Economic growth and the market economy

If we want to understand this potential for destruction, which lies at the heart of capitalist production (including the capitalist development of the forces of production), we must be aware of two characteristics of the production of commodities that have been brought to light by Marxist critique.

On the one hand, the production of commodities presupposes private labour, meaning it presupposes that the human and material resources of the community are dispersed among corporations that are independent of one another and – driven by competition – strive to make as much profit as possible. [9] On the other hand, however, profit is a criterion of economic rationality that is entirely determined by the social nature of the relations of production. Profit quantifies in monetary terms only that which has a price, and it leaves aside everything which has no price. Profit is the expression of a direct and partial objective of a distinct cell, the objective to achieve the greatest possible difference between the production costs (expressed in monetary terms) and the turnover of a given corporation.

This is the goal, regardless of the effects on society as a whole and it is certainly not the expression of a comprehensive long-term objective aiming at the benefit of the entire community. That which increases the direct profits of the corporation may reduce the income of society as a whole. [10] What increases profits may reduce the resources available to society as a whole and destroy people's health and lives; these two elements cannot be 'valued' in terms of money without changing human life from an end to a means: a means to increase profits. [11]

In short, the capitalist market economy, meaning a generalized market economy, produces an increasing contradiction between the economic rationality of parts, and the socio-economic irrationality of the whole. Bourgeois

economists are of the opinion that maximum well-being of the community quasi-automatically results from the pursuit of the greatest possible individual profit by enterprises and households (an endeavour that is more or less restrained by corrective interventions by the public authorities). Marxists declare that none of this is true. The pursuit of the highest possible profits by corporations (especially those that – in the age of monopoly capitalism – possess disproportionate economic power) can from the point of view of collective welfare lead to serious and even irreparable losses.

On the other hand, the market economy presupposes that economic resources are distributed between different production sectors according to purchasing power and demand. But demand and ability to purchase are unevenly distributed: the construction industry may be in crisis because the market for luxury apartments is saturated, while innumerable families from lower income groups continue to live in poor conditions. Demand may be irrationally influenced by advertising, social surroundings, fashion: many consumers who are poorly fed and poorly housed may be led to buy all kinds of stuff that is less important for a fulfilling life than healthy food or a good home. In its very nature, purchasing power is individual and therefore caught in bourgeois ideological prejudices: individual spending is preferred – and this is structurally determined – to collective spending; the latter is considered to encroach on private well-being (as if good schools, modern hospitals and abundant green spaces were not indispensable for the well-being of the individual!).

These two characteristics make it possible that in a market economy economic growth undermines the very sources of human wealth. It is possible that all kinds of resources are wasted to produce ever more goods that are increasingly less useful even while the primary needs of millions of individuals are not met. It is possible that, in the end, such an economy favours production techniques that guarantee corporations more short-term profit but in the long term mean enormous social wastage.

## Market economy and pollution

There is a clear link between this traditional Marxist criticism of the market economy and the dangers threatening the human environment. The market economy – and above all the capitalist market economy – shows a tendency to plunder natural resources that have no or only a low cost, in other words to the extent that they do not appear as a significant cost in the cost-benefit calculation.

Already before a certain 'environmental awareness' made its appearance we saw too many examples of this. Where the land is very expensive – because its fertility is literally the product of centuries of human labour, like polders in the Low Countries or the irrigated gardens in pre-revolutionary China – capitalist agriculture treats it with due respect. But where the price of land is low or only nominal, capitalist agriculture entails monstrous waste, waste that is sometimes irreparable in the long run (erosion, deforestation, etc.). Rivers, a natural asset that has not been turned into private property, have no value or price. Consequently, river water has been used in large quantities as a raw material or production aid. They are transformed into industrial sewers because it is cheaper for private corporations to operate in this way than to build expensive treatment plants. Clean air, a natural commodity, is considered to be 'worthless'. In the capitalist system, anything that has no exchange value and hence no price is usually 'worthless'! So blast furnaces are built, cars are manufactured and chemical manufacturing methods are used with no concern for the resulting air pollution.

