

Back to the Visible Hand: The Challenges of the Second Rio de Janeiro Earth Summit

IGNACY SACHS

IN JUNE 2012, Rio de Janeiro will host, for the second time in twenty years, a United Nations Earth Summit, a tribute to the leading role played by Brazil in the search for socially inclusionary¹ and environmentally sound development strategies at the national and global levels. Brazil along with India are the two potential “*abre alas*”² of the bloc of emerging countries, bound to play an increasingly significant role within the United Nations system, provided that they manage to establish a common agenda, possibly led in this by IBSA – the India-Brazil-South Africa Forum, established in 2003. Somewhat paradoxically, the weaknesses of the Euro zone and the internal political struggle in the United States give the emerging countries an opportunity to assert themselves as an important player within the United Nations.

Another more heterogeneous grouping, whose acronym is BRICS, aims at bringing together Brazil, Russia, India, China, joined recently by South Africa.³ However, the prospect for a close collaboration among these five countries will depend on their ability to overcome important differences with respect to their social and political regimes.

As for their relative weight in world economy in the near future, quite differently indeed from the world in which I was brought up, we might refer to a recently released projection by the Economist Intelligence Unit.

In 2027, China is likely to become the largest national economy in the world with a GNP of 41.6 trillion US dollars, followed by the United States (31.13 trillion US dollars), India (11.32 trillion US dollars) and Brazil (7.34 trillion US dollars). Japan will have a GNP slightly lower than Brazil (7.27 trillion US dollars). The next five countries in this ranking will be clearly left behind: 5.67 trillion US dollars for Germany, 5.47 for Russia, 4.98 for France, 4.38 for the United Kingdom and 3.87 for Canada.⁵

With this perspective in sight, the 2012 Rio Summit will face two major closely interconnected challenges:

The mitigation of climate change, increasingly resulting from anthropogenic sources – the warming produced by massive emissions of greenhouse gases with deleterious consequences on the living conditions on the spaceship Earth for today’s seven billion and nine to ten billion human beings in the second

half of the present century; the scientists of the International Panel on Climate Change are adamant: the average temperature should not increase by more than 2°C if we want to avoid a serious disaster;

The need to put an end to the scandal of abyssal inequalities in the living conditions and quality of life prevailing today between nations and within nations: a small minority occupying the spacious and comfortable cabins on the deck of the spaceship Earth, while many more are condemned to lead a miserable life in its hold, working hard to survive on a hand-to-mouth basis. Do you recall Fellini's masterpiece *E la nave va*?

More than ever, it is time to learn how to walk on two legs, bringing together *social justice and environmental prudence*.

As a matter of fact, three key dimensions of justice are involved here: justice between and across nations, between present and future generations and even between human beings and other living species. One thing is sure: "*distributive justice should not be seen as merely instrumental but at the heart of sustainable development*".⁶ Questions of environmental justice cut deep into the mode of wealth creation and appropriation. The idea of global environmental/planetary citizenship implies giving a fair chance to all present and future inhabitants/crew members of the spaceship Earth.

We are still far from having achieved this goal. To reach it, we must cross a narrow door, perhaps even the biblical needle eye. Yet, it exists, no reason to share Cassandra's apocalyptic vision. As President Obama often argues, "*yes we can*". Should I say, "*yes we still can*"? The time to accomplish the required shift in global development strategies is running short.

To understand what will be at stake in the 2012 UN Earth Summit, it is necessary to replace this conference in a double historical perspective.

The Historical Contexts

With respect to the *histoire immédiate*, the Rio+20 Conference will follow suit to the pioneering Stockholm Conference in 1972, which was itself preceded by the seminal Founex seminar held in 1971,⁷ as well as by the publication of the bestseller by Barbara Ward and René Dubos, *Only One Earth*,⁸ and followed by the first Rio Earth Summit in 1992, as well as the Johannesburg Conference in 2002. One lasting result of the Stockholm Conference was the *shift from a two-dimensional concept of socio-economics to the three-dimensional eco-socio-economy*, in a sense comparable to moving from plane to space geometry.⁹

Even more significant is the insertion of next year's Earth Summit in the *longue durée*, to use a term dear to Fernand Braudel and the historians of the French *École des Annales*. It will be the first ever held in the *Anthropocene*, since it is likely to be preceded by the formal and belated recognition of our entry in this new era by the International Commission on Stratigraphy.

