
ESSAYS ON FRUGAL ABUNDANCE

DEGROWTH: MISINTERPRETATIONS AND CONTROVERSIES – PART 3 OF 4

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Controversies

Degrowth is based on scientific inaccuracy

The necessity of leaving our consumer society behind and embracing degrowth is contested by some¹ as not having any scientific basis. Others claim that its foundation, Nicholas Georgescu-Roegen's theory of the Earth's finiteness, is not valid. Entropy, the second law of thermodynamics, is proved right for a closed system. However, the Earth's ecosystem is not only an open system; it is one that continuously receives an almost unlimited flow of solar energy.

This argument is advanced mainly by ecologists and especially by experts in thermodynamics, such as Howard T. Odum. Advocates of sustainable development like René Passet support this argument in order to save the idea of sustainable development from collapse. This refutation probably conceals some kind of resistance to the questioning of our economic system, which is unavoidable in a degrowth society. Though some are truly convinced by it, others, such as cornucopians, just use it as a weapon to defend scientific and technical progress and justify their optimism which is based on pure denial of facts.

Objectors to growth, like Nicholas Georgescu-Roegen and growth denialists after him, acknowledge the fact that the Earth receives a huge flow of solar energy. It is actually fortunate, for without this energy, as frugal as it might be, degrowth society would neither be peaceful nor cheerful: it would not be at all. After all, the capture of solar energy, as plants do in photosynthesis, is the basis of all life on Earth.

As for fossil fuels and mineral resources, Georgescu-Roegen's fourth law of thermodynamics, or material entropy, is currently under debate. According to this Romanian scientist, the degradation of energy and of material is an irreversible transformation. Consequently, the constant use of material will cause it to disappear. Once metal molecules and atoms are used and scattered, they are not usable anymore. Georgescu-Roegen gives the example of a piece of coal that is burnt. The process of burning neither increases nor decreases its chemical energy, but turns it into heat, smoke and ashes, which are then not reusable by human beings.² As Yves Cochet put it, there is more energy contained in a golden nugget than in the same amount of gold atoms dissolved one by one in water.³ However, the economist Kenneth Boulding claims that material entropy could be delayed if we dedicated more thought and energy to the issue. If we managed to capture unlimited energy supplies, such as solar and nuclear energy, monitored economic growth would still be an option. As for Howard T. Odum, he believes that all matter dispersed locally is automatically recycled by the solar system. However, if as Odum, Boulding and Passet believe it, this negentropic cosmic dynamic was really happening, reversing the increase of entropy caused by human activity and thus refilling both oil and mineral stocks

1 Such as René Passet and Kenneth Boulding.

2 Nicholas Georgescu-Roegen, *La Décroissance*, op. cit., p.59.

3 Yves Cochet, *Pétrole apocalypse*, op. cit., p.153.

would take millions, possibly billions of years to make a significant impact. The time needed for the natural negentropic process is simply beyond human understanding.⁴ Furthermore, infinite economic growth, no matter how slow, would depend on the unlimited capture of solar energy. As we know, except from 'natural' photosynthesis, all artificial means of capturing solar energy (via solar cells, for example) come with an energetic, ecological and economic cost, which dramatically limits their efficiency. To this day, the options that we could potentially rely on are still scarce, and would hardly cover our needs the way fossil fuels do. Let us simply keep in mind the fact that productivist agriculture is the least economical invention ever invented by humanity, energy-wise. To produce one plant calorie, dozens of fossil calories are needed (or even hundreds in the case of greenhouse-grown crops). Meanwhile, it still takes five to ten plant calories to produce just one animal calorie.

This is why it seems reasonable to consider the biosphere as an almost closed system with limited resources, and thus not able to support never-ending growth. As Nicholas Georgescu-Roegen wrote, 'Even though on purely logical grounds economic growth might occur even with a decrease in the rate of resource depletion, pure growth cannot exceed a certain, albeit unknowable, limit without an increase in that rate...'.⁵

Economic growth, if based on immaterial production, is still an option

For some, economic growth is essentially defined by an increase in Gross Domestic Product (GDP). Yet it is not necessary to reduce the GDP in order to preserve the natural balance. The GDP includes not only goods produced from natural resources (that is, material inputs) but also immaterial services, which are playing an increasingly important role in developed countries. Therefore we can easily imagine the continuous growth of services, and thus the maintenance of solid GDP growth, along with a downturn or a complete halt in material production. In theory this is correct, but it is irrelevant in practice, as shown by the four following points.