This logic of profit, which runs counter to the socio-economic rationality of the whole, is not confined to the use of natural resources. From the outset, under a capitalist system economic decisions are imbalanced. These decisions count on the privatization of profits and the socialization of costs. The development of the car industry – one of the main causes of air pollution – is not just about the fact that air is worthless to private industry. The fact that public authorities build and maintain roads, without which private car ownership would not have become so widespread,

also plays a role.

Another factor arising from the logic of the market economy is the strictly time-limited frame of reference of capitalist decisions. A corporation strives to maximize profits within a given time frame. This entails a logic in the style of 'after us the flood'. When invested capital has been depreciated, profit has been realized and consumed either in an unproductive way (luxury spending by the bourgeoisie) or in a productive way (capital accumulation), the cycle of reproduction of capital is closed. But nature imposes imperative requirements that do not take into account the laws of profit: recycling of primary chemicals and restoration of the ecological balance. And so, only after perhaps twenty years can we see that the 'social costs' of pollution, brought about by certain technological processes, far exceed the private profits produced by those processes. In a market economy, it is impossible to retroactively tax the capitalist corporations that for decades have been inflicting such costs.

We emphasize that, from a social point of view, the ultimate cause of these 'arithmetical errors' is not capitalism as such, but rather the commodity economy; capitalism is the generalized, universal form of the commodity economy. In this sense, the misdeeds of 'partial economic rationality' are most obvious in capitalism. But historically, the commodity economy existed before capitalism. Gradually, it spread within simple commodity production, for example within the economy of the Netherlands from the 13th to the 16th century, and remained in the 17th and 18th centuries of greater importance than manufacturing capitalism. It partly continued to exist during the transition from capitalism to socialism (the economy of the Eastern Bloc countries), whether or not bureaucratic deformation or degeneration took place.

For example, in the Soviet Union similar environmental problems arise. As a result of the partial continuation of commodity production in the Soviet Union and of organizational structures such as the individual calculation of the yield of corporations, the social and long-term costs of production are not taken into account. The best-known and saddest example is the pollution of Lake Baikal, the largest freshwater reservoir on the Eurasian continent. The cause of this pollution is chemical plants. When calculating 'yield' (which determines the choice between different investment projects), the long-term costs of destroying freshwater resources are not included among the determining factors. [\[12\]](#)

So we can now more accurately explain why socialist planning is superior to the market economy. Socialist planning can seek to calculate costs and benefits at the social level and, in the long term, for the whole community. But this is only possible if this planning is democratic: based on democratically centralized self-management and political democracy, in which different parties and complete freedom of criticism exist. For this, private ownership and competition, which necessarily force production units to establish individual profitability criteria, need to be abolished.

## Technology and environmental pollution

The discussion in the Meadows Report Limits to Growth regarding the dangers of unlimited, or rather uncontrolled, growth of productive forces focuses on three themes: pollution; the depletion of natural resources, (particularly raw materials); and the dangers arising from population growth. [\[13\]](#) Unfortunately, the clarity of the discussion is hampered by the fact that all these data are based on extrapolations and projections of current trends, in other words, on the assumption that socio-economic structures (and in particular the capitalist market economy) are immutable. These studies are based on the mystifying premise that today's technology is the necessary and inevitable consequence of the development of the exact sciences, indeed of the 'rational structure of human intelligence'. It is the mystification of 'technological compulsion', of what in untranslatable and inimitable German philosophers' jargon is called 'technologischer Sachzwang'.

We owe thanks to the American professor of biology, Barry Commoner (not a Marxist by the way), for highlighting the mystifying character of this kind reasoning with the help of a few concrete examples.

First of all, it is simply not true that modern industrial technology is inevitably geared towards destroying the environmental balance. The progress of the exact sciences opens up a very wide range of technical possibilities. Some of these possibilities were chosen without taking into account their impact on the environmental balance; this is because individual profitability calculations were made by individual innovative corporations. In some cases, such calculations simply resulted from chance and not from some unavoidable necessity.

Second, it is not true that major technical innovations as a whole are necessarily polluting. In fact, a whole series of innovations show the opposite picture (e.g. progress in electronics, replacement of coal gas by natural gas, etc.). It is also untrue that, since the advent of modern industry, pollution increased at the same rate as technical development.