The concept of Anthropocene was elaborated in a seminal article by P.J.

Crutzen and E.F. Stoermer; emphasising the present day “*central role of mankind in geology and ecology*”.¹⁰

As a matter of fact, we are only now realising that the 18th century industrial revolution propelled us into the Anthropocene. For more than two centuries, we have been behaving like the main character of Molière’s *Le Bourgeois Gentilhomme*, Monsieur Jourdain, who did not know that he was speaking prose.

The Industrial Revolution was preceded, some twelve thousand years ago, by the Neolithic Revolution marked by the transition from hunting and gathering to agriculture and permanent human settlements, out of which the first towns arose.¹¹ The next breakthrough came with the unification of the world economy as a result of the discovery of America by European navigators in the 15th century.

Most probably, future historians will consider the entry into the Anthropocene as a major divide, leaving behind the dichotomy ‘before and after the birth of Jesus Christ’, insofar as it emphasises human growing responsibility in the evolution of the living conditions on the spaceship Earth, not only for mankind itself, but also for other living species.¹² In this way, the second Earth Summit to be held in Rio de Janeiro, will probably be recognised in the future as a turning point in the long history of the co-evolution of our species with the biosphere, whatever its immediate concrete outcome.

Time has thus come to assume our new role as “geonauts”, to use the neologism proposed by Erik Orsenna,¹³ and to prove that we are no longer acting as sorcerers’ apprentices – do you recall Walt Disney’s illustration of Paul Dukas’s musical score in *Fantasia*?

Humanity is at a crossroads. If the warming provoked by anthropogenic causes is not mitigated in time, our descendants may be confronted with deleterious, or even catastrophic, climate changes threatening the very survival of our species, not speaking of the probability of sharp social and political conflicts and wars.

On the other hand, however compelling they may be, ecological concerns should not be accepted as a reason to postpone the addressing of urgent social imperatives. Green economy only makes sense as a socially-minded economy.

The necessary compromise between the environmental and social goals will not arise from the Invisible Hand – the free interplay of market forces, by nature short-sighted and insensitive to the social dimension. The troubled times through which we are now muddling¹⁴ as a result of neoliberal counter-reforms, the fall of the Berlin Wall in 1989 and of the ensuing implosion of the Soviet Union, show us, once more, that we can no longer rely on the Invisible Hand and on the myth of self-regulating markets.¹⁵

The Visible Hand

If we want to move to long term strategies governed by care for all the human – present and future – fellow travellers (and hopefully geonauts) of the spaceship Earth, we must turn to the Visible Hand and its five fingers: a renewed *contrat social*, long term democratic planning, food security, energy security (the two pillars of inclusionary and sustainable development) and international cooperation.

Towards a New Contrat Social

As already said, the paramount long term development goal ought to be the reduction of the tremendous social disparities prevailing at present between nations and within many nations, while keeping in mind the necessity of mitigating climate change.

Historians specialised in *histoire immédiate* are still to give us a thorough critical evaluation of the ‘short twentieth century’ and its two terrible World Wars.¹⁶ the rise and fall of real socialism in the Soviet Union, the emergence of the Welfare States in the Scandinavian countries and of the New Deal in the United States, as well as the diverse models of mixed economies in the developing countries.

Such a study would certainly contribute towards elaborating new paradigms of democratic planning and economic governance and towards designing development strategies, capable of giving the present and future generations a fair chance to make the most of their lives by granting them decent material conditions, hand in hand with the exercise of basic freedoms.

In particular, the patterns of the public sector in mixed private-public developing economies may be analysed using two historical models that define the range of possibilities: the Japanese model of the Meiji era, in which the State limited itself to play a transitory initial role, and the Nehruvian Indian model, also known as the ‘socialistic pattern of society’.¹⁷

We ought to open a discussion on possible “third ways” differing from both the classical capitalism and real socialism as we have known them, focusing on mixed public/private economies with a significant third sector of social economy. Neither history (nor planning) should be forced into the straight jacket of inherited categories. There are at least three reasons to believe that the future will differ from the past: the lessons that we shall learn from the historical experiences analysed *sine ira et odio*, the scientific and technical progress and human creativity at large.