If we consider natural resources, the 'new economy' is indeed relatively *immaterial*, for it is based on services and virtual elements. This transformation is epitomised by expanding sectors such as tourism and the new information and communication technologies at the heart of the knowledge economy. There were 25 million international tourists in 1950, compared to 700 million in 2008⁶ – which explains why the turnover of tourism is higher than that of material inputs. In the same vein, according to Alain Cotta, almost two out of three people have stopped using their muscles because they started working in the tertiary sector, a 'megamachine of communication whose servants are called employees'.⁷ This is exemplified by the tertiary sector

4 Denis Bayon et al, *La Décroissance*, op. cit., p.35.

5 Nicholas Georgescu-Roegen, *From Bioeconomics to Degrowth*, Routledge, 2011, p.76.

6 Hervé Kempf, *Pour sauver la planète, sortez du capitalisme*, Paris, Le Seuil, 2009, p.30.

7 Alain Cotta, quoted in Alain Gras, *Fragilité de la puissance*, Paris, Fayard, 2003, p.64.

in France, which accounts for 70% of total employment, but (excluding transport) consumes 16% of the energy used in the country and results in only 11% of total CO₂ emissions.⁸ Jacques Attali, one of the prophets of the 'knowledge economy'⁹, rejoices in the fact that a huge amount of growth lies ahead for the world. The announced 'digiworld' brings together high-tech, IT, electronics, telecommunication, high-speed Internet access, networks, biotechnology and nanotechnology. Blue-collar workers are to be replaced by scientists, engineers, technicians and IT experts. The computer is to take over the machine-tool, leading to a rise of services deemed less noble yet no less necessary to ensure the new society runs smoothly (e.g. cleaners, nurses, wardens, deliverymen etc.).

There is some truth in this argument; there *is* an unprecedented rise in the production of goods that do not hurt you if you trip and fall on them¹⁰ and which involve investments in 'cognitive' capital or simply human labour rather than material capital. Yet this growth of immaterial goods is based on a material infrastructure, which is staying with the anti-ecological logic of the growth society.

Cognitive capitalism often requires more material input than you might expect. It is true that software is designed by human intelligence, yet to manufacture a computer you need, for instance, 1.8 tonne of material, including 240 kilograms of fossil fuels, and a 2-gram microchip requires 1.7 kilogram of energy along with a great deal of water.¹¹

This new economy fulfils rather than replaces the existing system. Industrial activity has decreased in relative, but not in absolute terms: over the past 20 years, it has gone up 17% in Europe and 35% in the US. In Spain, according to Joan Martinez-Alier, the material flow accounting shows that the dematerialisation process has not taken place, either in relative or in absolute terms. While the GDP has increased by 74%, material inputs have grown by 85%.¹²

As for ecoefficiency and the growth of services in Europe, according to the MOSUS study, the best-case scenario is a 5% decrease in material extraction and a 12% decrease in CO₂ emissions by 2020. Over the same period of time, the rise would correspond to 30% on a global scale: that is, 80 billion tonnes of extracted and used materials.¹³ A report by SERI (Sustainable Europe

8 Jean Gadrey and Jany-Catrice, *Les Nouveaux indicateurs de richesse*, coll. 'Repères', Paris, La Découverte, 2005, p.76.

9 *Le Monde*, 4 January 2004.

10 Jean Gadrey, *Adieu à la croissance*, op.cit., p.56.

11 See the UNO report *Computers and the Environment* (Kluwer Academics, 2003), quoted by Alain Gras in *La décroissance*, no. 2, May 2004. To produce a 32-megabyte microchip, 72 grams of chemicals, 700 grams of elemental gases, 32 liters of water and 1.2 kilograms of fossil fuels are needed. That is, an amount of material corresponding to some 17,000 times the weight of the microchip itself, according to the World Watch Institute.

12 Joan Martinez-Alier, 'Che cos'è l'economia ecologica', in Masullo, A. (ed.) *Economia e Ambiente. La sfida del terzo millenio*, Bologna, EMI, 2005, pp.114-115.

13 MOSUS, *Policy Recommendations*, December 2005 (www.mosus.net).

Research Institute) shows that in 30 years' time, despite a 30% decrease in the amount of natural resources used by per extra GDP percentage point, the global drain of natural resources has not decreased.

This phenomenon is called the *rebound effect* or 'the Jevons paradox' in specialised literature. At the end of the 19th century, the neoclassical economist William Stanley Jevons observed that steam engines burnt less and less coal thanks to technical improvements, but that the global consumption of coal kept growing due to the rising number of such engines. The rebound effect can be defined as 'the increase of consumption linked to the reduction of limits to use a technology. These limits might be monetary, temporal, social, physical, effort-related, spatial or organisational'.¹⁴ Finally, efficient technology stimulates a rise in demand; what is gained is overcompensated by a rise in consumption. François Schneider, an expert on the matter, concentrates on the underlying psychological process that explains our behaviour. If we are pleased with ourselves for reducing our consumption of energy, for instance by using low voltage lamps, we will treat ourselves with a trip to the Caribbean, which will result in the consumption of a far larger amount of energy than what we saved... Trains are going faster nowadays; therefore we travel farther and more often. Home insulation has been improved: we save money and buy a second car. Compact fluorescent light bulbs require less energy: we leave them on. The Internet dematerialises the access to information: we use more printing paper. Indeed, more and more highways and trains are being built, traffic increases and paper consumption does not decrease...