In reality, the 'pollution growth rate' is fairly recent. The indicators of environmental pollution only began to deteriorate disastrously after 1946. [14] Anyone who concretely analyses the causes of this cannot contest 'technology' as such, but must focus on well-defined technological decisions. Certain decisions are proving to be irresponsible and disastrous from the point of view of the future of humanity.

We need only mention the examples quoted by Barry Commoner to see that the options chosen were not at all inevitable; they were determined by certain private interests and by the social and political power of those who defended those interests. Three key examples are: the increase in lead emissions (by 415 per cent between 1946 and 1970), of nitrous oxide in the atmosphere above the USA (by 630 per cent between 1946 and 1970), and the 2100 per cent increase in mercury from chemical plants. [15] Such 'pollution growth rates' are the result of choices made by capitalist corporations aiming at private profits: the introduction of cars with increased cylinder compression, the use of higher octane petrol and the replacement of soap by synthetic detergents. As a result of the latter, 174,000 litres of phosphate-containing waste are discharged daily into Lake Erie, causing biological life in that lake to decline rapidly; there are 12 million people living around that lake. It is clear that in these cases we cannot speak of 'an inevitable technological necessity'. The only conclusion we can draw is that what was beneficial to General Motors, Ford or Monsanto Chemicals was usually not beneficial to humanity. [16]

Once the mystifying axiom that the current technology is the only possible one is abandoned, the priority that emerges is that socio-economic and socio-intellectual conditions must be created that promote all technological research and innovations which restore the environmental balance, as opposed to research and innovations which further destroy it, regardless of the impact on private costs. Priority must be given to the development of a different technology which is geared entirely to the harmonious development of the individual and to the preservation of natural resources, not aimed at profit maximization.

In other words, the long-term economic, social and natural costs, taking into account the entire community, must become investment criteria. This means there must be socialist planning of the global economy. The environmental debate ultimately leads to the conclusion that humanity can no longer afford the wealth of private profit – i.e. capitalism – being the engine of economic growth. The discussion leads to a rejection of a growth that is irresponsible from the point of view of humanity's long-term interests, and not to a rejection of 'growth' as such.

## Should scarcity and asceticism be restored?

But bourgeois ideology does not automatically admit that it has been defeated, any more than the bourgeois class automatically gives in to socialism. One might have the impression that bourgeois ideology has been hit hard by the

explicit rejection of the profit motive, on which the environmental debate is based. [17] But no, on two different fronts it counterattacks.

On the one hand, liberal economists say: Since all evil seems to come from the existence of 'costless natural elements', let's give them all a price, and pollution will stop. A wonderful prospect: soon we will have to pay for the air we breathe to prevent the capitalists from polluting the atmosphere. [18] Let us charge industry so that it will construct 'purification plants', the representatives of neoliberal ideas add.

Those are absurd proposals. The economic rationality of the whole is not restored by changes at the level of partial rationality. This partial rationality must be abandoned completely. Financial penalties are no more than an item included in the calculation of net profit. Fines are only relative deterrents, not prohibitions. As long as pollution remains profitable, it will continue, despite prices, levies and fines. To retain an effect, such penalties would need to be constantly increased and the public and those who are not to blame for pollution would be punished as severely as or even more than the real culprits. And if these levies and so on exceed a certain limit, the chances of production and investment being stopped are greater than of them being steered in a different direction.

After all, capitalist doctrine would allow the sacrifice of everything to save private property and profit from ruin. The still sacred cow of the standard of living is already on the table (the authors of the Meadows Report cheerfully propose that before the end of the 20th century, the current standard of living of the American people should fall by 50 per cent!) and even the physical survival of humanity would be sacrificed if this were to save property and profit.

The industry that produces 'anti-pollution installations' even sees new profit opportunities in the great ecological fear. [19] Harry Rothman, in his remarkable book, the first to approach the entire environmental problem from a Marxist viewpoint, draws our attention to the fact that in order to 'measure' the 'cost of pollution', a 'price must be set' for human life: a price which is calculated on the basis of what a person would produce! [20] We are here squarely in the realm of inhumanity.