The fundamental question to be asked is: *how much is enough?*

Gandhi replied to it by saying “*needs, not greed*”, but we should not carry too far his postulate of voluntary simplicity. Material over-consumption is by no means an indicator of happiness. Yet, we should be able to provide each of the nine to ten billion human beings that will be sailing on the spaceship Earth in

the second half of this century, with a reasonable income, guaranteeing decent material standards of living, on the understanding that the paramount goal is “*a civilisation of being in the equitable sharing of having*”, in Louis Joseph Lebret’s words.¹⁸ In other words, we should learn to self-control our material consumption.

As there is no reason to believe that we have exhausted the potential of technical progress and of better use of available energies, less and less working time of society will be necessary in the future to produce material goods. It will therefore be possible to gradually reduce the relative share of societal time ascribed to the activities of the *homo faber*, making more time available for the *homo ludens*.¹⁹ At the same time, we ought to ensure that the total working time and earnings from work are fairly distributed among all potential workers, so that the scourge of unemployment is eliminated.²⁰

The sky is the limit to cultural and ludic activities, provided that we learn how to make good and pleasant use of time freed from work. Keynes was right to warn us, as early as 1930, against a “general nervous breakdown” that might be caused by such a fundamental change in the social fabric.²¹ We might take example from a tribe living on a remote Asian seashore. Its best artists were invited to compete by making beautiful drawings on the humid sand of the beach, bound to disappear with the next high tide. I am still looking for a better example of material *désintéressement*.

In order to move towards a less polarised world society, we must bring back to the fore the social and institutional reforms which no longer attract the attention they deserve in the national and international agendas. The unfinished land reforms certainly belong to this category, side by side with urgently needed fiscal reforms. The experience of the New Deal in the United States ought to be revisited in the latter context. The prospect for greater international solidarity will be dealt with in a subsequent section of this paper.

Back to Planning

Planning, a child of war economy,²² prospered at the age of the abacus. Paradoxically, it is unloved in the computer age. There are two reasons to it: the myth of the invisible hand convenient to the capitalists and the spurious relation in the past between planning and autocratic regimes.

In his essay *L’île aux cannibales*,²³ Nicolas Werth describes the attempt by the Soviet authorities to populate an island in the middle of a Siberian river with prisoners randomly grabbed in the streets of Moscow and left to themselves in a hostile environment without adequate equipment and technical advice. The planners were eager to incorporate new territories to the Soviet economy. They ended up provoking a return to cannibalism for real, reminding us of a satirical piece by Swift.²⁴

Yet, we should remember that we are the only living species capable of imagining and anticipating alternative futures, as rightly recalled by Anatol

Rapoport²⁵ and therefore, of planning, if we accept M. Kalecki's succinct definition of the latter as "*variant thinking*" about future action.

Not that we are, or ever will be, "masters of nature" as Descartes wanted us to believe. The nuclear disasters of Chernobyl and Fukushima on the one hand, the tsunamis, typhoons and other natural catastrophes, on the other, should teach us modesty. My preference goes to another seventeenth century French philosopher, Blaise Pascal, who compared man to a "thinking reed" (*roseau pensant*), thus capable of a twofold strategy: bending under the wind in a *reactive posture*, and also taking a *proactive attitude*, in the attempt to outwit nature.

Democratic planning, predicated on a quadripartite dialogue between planners, entrepreneurs, workers and the organised civil society, and making good use of the computers is yet to be firmly established on the tripod of social and ethical goals, environmental conditionality and economic viability, the latter being the *sine qua non* condition for things that matter to happen.

Planning implies an iterative process involving actors at the local, regional, national and international levels. It should incorporate, on the one hand, the concepts of *ecological footprint and biocapacity*, making a sharp distinction between countries which are *biocapacity debtors* and those which are *biocapacity creditors*²⁶ and, on the other, the definition of opportunities for *decent work*, as proposed by the ILO, and which includes *employment and self-employment*, the latter particularly important in rural societies.

At the local level, going back to the example of the French revolution, we need to start by compiling *cahiers de doléances*: a comprehensive listing of the social priorities to be addressed, side by side with the identification of the latent local resources to be explored, the bottlenecks to be tackled and the necessary critical inputs to be brought from outside – knowledge, equipment and finances.