One cannot deny the loss of industrial jobs in rich countries: in France, it amounted to 1.5 million between 1978 and 2002. It is primarily due to a slump in demand, combined with the quest for gains in productivity. However, it is also the result of the outsourcing of some services (maintenance, security, catering etc.) which were previously delivered by the companies themselves and regarded as secondary occupations. For some others, relocation is the cause of this decline. We consume more and more natural resources, but the materials we consume are mostly imported from other countries. This explains why the consumption of natural resources in developed countries has seen a relative decrease while it has kept growing on a global scale. The rebound effect has full hold here: reductions due to qualitative improvements in technology are far from offsetting the quantitative growth of newly industrialised countries. Consider that over the same period of time, industrial production in China grew by 250%!¹⁵

As Yves Cochet points out, the transfer of energy-consuming activities from developed countries to emerging countries actually adds up to the growing global movement of goods, resulting in a growing consumption of energy. The OECD post-industrial 'knowledge economy', as it is called, is based on the transfer of its material and energetic foundations to emerging economies. Yves Cochet concludes by asserting that on the whole, the present-day global society is more

14 François Schneider et al, 'Eco-info-society: Strategies for an Ecological Information Society', in Hilty, L.M. and Gilden, P.W. (ed.) Sustainability in the Information Society, Marburg, Metropolis Verlag, 2002, part 2, pp.831-839. Quoted by Yves Cochet, *Pétrole apocalypse*, op. cit., p.132.

15 Jean-Paul Besset, *Comment ne plus être progressiste...*, op. cit., p.207.

industrial than ever.¹⁶ Today, all indexes confirm that the exploitation of natural resources is steadily growing, particularly on a global scale.

The service economy, on its part, has a significant impact. As Paul Ariès observes: an employee working in the tertiary sector consumes 1.5 tonne of oil equivalent (toe) per annum, i.e. one-third of what an average Frenchman consumes for their personal use. That same employee consumes more energy than a farmer did in 1945.¹⁷ The philosopher Bernard Stiegler thus concludes that the *immaterial* does not exist, has never existed and will never exist. Each and every thing that exists is a state of matter. In order to produce these evanescent states of matter, a large amount of *material* is required: lots of *devices*... Nowadays, everything is converted into information, i.e. in states of matter produced by materials and devices; due to them, everything is now controllable at nanometre and nanosecond level... The problem does not lie in the immateriality of the matter but in its invisibility.¹⁸

The expansion of services and immateriality will not save the economic growth of our society.

The growth of market value is compatible with a reduced amount of material

A similar objection is the following: economic growth refers to the growth of market value and not to the physical quantity of goods. Therefore, we can imagine that the market value would keep growing while production and consumption would go down in terms of quantity. The ecological and social conversion advocated by degrowth could lead to such a result. In the areas of agriculture or renewable energies, more added value per unit of output will be produced, since more human labour will be needed to replace machines, fertilisers etc. Furthermore, inputs in terms of transport, packaging etc., will be reduced. Therefore, similarly to the previous objection, this is acceptable in theory, yet not in practice: its implementation in the logic of productivity is paradoxical and even less desirable.

Running out of oil, for instance, will not necessarily lead right away to the end of consumerism. This is in a way what is true in the arguments of those advocating sustainable development, green growth and immaterial capitalism. Companies (at least some of them) could keep thriving on the growth of their turnover and profits, as the planet would be plagued by famine, pandemics and wars, thereby leading to the extermination of nine-tenths of humanity. The price of resources, growing scarcer, would increase faster than their quantities would decrease.

If land and oil revenues grow more than the overall price level, GDP, in constant euros, grows as well. The relative scarcity of oil is not currently harmful to the good health of oil companies –

¹⁶ Yves Cochet, *Pétrole apocalypse*, op. cit., p.117.

¹⁷ Paul Ariès, *Décroissance ou barbarie*, op. cit., 2005, p.82.

¹⁸ Bernard Stiegler, *Économie de l'hypermatériel et psychopouvoir*. Entretiens avec Philippe Petit et Vincent Bontemps, Paris, Mille et une nuits, 2008, pp.110-113.

quite the contrary. It is not the same for the fisheries sector because substitutes for fish exist; therefore, the price of fish cannot grow in proportion to its scarcity. If the cod fillet is too expensive, we can still eat chicken, but what could we use instead of oil to make our engines work? In a world without oil, and despite the depletion of natural resources, oil consumption would decrease substantially while its market value would keep growing. Market value fluctuates according to scarcity and rigidity of demand, and it increases faster than the decrease of available supplies.

Therefore, exchange value is dissociated from value in use: the former keeps growing while the latter decreases. This would allow for the survival of a growth economy and of a growth society for some time, but with drastic rationing and rough restrictions on basic necessities for the poor. Such a mercantile society, based on opulence for the richest and penury for the masses, would be the exact opposite of the frugal abundance of degrowth. It would necessarily lead to a dictatorial and totalitarian regime of oppression. In the event of an ecological collapse, a market economy could still be more or less functional, despite the extreme scarcity of natural resources, climate disruption, the sixth extinction of species, the loss of biodiversity etc. We are emerging from the age of consumerism without breaking away from the logic of the growth society. Unlike the previous objection, it is not the immaterial production that pushes the GDP up but the sole increase in the rents of these diminishing resources. This scenario is outlined by the US growth of the past decades, based to a large extent on property speculation and on a deceptive improvement of well-being. The rich would live in affluence while the masses would strive to survive by running up more debt. The speculative bubble glistens but always ends up bursting...