On the other hand, the environmental discussion puts the prophets of doom, for long relegated to the background, back in the limelight. 'Socialism presupposes abundance. Well, the environmental debate shows that natural resources are becoming more scarce. So scarcity is inevitable and will increase. So socialism is impossible. Thus, the economy must be run according to rules governing the distribution of resources; and history has shown that the market economy is the least inefficient means of such distribution'. *Quod erat demonstrandum*.

This line of reasoning is based on a major fallacy. The Meadows Report shows only – subject to the above reservation – that it is impossible for the earth with its limited natural resources to sustain 6 billion people with the standard of living of today's US 'middle classes', as long as the terrifying waste of material and natural resources remains trapped in the current wasteful functioning of decaying capitalism. Examples of that waste are: the armaments economy, the under-utilization of machinery and intellect, the waste of raw materials in useless plunder, etc., etc., etc.

But nowhere has it been demonstrated that the earth's present riches would not be sufficient to reasonably feed, clothe, house, educate and nurture every citizen of the world, and enable them to develop their human personality in the way that most suits them once primary needs have been met. Nowhere has it ever been demonstrated that if production for the sake of profit were abolished, if university education were made accessible to all, if the fight against pollution (and the fight against hunger, against cancer and other civilizational diseases) were an absolute priority in the distribution of 'economic resources', humanity would not have enough intellectual and material resources to meet these challenges and adapt technology to the needs of survival and development.

In this context, the most typical example is that of food stocks. The Meadows Report takes the old Malthus theorem out of the closet and earnestly explains that today an average of one acre of land (0.4 ha) is needed to feed a human being. There are only 7.5 billion acres of arable land on the entire globe. The most fertile and accessible parts are already being cultivated. 'As for the remaining land, for the most part it would be too expensive to make it accessible, cultivate it, irrigate it and improve it, however much we need it.' [21] So if the population exceeds 4 to 5 billion people, 'the limit of growth has been reached', unless one wants to starve an increasing number of people to death.

We will ignore the errors in the reasoning: it is assumed that agricultural productivity per cultivated unit will remain the same (whereas in the US the amount of cultivated land is constantly decreasing while agricultural production is increasing); the possibility of hydroculture ('cultivation without land') is ignored; productivity varies enormously in different parts of the world, etc. We will confine ourselves to the main fallacy: the remaining land for the most part would be too expensive to access, exploit and irrigate. But too expensive from what point of view, and according to what criterion? Too expensive for a world that wastes 120 billion dollars a year only to make weapons? Is it not a disgrace that, when the physical survival of billions of people is at stake, profitability criteria – 'too expensive', 'affordable' – are used, instead of speaking in terms of physical priorities and possibilities? [22]

As far as the 'population explosion' is concerned, all past experiences show that it is a social phenomenon, not a biological inevitability. Let us begin by ensuring the social liberation of the majority of the population in semi-colonial countries, introducing compulsory and free education, taking them out of backward ignorance, misery, illiteracy and superstition. Then population growth will decrease, as it has decreased in all industrialized countries.

This does not mean, of course, that the increasing population pressure in semi-colonial countries is not a problem. There is no doubt that birth control through the systematic distribution of contraceptives – and, it goes without saying, with the rejection of barbaric sterilization practices – is indispensable for the increased well-being of the population of such countries. But this must be linked to global change in social, economic and political structures. A very important lesson to be drawn from the discussion on the environment is that we must become aware of the terrifying danger – especially for so-called 'third world countries' – of major partial change, a change in which the long-term global costs, especially the 'ecological' and 'human' costs, have not been carefully calculated. The very recent experiences of the 'Green Revolution' and the failure of the 'Mekong project' are clear warnings in this respect. [23]