Planners diverge with respect to the time horizon of long term planning. The longer the time span covered, the greater the margins of freedom, but also of uncertainty. Twenty years seems to be a fair choice with the possibility to extend further some projections, in order to identify the emerging breaking points.

Essentially, planning is an exercise in systems approach aimed at identifying ambitious, yet feasible, social goals by proposing efficient patterns of resource use while matching them with the available working force and creating opportunities for decent work, so as to eliminate unemployment and, as far as possible, underemployment. For that, planners should address such issues as easing up bottlenecks while avoiding the unnecessary piling up of stocks and turning waste into wealth (a catchphrase in Maoist China) by finding productive uses for residues.

We are still far removed from having satisfied the basic material needs of the entire human crew of the spaceship Earth. Attacking social inequalities both

at national and international levels is thus more urgent than ever, keeping in mind that we cannot envisage an unlimited growth of material output in a finite planet. The sooner we reduce the abyssal social disparities prevailing today in material consumption standards across the world, the sooner we shall be able to move from an economy of growth to an economy of steady state. We are not there yet.

Food Security

Food and energy security ought to be considered as the two pillars of socially inclusionary and environmentally sound development strategies.

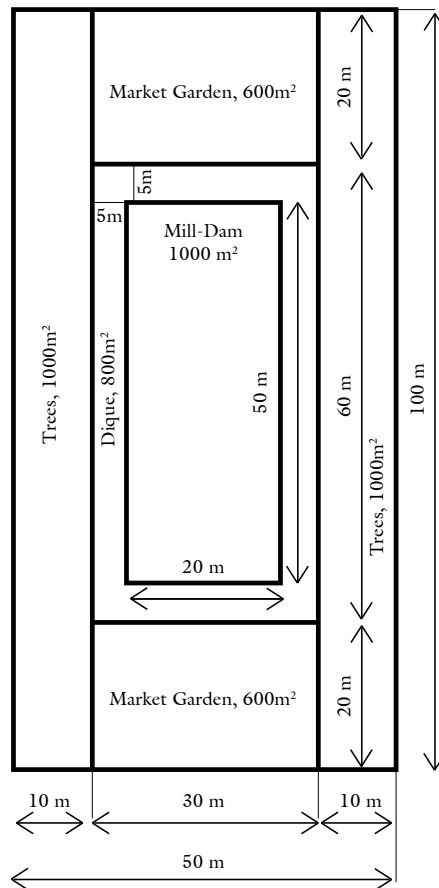
Even assuming a stabilisation of the world's population by the mid 21st century, we must think of how to provide enough food and a reasonably comfortable life for 9+ billion human beings. For that, we depend on further progress of the *green and blue revolutions* with special reference to the interface between the two and to their dissemination throughout all the continents.

Rather than sticking to the elitist green revolution as initially proposed by Borlaugh, based on the massive use of selected seeds, fertilisers and water, we must move towards the '*evergreen revolution*', as advocated by the well-known Indian agronomist M.S. Swaminathan²⁷ and directed towards the small peasants who still represent the majority among rural dwellers in developing countries.²⁸

At the same time, we ought to limit the devastating impact of extensive cattle breeding on forests by resorting to a husbandry better integrated with small scale family agriculture and favouring the substitution of meat consumption by that of fish coming from pisciculture. As far as Brazil is concerned, fish farming has a great future in the Amazon region, the Mato Grosso Pantanal, not speaking of the Atlantic coast, so long as a satisfactory solution is found for long distance transportation of fish, more efficient than by road, and cheaper than by plane. Should we give a second chance to the zeppelin, the more so that we can fill it today with non inflammable gas?

This leads us to emphasise the importance of *intensive production units combining horticulture, pisciculture and arboriculture* inspired by the traditional *dike pond systems* in Southern China²⁹ and updated and adapted to different Brazilian contexts: the Amazonian "*igarapés*", natural and manmade lakes to generate hydropower, ponds and "*açudes*", as well as the coastal areas, in particular the lagoons behind the reefs.