In her recent book *The Shock Doctrine*, Canadian author Naomi Klein defends the idea that the US extreme right is urging the ecological crisis to break out so as to be able to impose their solutions. Their goal would be to end up with all the regulations and establish an *anarcho-capitalistic regime*, along with a privatisation of all goods and services.¹⁹ Unlike Herman Daly's theoretical doctrine about a steady state economy, in Klein's scenario there would be a material degrowth with statistical growth and, obviously, on top of that, a totalitarian dictatorship. The 'rise of disaster capitalism', as Klein rightly defines it, had already started with the austerity policies implemented in the US and in Europe since the spring of 2010.²⁰ Such a solution is destined for a great future if the degrowth revolution fails to remedy the situation.

Degrowth implies a drastic reduction in the world's population

Addressing the demographic issue is rather delicate inasmuch as it is connected with religion and we would thereby be dealing with taboos. Nevertheless, at each meeting, in each debate, there is always someone who raises this objection: "The ecological crisis results from the

¹⁹ Naomi Klein, *The Shock Doctrine: The Rise of Disaster Capitalism*, New York, Metropolitan Books, 2009. See the article entitled 'Why the Right Loves A Disaster'.

²⁰ Ibid.

overpopulation of the planet.’ Therefore, the effects of degrowth should be demographically visible.

Demography is indisputably part of the debate; it would be absurd to deny this. However, positions on the issue often are emotional, for it addresses both the problem of the right to life and the optimism of modernity together with its advocacy for science and progress. These arguments can lead to eugenics or even racism in the name of a rationalised form of Darwinism. The demographic threat – real or fictitious – easily becomes a tool used to promote the establishment of different forms of ecototalitarianism. It is therefore important to define all the aspects of the issue and consider all the pessimistic and optimistic arguments carefully before expressing any judgement as to the size of a ‘sustainable’ humanity.

1) If the shortage of natural resources and the limited regeneration ability of the biosphere condemn us to change our lifestyle, the lazy solution would indeed be to reduce the amount of the few happy ‘beneficiaries’ so as to restore a sustainable situation. This solution suits the world leaders as it does not represent a menace to either social relations or the logics of the system. This is why the few representatives of employers or of the oligarchy who support degrowth mostly consider birth control to be the solution.²¹ A simple solution to our environmental woes would consist in adjusting the size of the human population to our planet’s capabilities by applying the rule of three.

A mechanistic analysis similar in inspiration to that of Malthus shows that the world’s population has skyrocketed in the age of economic growth, i.e. the age of thermo-industrial capitalism. The easy availability of oil, a plentiful, cheap source of energy, enabled the world’s population to leap from 600 million individuals in the 18th century to 6 billion today. It will reach an estimated 9 billion by 2050. If this non-renewable resource were to become depleted, we would be forced to scale back the population to a level in keeping with our planet’s sustainable load capacity: approximately to what it was before the advent of industrialisation. Such is the argument put forward by William Stanton in his book *The Rapid Growth of Human Population 1750-2000: Histories, Consequences, Issues, Nation by Nation*.²² This argument, along with the ecototalitarian predictions the author draws from it, is most seriously debated by ASPO²³ (Association for the Study of Peak Oil): ‘According to William Stanton, the population reduction scenario with the best chance of success has to be Darwinian in all its aspects, with none of the sentimentality that shrouded the second half of the 20th century in a dense fog of political correctness’.²⁴

21 Such is the opinion of Hugues Rialan, a banker who worked for Goldman Sachs and who adopted the doctrine of ‘thriving degrowth’, on which a conference was held in 2009, during the summer meeting of the French business confederation (MEDEF).

22 Brentwood, Multi-Science Publishing, 2003.

23 ASPO Newsletter, April/May/June/July 2005.

24 Quoted from ASPO’s Newsletter, April/May/June/July 2005.

This scenario, which Stanton would like to see implemented in a voluntary, fair, and peaceful manner, aims at gradually reducing the population over a 150-year period, parallel with the rate of oil depletion, to prevent a nightmarish, brutal decimation of the population by violent means, including nuclear war, massacres, famine etc. The script for this scenario is as follows: 'Immigration is banned. Unauthorised arrivals are treated as criminals. Abortion or infanticide is compulsory if the foetus or baby proves to be handicapped (Darwinian selection weeds out the unfit). When, through old age, accident or disease, an individual becomes more of a burden than a benefit to society, his or her life is ended humanely. Imprisonment is rare, replaced by corporal punishment for lesser offences and painless capital punishment for greater'. William Stanton is well aware that the wording of his proposal, not to mention its implementation, will raise a few objections: 'Probably the greatest obstacle to the scenario with the best chance of success (in my opinion) is the Western world's unintelligent devotion to political correctness, human rights and the sanctity of human life'.²⁵ His response is just as scathing as his diagnosis: 'To those sentimentalists who cannot understand the need to reduce the UK population from sixty million to about two million over 150 years, and who are outraged at the proposed replacement of human rights with cold logic, I would say "You have had your day"'. And for good measure, he adds: 'Acts of violent protest, such as are carried out today by animal rights activists and anti-abortionists, would, in the Darwinian world, attract capital punishment'.