## Planning and controlling growth

The main conclusion to be drawn from this discussion is that humanity is faced with a very clear choice: either to allow itself to be carried away towards a 'halt in growth', or even a reduction in productive forces (which inevitably means an enormous increase of suffering and hunger and would quickly result in hundreds of millions of deaths), or to opt as quickly as possible for controlled and planned growth. Such growth would need to be in the service of clearly defined priorities that have nothing to do with the demands of private profit. The old Marxist dilemma of 'socialism or barbarism' is once again extremely relevant, a relevance not limited to the immediate need to stop the nuclear arms race. In the absence of a planned global economy, the foundations of human civilization could in the near future collapse. [24]

The choice for 'zero growth' is clearly an inhuman choice. Two-thirds of humanity still lives below the subsistence minimum. If growth is halted, it means that the underdeveloped countries are condemned to remain stuck in the swamp of poverty, constantly on the brink of famine. It sounds good to say 'zero growth' must go hand in hand with a radical and global redistribution of wealth. But who really believes that such an international redistribution can take place within the framework of a capitalist economy based on private ownership and under the constant pressure of the market economy, when even inside the industrialized capitalist countries such a redistribution has never succeeded? What material authority, what 'world government' ('moral authorities' are only words) will carry out such

a heroic act when at the slightest sign of increasing economic difficulty, egoism is sacrosanct? Even states which have long been allies remain competitors, such as, for example, the members of NATO and the OECD.

When under these conditions growth is stopped and the underdeveloped countries remain imprisoned in their hellish conditions, when permanent social and military explosions and counter-revolutionary wars are imposed, such as the one in Vietnam, the disastrous consequences for the ecological balance of such wars, caused by the barbarism of the imperialists, bring the destruction of our planet rushing towards us. [25]

Our only salvation is in the second option, controlled and planned growth. Disorderly, uncontrolled capitalist growth, which disregards people's most fundamental interests and basic respect for nature, poses such a threat to humanity's physical survival that radical change in economic and social structures has become an absolute necessity. The struggle for the socialist world revolution, for the classless society, is no longer only a struggle for a more rational, fairer, more humane and freer society. It has become a struggle for the physical survival of the human species.

The private ownership of the means of production, the commodity economy and the nation-state – these three appalling anachronisms must be abolished. This would create the framework within which the fight to restore environmental balance can at least have a real chance of success. Technological optimists believe that, in this case, success would be guaranteed. But we must be cautious, aware of what is at stake and of the need to be constantly alert. A triple priority can be established in consensus with the majority of the world's inhabitants; (1) primary needs of all people must be met; (2) new and different forms of technology which save and replenish the reserves of scarce natural resources must be sought; and (3) the intellectual abilities of all must be developed (through education, research and meaningful recreation). [26]

Assuming that all the means available to humanity today are applied rationally, free from the coercion of private profit, and assuming that the human potential comes to fruition when hundreds of millions of people, who now have to perform alienating and alienated labour, develop their creative gifts, there is no reason to suppose that the standard of living of the inhabitants of the northern hemisphere would fall at all. The standard of living in the southern hemisphere will by necessity rise by leaps and bounds.

When we talk about the standard of living, we are talking about a large number of needs that have to be met, the structure of which needs to change compared to the current one. Accumulating devices that are not or hardly useful, and that save us no more than a few minutes or even a few seconds of effort will be less important than developing the richness of social relationships. Realizing fully developed individuals will be more important than producing more and more objects. The growing tentacles of crammed and clogged cities – a veritable plague on the earth's surface caused by commodity production – will be disentangled; at the same time, we will return to a form of agriculture that is not archaic, but has been rebalanced. Happiness and the 'quality of life' will be more important than the 'growth of gross domestic income': in this respect we can agree with Mansholt.

But happiness and quality of life presuppose that primary needs are met. They presuppose a rejection of the compulsory asceticism imposed on a large majority, for whom it is still impossible to decide their own fate, by a small minority of privileged rulers (whether they be scholars or technocrats on the side of the capitalists). Planned growth means controlled growth, rationally controlled by human beings. This presupposes socialism: such growth cannot be achieved unless the 'associated producers' take control of production and use it for their own interests, instead of being slaves to 'blind economic laws' or 'technological compulsion'.