The following diagram illustrates such a unit:



Total surface: 0,5 ha

- A 1000 m² pond (50 m x 20 m) producing 10 tons of fish (a productivity deemed feasible by the BNDES), corresponding to the yearly consumption of 200 inhabitants;
- A 800 m² dike and an additional surface of 1200 m² used for vegetable gardens meeting the annual requirements of 200 inhabitants (feasible on the condition of resorting to biochar as advocated by the NGO Pro-natura International at the rate of 1kg/m²);
- A 2000 m² surface for arboriculture.

Two hundred people fed throughout the year on half a hectare, too good to be true! If it were only possible to create throughout Brazil an archipelago of one million of such units, it would ensure the food security to two hundred million Brazilians and furthermore, generate 2.5 to 5 million jobs, while preventing the further clearing of forests in order to transform them into agricultural land.

Only floriculture can compete with such units as far as employment per hectare is concerned, but obviously, the demand for flowers is much more limited than that for food.

At any rate, we are not there yet, and we ought to evaluate realistically the prospect of advancing along these lines. But the challenge is certainly worth a try. Brazil and India, as already said, the *abre-alas* of the Bloc of emerging countries, have a joint responsibility in this respect.

Energy Security

Energy is crucial to development insofar as it multiplies the productivity of human work. The industrial revolution was predicated on resorting to a widespread use of coal and later oil and gas, three fossil energies responsible for the emissions of carbon dioxide and the ensuing global warming. That is why we ought to reduce and even phase out the use of fossil energies even before they are entirely exhausted.³⁰

Fortunately, we may shift to an array of alternative energies: solar, hydro, wind, geothermal and biomass, each one presenting some advantages and obstacles to be overcome. Three remarks are in order here:

The energy strategy should address three interrelated questions: *energy sobriety*, *efficiency*, and only then the *alternative energy sources*.³¹ Profligate use of energy can be curbed and efficiency greatly increased, so as to reduce the final demand for energy;

Resorting to bioenergy calls for a careful evaluation of the potential conflict between the production of food and that of energy. It need not happen if residues from food production are used as a feedstock for energy production (cellulosic ethanol, biogas from cattle dung, etc). Moreover, countries like Brazil have enough agricultural land available to afford for a while expanding both food and bioenergy production, so long as this does not happen at the expense of standing forests. The latter are to be conserved as carbon sinks, not speaking of their other potential economic uses. Algae grown in sea and fresh water are also a potential source of bioenergy. Food, animal feed, fertilisers, fibres (standing for all kinds of industrial feedstock), fuel and forests are the six potential uses of biomass, which ought to be articulated through the development plan.

The Faustian bargain – resorting to nuclear energy – poses a serious dilemma. It is clean in terms of emissions of carbon dioxide, however, not immune to the risk of highly improbable, yet devastating, accidents (*vide* Chernobyl and Fukushima), not to mention the danger of the proliferation of nuclear weapons. That is why some countries have recently taken the wise decision to phase out the production of nuclear energy.³²

International Cooperation: Whither United Nations?

The second Rio Earth Summit should be essentially seen as a *roadmap conference*, assisting the UN country members in redefining their long term strategies, in order to be able to jointly ensure by 2050 decent conditions of living

to the nine billion human beings, while mitigating deleterious climate change.

The UN system has a major role to play.

On the one hand, it should manage to greatly increase its financial participation in assisting the less developed countries in their socially inclusionary and environmentally sustainable development. For that, the UN could rely on the following funding:

A contribution to a UN Development Fund from the developed countries, going back to the much discussed but never implemented pledge of allocating annually for this purpose at least 0.7 percent of their GNP;³³

The proceedings from the Tobin tax to be collected on financial transactions;

A tax on carbon leading to the reduction of carbon emissions and used to finance projects that meet this goal;

Tolls on oceans and air as a fee for using parts of mankind's common heritage, with the possibility of exempting on certain conditions ships and planes from less developed countries.

It is difficult to set quantitative goals but it should not be impossible to aim at two percent of the world GNP, a very large sum indeed, if it were to be used to increase the productive investment and social expenditure in developing countries.³⁴

On the other hand, the UN system should use its expertise and organisational skills to create international networks for *scientific and technical cooperation among countries sharing similar biomes*, instead of using the geography of proximity. This will call for a significant overhaul in the organisation of the UN affiliated bodies, requiring in particular, a much closer cooperation between regional commissions (ESCAP, ECLAC, ECA, ECE) substantive agencies (FAO, UNIDO, UNESCO, UNDP) and financial institutions (the World Bank, the regional and national development banks), around *biome-oriented programmes* for humid tropics, semi-arid regions, savannas and *cerrados*, temperate regions and so on. Without forgetting the crucial interface between water and land ecosystems in which the green and blue revolutions interact in the intensive production units combining horticulture, pisciculture and arboriculture described above.