This constant, almost obsessive allusion to the Darwinian world echoes Reverend Malthus's original, cynical claims. Indeed, Darwin was inspired to formulate his theory of evolution by natural selection after reading Malthus's *Essay on the Principle of Population* (1798).

The same assumptions crop up in numerous analyses of geopolitics. Furthermore, this outlook recalls Samuel Huntington's theory of the clash of civilisations. In a memorandum dated 10 December 1974, entitled 'Implications of Worldwide Population Growth for U.S. Security and Overseas Interests', Henry Kissinger wrote in essence that, to maintain American hegemony over the world and guarantee the US free access to strategic minerals all over the planet, it was necessary to contain, or even reduce, the population of the thirteen Third World countries (India, Bangladesh, Nigeria...) which, because of their sheer demographic weight, were condemned (so to speak) to play a key role in international politics. In order to achieve that goal, we must convince Third World leaders to accept birth-control methods by applying subtle political pressure (while taking great care that it does not look like some form of economic or racial imperialism). If that plan were to fail, more coercive methods will have to be applied. Dr. M. King, one of the experts in charge of demographic strategy, shares this view: 'Try family planning, but if it fails, then leave the poor to die, as they are an environmental hazard'.

In the 1950s, American author William Vogt already advocated drastic population cuts and suggested that a large-scale bacteriological war would, if waged energetically, be an efficient way

²⁵ Ibid.

of giving the Earth its forests and grazing lands back.²⁶ This is the 'final solution' to the environmental problem.

This is not, of course, where growth objectors stand on the issue. Massive population downsizing plans are a world away from the degrowth project. This does not spare us from accusations of Malthusianism, sometimes by the very people who doom two-thirds of humankind to extermination.

2) Conversely, a similarly mechanistic, yet optimistic view points out that while the global population has been multiplied by 6, rising from 1 to 6 billion inhabitants over 200 years, productive forces have been multiplied several hundred times over. Therefore, according to theory, each of these 6 billion individuals is statistically a hundred times wealthier than their ancestor. Therefore, there is no reason to worry. This pervading sense of optimism rests largely on statistical extrapolation. A French farmer fed 7 people in 1960, versus 80 in 2000, a feat Malthus had not reckoned with. The corn output per hour of an American farmer is today 350 times higher than that of a Cherokee. In the 1960s, these dizzying figures led many a demographer, such as Alfred Sauvy, to fall for them and claim that the Earth could feed 100 billion people... In the 1950s, the Australian economist Colin Clark estimated that the Earth could feed up to 90 billion people. A few years ago, Michel Cépède put forward the figure of 35 billion.²⁷ However, we should keep our wits about us.

3) Once we have regained a sense of limits and moderation, we may face the demographic issue with equanimity. Obviously, if infinite growth is irreconcilable with a finite world, it is also true for population growth. The planet and its mere 55 billion hectares cannot provide for a limitless number of inhabitants. That is why almost every authoritative author who has written about degrowth, who showed the limits of growth (Jacques Ellul, Nicholas Georgescu-Roegen, Ivan Illich and René Dumont, among others) have raised the alarm on overpopulation. And yet, few of them support the system... Even Cornelius Castoriadis writes that 'the link between the population explosion and environmental problems is obvious'.²⁸ However, demographic growth is less at play here than the adoption of the religion of industrial growth. What degrowth questions first and foremost is the logic of growth for the sake of material growth, not the abundance of human beings. Even with a significantly downsized population, the infinite growth of needs would still entail an excessive environmental footprint. Italy is a good example of this paradox: its population is decreasing but its environmental footprint, its production and consumption, the destruction of nature, of landscapes, urban sprawl and 'concretification' keep growing.

26 Jean-Pierre Tertrais, *Du développement à la décroissance. De la nécessité de sortir de l'impasse suicidaire du capitalisme*, Paris, Editions du Monde libertaire, 2004, pp.35-36.

27 In an essay published 25 years ago, Joseph Klatzmann was far less optimistic: he estimated that while feeding 10 billion people was theoretically feasible, it was politically difficult.

28 Cornelius Castoriadis, *A Society Adrift. Interviews and Debates, 1974-1997*, New York, Fordham University Press, 2010, p.198.

If we all lived like Australians, the world would already be overpopulated and nine-tenths of the population would have to be wiped out. The planet could support no more than 500 million people. As Murray Bookchin aptly points out, 'Whether the Earth contains 10 million or 10 billion inhabitants, the "grow-or-die" dynamics of the capitalist market economy would undoubtedly devour the entire biosphere'.²⁹ For the moment, the issue is not so much too many human beings as too many cars.³⁰

What is a sustainable, viable or desirable size for the global population? Nicholas Georgescu-Roegen was in no doubt that the Earth was already overpopulated and that drastic downsizing had to be organised. In *Energy and Economic Myths* he suggests a plan he had already put forward in *The Entropy Law and the Economic Process*, whose third point called for humankind to 'gradually lower its population to a level that could be adequately fed only by organic agriculture'.³¹ Around the same time, in 1972, René Dumont, in *Utopia, or Else*, begged to differ: 'No! Infinite growth is impossible'. He, too, advocated demographic degrowth.