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[1] See for example Axelos, Kostas, *Alienation, Praxis, and Techne in the Thought of Karl Marx* (Austin, 1976). The quotation comes from an article by Alain Birou, 'Sens et Non-Sens du Développement', *Options méditerranéennes* 8 (1971), p. 19.

[2] See: Donella H. Meadows, Dennis L. Meadows, Jorgan Randers, William W. Behrens III, *The Limits to Growth: A Report for the Club of Rome's Project on the Predicament of Mankind* (New York, 1972). This research was commissioned by the Club of Rome, founded and chaired by FIAT executive Aurelio Peccei, and financed by the Volkswagen foundation. ['Sicco Mansholt's letter' refers to the letter of 9 February 1972 by Sicco L. Mansholt to Franco Maria Malfatti. Malfatti was President of the European Commission from 1970 to 1972. He was succeeded by Mansholt. This letter was not intended to be public. English translation available [here](#).]

[3] Karl Marx, *Grundrisse der Kritik der politischen Oekonomie* (Berlin, 1953), pp. 440, 593, 596-7. [Karl Marx, *Grundrisse. Foundations of the Critique of Political Economy (Rough Draft)*, p. 251: 'Capital's ceaseless striving towards the general form of wealth drives labour beyond the limits of its natural paltriness [Naturbedürftigkeit], and thus creates the material elements for the development of the rich individuality which is as all-sided in its production as in its consumption'. Available online [here](#).]

[4] \* There is a rational limit to what we can digest in material goods. To put it philosophically and a bit banal: in a limited life, limited in time and space, an unlimited number of material goods cannot be consumed. And even if we could consume commodities every second of our lives (what a nightmare!) new material goods would be produced faster than we could consume. Long before this, there would be a dialectic shift, where needs for non-material goods, needs for human and social relations, as Marx puts it, would become much more important than the need for additional material goods.

[5] Karl Marx, *Grundrisse*, p. 231.

[6] Karl Marx, *Das Kapital*. Part I (n.p., 1887) [1867], p. 330, last sentence of Chapter 15: 'Capitalist production, therefore, develops technology, and the combining together of various processes into a social whole, only by sapping the original sources of all wealth-the soil and the labourer' see [here](#).

[7] In his methodological introduction to the *Grundrisse*, Marx specifies that production not only produces the objects that satisfy needs, but also creates the needs that the objects meet. Further on in this book, he elaborates on the tendency of capitalism to develop needs beyond their constrained natural limits, while at the same time limiting the extent to which those needs are satisfied for the large mass of wage labourers. *Grundrisse*, pp. 13, 426-7.

[8] 'In the development of productive forces there comes a stage when productive forces and means of intercourse are brought into being, which, under the existing relationships, only cause mischief [Unheil], and are no longer productive but destructive forces (machinery and money)'. Karl Marx, Friedrich Engels, *The German Ideology* (Moscow, 1976), p. 60.

[9] Maximum profit in the short term, in a system of free competition; maximum profit in the long term (or 'the maximum growth rate') in a monopoly capitalist system.

[10] The classic example is that of 'saving' of 1 million [cost units] through rationalization and redundancies in a single corporation, which can result in a loss of 2 million for the community (unemployment benefits combined with loss of income at the level of the whole society, caused by the 'multiplier' effect in terms of the difference between wages and unemployment benefits).

[11] \* It is false to think that when it has a choice between two possibilities, a corporation will take into consideration all expenses and income. It will calculate only those factors which have a price, a monetary price, and will calculate only those expenses and revenues which for the corporation itself have a monetary price. In other words, profitability as a criterion for economic decision-making is by definition partial, because it excludes a whole series of costs and expenses: all those costs and results which it does not bear itself and all those results which do not benefit

itself.

[12] See Elmar Altvater, *Gesellschaftliche Produktion und ökonomische Rationalität* (Frankfurt, 1969), pp. 144-50, and Harry Rothman, *Murderous Providence* (London, 1972), pp. 248-55.

[13] According to the Meadows Report, in the event of an exponential depletion of resources, with extraction increasing at a fixed rate each year, there will be no bauxite in 31 years, no copper in 21 years, no coal in 111 years, no chromium in 95 years, no nickel in 53 years and no petroleum in 20 years.