It is a tall order indeed that cannot be meaningfully addressed within the short time span left until the Rio+20 conference. That is why the latter should be essentially a *roadmap conference* defining targets and a timetable for further working meetings.

In particular, the UN member countries should be invited to present within two or three years national long term development plans containing the relevant information about the ecological footprint and biocapacity use, as well as about social objectives and especially the creation of opportunities for decent work. The biocapacity debtors should be encouraged to decrease their ecological footprint while the biocapacity creditors should be assisted in making better

use of their biocapacity. Another urgent question is the choice of the energy paradigms.

In parallel, the UN should advance in expanding the international capacity to finance development and setting a collaborative network aimed at designing and implementing biome-based development strategies, which imply much closer South-South links and *collaboration along par^{as}allels rather than along meridians*.

In this way, conditions would be created to move to the next stage of international cooperation: identifying the synergies that can be achieved by mutually adjusting the national development plans, opening new opportunities for trade as well as for scientific and technical exchanges, to be partly financed from international sources and assisted by the network of UN agencies.

It has taken us more than two centuries to acknowledge the dawn of a new age. We must accelerate now the pace of the required transformations to make up for the delay so as to successfully enter into the Anthropocene.

Endnotes

- 1 I prefer the term used by A. K. Sen, “inclusionary” to “inclusive”, for obvious reasons: inclusionary denotes a movement. [Note for the translator into Portuguese: “includente” instead of “inclusivo”.]
- 2 Abre-alas are the dancers who open the parade of the Brazilian carnival street bands.
- 3 This group represents 40% of the world population, 18% of the global foreign trade and about 45% of the current growth of global economy. The BRICS’s aggregate GNP amounts to 1.2 trillion dollars, to be compared with 1.5 trillion dollars for the United States. (source: xinhua.com, 18/04/2011). The BRICS held a summit in Sanya (China) in April 2011 and formulated on this occasion a rather general Action Plan laying the foundation for the BRICS cooperation in the economic and other fields, including, among the new proposals to explore, the feasibility to cooperate in the field of green economy (source: International Business Times, Hong Kong, 15/04/2011; ibtimes.com).
- 4 *Folha de São Paulo*, 28/08/2011.
- 5 See Chukwumerije Okereke, “Justice Must Be Reinstated at the Centre in the Quest for New Green Global Economy”, *Outreach*, (www.stakeholderforum.org), 16/12/11.
- 6 See *Development and environment – Report and working papers of a panel of experts convened by the Secretary General of the United Nations Conference on the Human Environment* (Founex, Switzerland, June 4-12, 1971). The Hague; Paris, Mouton, 1972.
- 7 Barbara Ward & René Dubos, *Only One Earth: The Care and Maintenance of a Small Planet*, United Nations Conference on the Human Environment, New York: W W Norton & Co, 1972.
- 8 See Ignacy Sachs, *Rumo à ecossocioeconomia*. Teoria e prática do desenvolvimento, organizado por Paulo Freire Vieira, São Paulo: Cortez Editora, 2006.
- 9 Paul J. Crutzen & Eugene F. Stoermer “The ‘Anthropocene’”, *Global Change Newsletter – The International Geosphere–Biosphere Programme (IGBP): A Study of*