Is the Earth already overpopulated? It would be, undeniably so, if everyone were to consume as much as the average American. Conversely, the average Burkinabe's diet would offer ample leeway. Whereas in the first instance, the population should decrease to about one billion individuals, in the second case, it could balloon up to 23 billion! However, French naturalist Jean Dorst used to joke that it was much nicer to be able to sit down to a meal and not to have to remain standing.³² Paul Ariès is highly optimistic when he writes: 'Let us be serious: the current production of staple foods far exceeds the needs of the entire global population: it is even estimated that we could produce 23% more food than required to meet mankind's nutritional needs'.³³ If we set the daily amount of energy required to maintain a standard human being (food and basic needs) at 3,500 calories, French consumption was already 80 times as high in the 1970s!

These quantitative approaches, however, tend to obscure the main issue: the logic of excess that defines our economic system. Once this excess is kept in check and the essential paradigm shift undertaken, the demographic issue can be more calmly addressed and resolved. However arbitrary these figures may sound, the concept of a sustainable global population is quite relative. There is no doubt that if the American standard of living is non-negotiable, a large chunk of the population will have to be eliminated. The situation is not as bleak as it looks, however, if we examine the issues from all angles: on every single continent, humankind has

29 Quoted in Arne Naess, *Ecologie, communauté et style de vie*, Paris, Editions MF, 2008, p.342.

30 Which does not deter French president Nicolas Sarkozy from declaring that the car, which yesterday was a symbol of growth, will power tomorrow's growth.

31 Nicholas Georgescu-Roegen, *Energy and Economic Myths: Institutional and Analytical Economic Essays*, New York, Pergamon Press, 1976.

32 Jean Dorst, *Before Nature Dies*, New York, Penguin, 1971.

33 Degrowth or Chaos, op. cit., p.89.

made significant progress through the demographic transition. In the Arab world and in Africa, the process is well under way. It is first accompanied by population growth, which is then followed by a rapid decline in the birth-rate.

It would be wrong to only consider the issue from a quantitative angle. Even if it can be brought about without violence, population degrowth still raises formidable challenges (think of the tragic consequences of the one-child policy in China and elsewhere) in education and lifestyle, as well as intergenerational relationships, not to mention the debate over the funding of retirement pensions. Building a degrowth society means confronting those challenges, but adequate answers are neither unimaginable nor unrealistic. The constraints are flexible. The overconsumption of meat by the rich, for instance, which is a source of health problems, claims one-third of the world's arable land (in addition to the 30% of total land surface which is natural pasture).³⁴ A relative decrease in livestock breeding, coupled with an improvement in the treatment of cattle, would allow us to both feed a larger population a healthier diet and reduce carbon dioxide emissions.³⁵ We can thus agree with Jean-Pierre Tertrais that there is little point in speculating about the mathematical aspects of variations in the human species: population levels have to be stabilised this century. The central issue is whether that will result from events, authoritarian policies or even methods based upon coercion or even barbarism, or whether it will be the result of a deliberate choice and a refusal to allow the desire to procreate to be programmed by a so-called enlightened elite.³⁶

Perhaps the last word should be left to a specialist on our wise cousins the bonobos, Frans de Waal: 'The question facing a growing world population is not as much whether or not we can handle crowding as if we will be fair and just in the distribution of resources'.³⁷ That is the challenge of degrowth.

Neo-Malthusianism and newly industrialised countries

The Neo-Malthusian theories referred to respond in part to the current context of industrial 'neo-revolution': the industrialisation of China and India can be compared on a global scale to what happened in Great-Britain at the end of the 18th century. There is massive rural exodus in China. Every year, between ten and twelve million 'straw hats' (*mingongs*) are forced to leave the land to live cheek by jowl in polluted shanty towns in unimaginable conditions of poverty and filth. Every week in China, one million peasants head south to the cities, which amounts to a total

34 Thierry Paquot, *Petit Manifeste pour une écologie existentielle*, Paris, Bourin éditeur, 2007, p.13.

35 Let us recall that livestock breeding is said to be responsible for 37% of methane emissions resulting from human activity, i.e. more, in CO₂ equivalent, than the transport sector. *Ibid.*, p.13.

36 Jean-Pierre Tertrais, *Du Développement à la Décroissance*, op. cit., p.37.

37 Frans de Waal, *Our Inner Ape: A Leading Primatologist Explains Why We Are Who We Are*, New York, Riverhead, 2005.

of 150 million over the last few years and as many more over the years to come. 'The American dream in China could become a nightmare for the world,' says Lester Brown. But the consumer and communication society, absorbed in its frivolous pursuits, prefers to look away.