One of the most important books on these latter dangers was written by Paul and Anna Ehrlich, *Population Resources* (San Francisco, 1971).

[14] One of the first 'pollution alarms' was sounded in Belgium in December 1930, in the Meuse valley. Some sixty people died of respiratory diseases caused by a sudden increase in the presence of dust from blast furnaces and coal mines. This in turn was caused by a prolonged absence of wind. Harry Rothman, *Murderous Providence*, p. 51.

[15] Barry Commoner, *The Closing Circle* (London, 1971), p. 128.

[16] Commoner quotes a characteristic passage from a book published by the US chemical industry, *The Economics of the Chemical Industry*, 'The maintenance of above average profit margins requires the continuous discovery of new products and specialities on which high profit margins may be earned while the former products in that category evolve into commodity chemicals with lower margins'. Commoner calls this pursuit of technological superiority a 'nightmare for environmentalists'; after all, the period of four to five years during which new synthetic products are thrown on the market and into the environment is too short to discover and measure their ecological impact. (Commoner, *The Closing Circle*, pp. 260-61.)

\* The most well-known example is that of the car industry. Is the car as know it today the only one possible on the basis of current scientific knowledge? Could that be proven based on the history of the car industry? From its beginning to today, we constantly see a multitude of technical possibilities from which one is chosen. But that choice is not made by me or you. A very small group of people makes such choices not on the basis of objective, scientific criteria, but on the basis of partial profitability calculations. They have produced a certain type – chosen to produce and sell – a certain type of car, not because it was the only scientifically possible type, but because it was the type that (as far as they knew) would yield the highest profit. That is the only correct description of the process that has taken place in the car industry over the past 70 years.

Had the state not built motorways, but introduced a system of cheap or free buses and trains, had the state levied a high tax on gasoline while heavily subsidizing electricity, gas and coal, then of course no one knows if the car industry would have developed the way it has. Had the car industry itself been forced to bear all those costs, the price of a car would have been three or four times higher than it actually was. I'm not saying it is certain that we wouldn't have had massive sales of private cars anyway, we can't know. In any case, the economic data in the transport market is completely different now that whole series of costs have been socialized; this is, of course, related to the weight of certain sectors of American industry, among others, the weight of the oil industry, and for a certain time the importance of the Rockefeller-trust in the political structures of the US was greater than that of, for example, the coal industry or other sectors of American industry.

Socialization of costs has determined the development and structure of industry in the USA in a way which cannot simply be deduced from given, objective data. Not objective technological priorities, but social priorities, meaning priorities of the ruling class, and the power structure of the ruling class, have determined this development to a very large extent. It is certainly true that the decision-making which led to the construction of the car industry as we know it today involved a degree of ignorance about the long-term effects of technology on the natural environment. This is why it is important to take into account all the factors that have led to this development. This only underlines what I have stated, namely that it is not a matter of technologischer Sachzwang, of a supposed linear connection between scientific research and the only possible technology that can emerge on that basis. Rather, there are mediations of a socio-economic nature, and even ignorance plays a role. Another, very important mediation is the concrete socio-economic structure, in other words the power structure as we know it in our society: the concentration of power in the hands of certain persons who can make decisions, as well as the motivations of such persons.

[17] In this respect, the conclusions of the Meadows Report correspond to those of Sicco Mansholt's letter to the European Commission.

[18] This is not a joke; in several countries an industry exporting 'canned clean air' is already emerging.

[19] John C. Esposito, *Vanishing Air* (New York, 1970), p. 108.

[20] Rothman, *Murderous Providence*, pp. 312-13.

\* The 'cost-benefit analysis' technique has tried to develop a set of tools for calculating not only the in-house but also all the social costs involved in a given economic choice. But there is a great difficulty in quantifying the effects of economic decisions on human life. How to quantify, how to monetize human life? You can set a price on raw materials, on labour-power, on natural resources – and as I have already said, that means setting a price on the right to breathe. But how can you determine the price of disease, the price of life and death?