- Global Change of the International Council for Science (ICSU), n°41, May 2000.
- 10 See Gordon Childe, *What Happened in History*, Harmondsworth: Penguin Books, 1942.
 - 11 See on this point the seminal book by Hans Jonas, *The Imperative of Responsibility: In Search of Ethics for the Technological Age*, Chicago: University of Chicago Press, 1984 [1979].
 - 12 Erik Orsenna, *Portrait du Gulf Stream. Éloge des courants: promenade*, Paris: Éditions. du Seuil, 2005.
 - 13 Apparently the lessons taught by Keynes have been forgotten and budget austerity is once more believed to be a way out of the crisis, resulting in a grim prospect. See on this point Martin Wolf, “En route vers la récession”, *Le Monde*, 20/12/11. According to this author, most probably, the orgy of announced budgetary austerity will bring about lasting structural recessions in the most vulnerable countries.
 - 14 Nor can we further advance without addressing the urgent reduction of military expenditure. The United States spent 750 billion dollars during the 3196 days of the Iraqi war and occupation, 250 million dollars per day. No wonder that *Le Monde* called the US intervention in Iraq “the greatest international fiasco of the United States in the last thirty years”. See “Cahier du Monde – L’Irak après le retrait” no. 20814, *Le Monde*, 22/12/2012.
 - 15 See Eric Hobsbawm, *The Age of Extremes: The Short Twentieth Century, 1914–1991*, London: Penguin Books, 1994.
 - 16 See my doctoral dissertation, submitted to the Delhi School of Economics, Delhi University in 1960, and published under the title: *Patterns of Public Sector in Underdeveloped Economies*, New Delhi: Asia Publishing House, 1964.
 - 17 “*Civilisation de l’être dans le partage équitable de l’avoir.*”
 - 18 See Johann Huizinga, *Homo Ludens, a Study of the Play Element in Culture*, Boston: Beacon Press, [1938], 1955.
 - 19 Guy Aznar, *Travailler moins pour travailler tous*, Paris: Syros, 1993.
 - 20 See John Maynard Keynes, “Economic Possibilities for our Grandchildren” [1930], in *Essays in Persuasion*, New York: W.W.Norton & Co., 1963, pp. 358-373.
 - 21 By analogy, the well-known Polish economist Oskar Lange used to define development as a war against backwardness.
 - 22 Nicolas Werth, *L’Île aux cannibales. 1933, une déportation-abandon en Sibérie*, Paris: Perrin, 2006.
 - 23 Jonathan Swift, *For Preventing the Children of Poor People in Ireland from Being a Burden to their Parents or Country, and for Making Them Beneficial to the Public*, 1729.
 - 24 Anatol Rapoport, *Conflict in Man-made Environment*, Harmondsworth: Penguin Books, 1974.
 - 25 See the Global Footprint Network 2010 Annual Report, <http://www.footprintnetwork.org>. In 2011, the world population was globally a debtor, having exceeded the available biocapacity by 35%.
 - 26 The M S Swaminathan Research Foundation is a reference with respect to sustainable agriculture and rural development (<http://www.mssrf.org/bd.html>).

- 27 See on this point, Michel Griffon, *Nourrir la planète*, (Paris: Odile Jacob, 2006). Bruno Parmentier opposes the two green revolutions in the following terms: « *Là où la « révolution verte cherchait à artificialiser le plus complètement possible le milieu naturel, la « révolution doublement verte vise à inscrire le système productif au sein des écosystèmes. La première « force » la nature via le recours massifs à des intrants, la seconde l'« accompagne » en recherchant un équilibre entre potentiel interne et apports extérieurs ; la première spécialise les productions, la seconde les diversifie pour qu'elles se renforcent mutuellement ; la première recherche une protection absolue de la production via l'éradication complète des maladies et des ravageurs, la seconde compose et gère le système pour contenir ces envahisseurs.* ». Bruno Parmentier, *Nourrir l'humanité – Les grands problèmes de l'agriculture mondiale au 21e siècle*, (Paris: La Découverte, 2007), p. 160.
- 28 See Kenneth Ruddle & Gongfu Zhong, *Integrated Agriculture-Aquaculture in South China: The Dike-Pond System of the Zhujiang Delta*, (Cambridge: Cambridge University Press, 1988).
- 29 This is not tantamount to abstaining from the exploration of the offshore 'pré-sal' oil reserves in Brazil. However, utmost attention should be given to the prevention of potentially dangerous ecological accidents. On the other hand, the 'pré-sal' oil could be taxed so as to finance the phasing out in future of fossil energies.
- 30 See Benjamin Dessus, *Scénario négaWatt 2011*, Association négaWatt, October 2011 (www.negawatt.org).
- 31 For a critical assessment of nuclear energy, see Benjamin Dessus & Bernard Laponche, *En Finir avec le Nucléaire – Pourquoi et Comment*, Paris: Éditions du Seuil, 2011. The French presidential candidate from the Socialist Party, François Hollande, proposes to reduce the relative share of nuclear electricity from 75% to 50% in 2025 (*Le Monde*, 17/12/2011). The French Green Party favours a total phasing out of nuclear energy.
- 32 In 2007, the OECD contribution was of 0.28%. Only five countries contributed in excess of the 0.7% target : Norway (0.95%), Sweden, Luxemburg, the Netherlands and Denmark. The French was of 0.38%. See Philippe Laget, *Les chiffres d'une planète de fous... ou de l'urgence d'un développement durable*, La Tour d'Aigues : Éditions de l'aube, 2009, p. 16.
- 33 In 2010, the global GNP reached 62 trillion US dollars.