Scientific debate

It is difficult to find one's way through the various extrapolations put forward by experts on the planet's load capacity. According to David Nicholson-Lord, 'the truth is that greener lifestyles can make a difference, but zero-impact living, for the foreseeable future, is a chimera and human numbers do matter – hugely. Footprinting studies by Andrew Ferguson at the Optimum Population Trust suggest that if a world of six billion lived a "modest" western European lifestyle based entirely on renewable energy, it would still need, to support it, another 1.8 planets!'³⁸

François Meyer sounded the alarm in the 1970s with his book *La Surchauffe de la croissance*. According to Meyer, the hyper-exponential rate of population growth is a significant factor, which takes us far away from any logistical solution that might restore some balance.³⁹ Assuming that there are 135 million km² of landmass, he calculated that in 1650, the available area per individual was, in theory, 0.28 km²; in 1970, it was no more than 0.04 km², seven times less; and in 2070, it would most likely be reduced to 0.011 km², about four times less than in 1970. This means that the bioproductive area would be insufficient for survival. Degrowth thinkers with a scientific background often tend to take a biological and mechanical approach and consequently underestimate what is possible. This is the case of the Norwegian philosopher Arne Naess, who is considered one of the founders of the 'Deep Ecology' theory. In 1973, after showing that humankind posed a threat to the biosphere, he proposed an eight-point platform. The fifth point states: 'The flourishing of human life and cultures is compatible with a substantial decrease in human population. The flourishing of non-human life requires such a decrease. [...] At present there is no universal solution and no planet available to support eight billion individuals'.⁴⁰ Objectors to growth do not share this 'eco-centric' or 'nature-centric' opinion, and usually criticise it. The nutritionists Hopfenberg and Pimentel say that 'if all people are to be fed adequately and equitably, we must have a gradual transition to a global population of 2 billion. A population policy ensuring that each couple gives birth to only 1.5 children on average would have to be implemented'.⁴¹

38 'The Numbers Game', *The Ecologist*, 22 September 2006.

39 François Meyer, *La Surchauffe de la croissance*, Paris, Fayard, 1974. See also François Meyer, *Problématique de l'évolution*, Paris, PUF, 1954. Albert Jacquart, in his *L'Équation du nénuphar* (Paris, Calmann-Lévy, 1998), also notes that, given a constant annual growth rate of 0.5%, the human population, which numbered about 250 million individuals at the beginning of our era, would be about 5 trillion today.

40 Arne Naess, *Ecology, Community and Lifestyle*, op. cit., p.100.

41 Quoted by Richard Heinberg, *The Party's Over: Oil, War, and the Fate of Industrial Societies*, op. cit., p.247.

From a demographic point of view, is 'natural' evolution likely to adapt to these economic and environmental trends? According to Jean-Paul Besset, the global population growth rate declined from 2% to 1.3%, and this is probably the best news the world has received over these last few years. However, while we are recording this new growth rate, the population is now much larger and younger. With only 0.5 children more per woman (i.e. 3.0 instead of the current 2.6), the global population would rise not to nine but to eleven billion inhabitants in just two generations' time. This tells us how narrow the line is. The 'Population Bomb' has not been defused, and it makes the interruption of the biodiversity crisis an even more pressing issue.⁴²

By touching upon different ideas, cornucopian philosophers such as Luc Ferry⁴³ are quick to consider these positions as Malthusian, or even sectarian, thereby suggesting the recurrent return of an overcautious pessimism and detrimental obscurantism. However, it is doubly inaccurate to say that the positions of most objectors to growth are Malthusian: firstly, Malthus was referring to the very particular case of England at the outset of capitalism, when farmers were violently dispossessed of their lands, thereby resulting in an artificially excessive number of farmers; secondly, even though he was a sycophant (according to Marx), the 'Grim Reverend' seemed incredibly optimistic in thinking that food supplies could grow endlessly, following an arithmetic progression.

How many of us will there be in 2050? This is a symbolic (and arbitrary) year, and it will be the moment of truth: we shall witness all the effects of climate change, the end of oil (and the depletion of fish stocks⁴⁴) and predictable economic and financial crises. According to the first report to the Club of Rome, there will be between 12 and 15 billion of us, or 9 billion people if we trust the demographers' predictions, based on the demographic transition. There will be much fewer of us if human sterility increases under the influence of reprotoxic substances, thereby leading us to extinction. It is difficult to make accurate predictions. According to Professor Belpomme, 'five human extinction scenarios are plausible: self-destruction, such as a nuclear war, the spread of extremely serious diseases, (i.e. a pandemic or sterility) which would irreversibly cut down the number of human beings, lead to the exhaustion of natural resources, to the destruction of biodiversity, and finally to extreme physico-chemical modifications in our inert environment, such as the loss of the ozone layer or worsening of the greenhouse effect'.⁴⁵

42 Jean-Paul Besset, *Comment ne plus être progressiste... sans devenir réactionnaire*, op. cit., p.110.

43 French philosopher and former Minister of Education in the cabinet led by the conservative Prime Minister Jean-Pierre Raffarin.

44 A FAO report predicted that, at prevailing trends, the world would run out of wild-caught seafood in 2048. Worms, B. et al. (2006) 'Impacts of Biodiversity Loss on Ocean Ecosystem Services', *Science*, 3 November, vol. 314, pp.787-790.

45 Dominique Belpomme, *Avant qu'il ne soit trop tard*, op. cit., p.194.

How will we feed ourselves?