Of course, anything is possible on paper, but, I repeat, you have to see the inhuman implications of it. You can set the price of sickness as the cost of recovery, and the price of a human life by calculating the income of people during the years they could still work as adults. When you then have to choose between two projects, one of which kills 5,000 people and the other does not kill anyone, but the first costs 150 million including the price of those 5,000 lives and the second 170 million, then you have to choose the first rather than the second.

A global cost-benefit analysis could try to monetize disease, human life, death, beauty, aesthetic feelings, everything else, and reduce those to elements of a calculation. And I believe that here we have reached the extreme form of the contradiction between two ways of seeing and resolving the ecological crisis. Here we see how, rather than giving up a dogma (based on material foundations and responding to material interests, albeit not always consciously and directly), one does not dare to say what has been self-evident to socialists for a very long time: That there are certain social choices that should not be based on cost. Such choices should not be made because they are cheaper than others in monetary terms, but because they are preferable from a social point of view, regardless of the cost, because they are priorities that correspond to human, social considerations.

[21] *Financial Times*, March 3, 1972.

[22] To illustrate the order of magnitude involved: the irrigation of 1.5 million acres of land in the Central Valley desert cost 1.5 billion dollars. At that price, the irrigation of 2 billion acres of desert land – which could increase the world's population by 2 to 4 billion people – would cost 2,000 billion dollars, which is the military budget of the whole world for 16 to 17 years. And this amount is grossly exaggerated, because the exploitation and irrigation costs in California have been exaggerated by all kinds of speculation.

[23] For the negative social effects of the Green Revolution, see Rothman, *Murderous Providence*, p. 22.

[24] If fossil fuel consumption continues to rise at the current rate, there will be 25 per cent more carbon dioxide in the atmosphere in the year 2000 than there is now and the average temperature on earth will rise by 0.6 to 4 degrees Celsius. As a result, the cloud cover in the atmosphere could become 10 per cent thicker, which in turn could lead to a temperature drop of 7.5 degrees Celsius. The last ice age was caused by a drop in the average temperature of the globe by 7.9 degrees Celsius. (Rothman, *Murderous Providence*, p. 207).

[25] See, for the ecological disasters caused by the chemical war of the Americans in Vietnam, Rothman, *Murderous Providence*, pp. 195-203.

[26] The abnormal development of cities in our time is accompanied by an 'industrialization' of agriculture, whose negative effects on the environment are particularly obvious; these negative effects are mainly due to the rapid transition to monoculture. An example: in the past, animal manure was used to restore soil fertility. Nowadays, artificial fertilizer threatens to poison the soil and its products, while natural manure is discharged into rivers and poisons the water.

\* I would like to quote Barry Commoner again. It is a very simple example, but it touches on one of the central points of the ecological crisis. What does one do with natural manure today? With human manure, if I may put it that way? It is discharged into the water, which pollutes the water and makes agriculture in some parts of the world less and less productive, which in turn means that more and more artificial fertilizers have to be put into the soil, which in turn increases the ecological crisis. There is a very simple solution: to put this natural human manure, as was done in the past, not in the water, but in the ground. In other words, build large pipelines from the cities, so that this manure will be fed into the arable land and not into the water, in order to replace the artificial fertilizers. Is that more expensive than what is being done now? It is almost impossible to answer that question. It can be said that it is more expensive when we compare the cost of the pipelines with the cost of the current sewerage system. Or: it is more expensive in terms of consequences within five years. But when you look at the long-term consequences, it might even be cheaper.

My argument is that the question of whether it is more expensive or cheaper should be eliminated from the reasoning. It is necessary for maintaining or restoring the ecological balance, for defending life and the survival of humanity. One now accepts military systems without saying 'they are expensive', one accepts different forms of planned obsolescence, one does all this without considering the social costs on a global scale. For the sake of human life and survival, we must eliminate partial profitability calculations. We must say; 'we need to develop new technology; we

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need to develop a radical revolution in technology; we need to implement options which are not based on profitability calculations, but on humanity's self-preservation and self-realization. That is why we need a democratic planned economy, that is why private ownership of the means of production and the autonomy of investment decision-making by individual trusts and corporations has to be abolished. In other words, that is why a socialist world economy is necessary.