References

- AZNAR, G. *Travailler moins pour travailler tous*. Paris: Syros, 1993.
- CHILDE, G. *What happened in history*. Harmondsworth: Penguin Books, 1942.
- CRUTZEN, P. J.; STOERMER, E. F. "The 'Anthropocene'", global *Change newsletter* – Programa Internacional de Geosfera-Biosfera (IGBP): A Study of Global Change of the International Council for Science (ICSU), n.41, maio 2000.
- DESSUS, B. *Scénario négaWatt 2011*. Association négaWatt, outubro 2011, Disponível em: <<http://www.negawatt.org>>.
- DESSUS, B.; LAPONCHE, B. *En finir avec le nucléaire: pourquoi et comment*. Paris: Seuil, 2011.

- GRIFFON, M. *Nourrir la planète*. Paris: Odile Jacob, 2006.
- HOBBSAWM, E. *A era dos extremos: o breve século XX, 1914-1991*. São Paulo: Companhia das Letras, 1995.
- HUIZINGA, J. *Homo ludens: a study of the play element in culture*. Boston: BeaconPress, 1955 [1938].
- JONAS, H. *The imperative of responsibility: in search of ethics for the technological age*. Chicago: University of Chicago Press, 1984 [1979].
- KEYNES, J. M. Economic Possibilities for our Grandchildren [1930]. In: *Essays in persuasion*. Nova York: W. W. Norton & Co., 1963. p.358-73.
- LAGET, P. *Les chiffres d'une planète de fous... ou de l'urgence d'un développement durable*. La Tour d'Aigues: Éditions de l'Aube, 2009.
- OKEREKE, C. Justice Must Be Reinstated at the Centre in the Quest for New GreenGlobal Economy, *Outreach*. Disponível em: <<http://www.stakeholderforum.org>>. Acesso em: 16 dez. 2011.
- ORSENNA, E. *Portrait du Gulf Stream*. Éloge des courants: promenade. Paris: Seuil, 2005.
- PARMENTIER, B. *Nourrir l'humanité: les grands problèmes de l'agriculture mondiale au 21^e siècle*. Paris: La Découverte, 2007.
- RAPOPORT, A. *Conflict in man-made environment*. Harmondsworth: Penguin Books, 1974.
- RUDDLE, K.; ZHONG, G. *Integrated agriculture-aquaculture in south China: the dike-pond system of the Zhujiang delta*. Cambridge: Cambridge University Press, 1988.
- SACH, I. *Patterns of public sector in underdeveloped economies*. New Delhi: Asia Publishing House, 1964.
- _____. *Rumo à ecossocioeconomia: teoria e prática do desenvolvimento*. Org. Paulo-Freire Vieira. São Paulo: Cortez Editora, 2006.
- SWIFT, J. *For preventing the children of poor people in Ireland from being a burden to their parents or country, and for making them beneficial to the public*, 1729.
- WARD, B.; DUBOS, R. *Only one Earth: the care and maintenance of a small planet*, Conferência das Nações Unidas sobre o Meio Ambiente Humano. New York: W. W.Norton & Co, 1972.
- WERTH, N. *L'île aux cannibales, 1933: une déportation-abandon en Sibérie*. Paris: Perrin, 2006.
- WOLF, M. En route vers la récession. *Le Monde*, 20 dez. 2011.

Ignacy Sachs is honorary teacher of the School of Higher Studies in Social Sciences in Paris. @ - Ignacy.Sachs@ehess.fr

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