According to Jean-Paul Besset, although there will be three billion more inhabitants on Earth by 2050, we are still told that we have nothing to worry about thanks to new, feasible green revolutions, laboratories producing new, more resistant varieties; biotechnologies increasing productivity, and aquaculture working miracles. However, it is far from the truth (meaning: than for the first green revolution). In fact, it may be completely false.⁴⁶

According to the United States Department of Agriculture (USDA), the available amount of grain, meat, and seafood products per person was growing ever faster than population until the 1980s. However, the USDA stated it has been decreasing since then: -11% for cereals, -15% for beef and lamb, -17% for fish and shellfish. Fish stocks, which are already becoming depleted, will definitely not compensate for this shortage.

Furthermore, climate change will not help matters. Surveys in the Philippines show that for every increase in temperature by one degree Celsius (1.8 degree Fahrenheit), there is a 10% decrease in agricultural productivity. According to Lester Brown, the July and August 2003 heat wave, which caused the death of 35,000 people (around half of whom were in France), also reduced the grain and wheat harvest in Europe, from eastern France to Ukraine. The United States Department of Agriculture calculated that the wheat harvest, as a result, declined by 32 million tonnes in Europe. To have an idea about the severity of the problem, people only need to realise that it corresponds to half of the American harvest. That is not an insignificant decrease.⁴⁷

Calculations based on our ecological footprint show that only since 1960 have we exceeded the Earth's load capacity.⁴⁸ However, at that time, there were three billion of us (compared with one billion in 1860, before the industrial era). In other words, even if we were to stop generating energy efficiency profits, which is highly unlikely, going back to three billion seems very realistic at first sight, even more so from a strictly quantitative point of view, because the potential land use would not be exhausted at all.⁴⁹ However, in 1960, we were in the midst of a thermo-industrial era. Richard Heinberg contemplated the question: 'How many people will post-industrial agriculture be able to support?' According to him, 'a safe estimate would be this: as many people as were supported before agriculture was industrialised – that is, the population at

46 Jean-Paul Besset, *Comment ne plus être progressiste... sans devenir réactionnaire*, op. cit., p.57.

47 Lester R. Brown, 'Plan B: Come affrontare la crisi alimentare incipiente', *Economia e Ambiente. La Sfida del terzo millennio*, Bologna, EMI, 2005, p.77.

48 Jean Brière, President of *Démographie et Écologie*, said in his presentation *Le drame palestinien et la crise écologique* that if we look at the available renewable energies (biomass essentially), a sustainable way of life is possible for a population between one and three billion, given the level of acceptable material restraint.

49 According to Silvia Pérez-Vitoria, on a global scale, 38% of land is agricultural, but less than a third of this percentage is cultivated, which corresponds to 0.28ha of agricultural land and 0.25ha of cultivated land per inhabitant. *Les paysans sont de retour*, op. cit., p.39.

the beginning of the 20th century, or somewhat fewer than two billion people'.⁵⁰ His answer may be overly optimistic in view of prominent soil degradation.

It is necessary to get back to a sustainable agriculture, such as permaculture. During a visit to Asia at the beginning of the last century, the American scientist F. H. King was quite impressed by the non-industrial systems he discovered: they fed 500 million people by using an area smaller than the entire agricultural land of the United States and soil which had been cultivated for almost 4,000 years.⁵¹ These systems had the particularity of using mainly human labour and few external inputs. More importantly, most of the energy was renewable and self-produced.⁵² The Bourguignons, a husband and wife team of specialists in soil microbiology, demonstrated that by being patient and using 'soft' techniques, we can regenerate degraded soil. The question, however, is whether or not this could be enough.

Heinberg presented a study carried out by John Jeavons of Ecology Action, in Willits, California. From 1975 to 2000, he developed methods for feeding the human population with a minimum area and no fossil fuel inputs. He finally concluded that the human species could survive if each inhabitant used only 260 m² of cultivated land. As a result, the Earth's load capacity could reach up to 7.5 billion. However, Jeavons' 'biointensive' mini-farming method implies the composting of all plant wastes and animal wastes—including human bodies *post mortem*—and provides a strictly vegan diet with no oils and no plant materials devoted to the making of fuels for cooking or heating. According to Richard Heinberg, a more realistic post-fossil fuel carrying capacity would be substantially below the current population level.⁵³

Still, it does not mean the situation has to be overly dramatised. Like in Italy and most over-developed countries, population degrowth is possible, if it is brought about carefully. After a future stabilisation at nine or ten billion, as demographers predict, can we imagine a following transition towards an optimal fixed state (between one and three billion)? Referring to Christian Godin's human extinction thesis, Paul Ariès expressed a more extreme idea going in the opposite direction: it is very likely that developing countries will soon have, like developed countries, birth rates which do not guarantee reproduction. As a result, humanity will slowly head towards extinction, simply because we will not have the will to continue with our lives.⁵⁴ For now, there is no reason to be overly optimistic or overly pessimistic.

50 Richard Heinberg, *The Party's Over: Oil, War, and the Fate of Industrial Societies*, op. cit., p.196.

51 L'Écologiste, no. 14, October-December 2004.

52 Quoted by Silvia Pérez-Vitoria, *Les paysans sont de retour*, op. cit., p.91.

53 Ibid.

54 Christian Godin, *La Fin de l'humanité*, Paris, Champ Vallon, 2003. Quoted by Paul Ariès, *Décroissance ou barbarie*, op. cit. p.85.