Science, culture and the stagnation of the environmental agenda

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Disappointed with American indifference to the issue of climate change, sociologist Andrew Hoffman (2012) calls on social scientists in the USA to assume a more effective stance in regards to this topic. He notes an increasing discrepancy in his country between the mounting decisiveness of scientific consensus on the existence of climate change threats resulting from anthropogenic activities and the parallel weakening of social consensus regarding the reliability of scientific findings in this domain. Since discrediting science leads to the absence of effective actions, Hoffman considers that social scientists should contribute to more effective and better disseminated arguments on this crucial topic. He examines why, despite verifiable progress in the solidification of scientific arguments on the occurrence and sources of climate change, an increasing proportion of the American population is rejecting this evidence. On the basis of this analysis, he suggests a set of communication strategies that social scientists could use to bridge the gap between science and social perception, with the objective of helping to promote and design more effective measures to counter this menace.

Without question, Hoffman's is an important essay, as he knows what he is talking about and is committed to promoting greater awareness of climate change and, consequently, of the need for urgent public measures to face this threat – before it's too late. His text also has the advantage of offering a useful summary of the key points of agreement and disagreement in relation to climate change issues. Nevertheless, the effectiveness of Hoffman's proposal may be limited due to the fact that he apparently overlooks three important aspects of the climate change question.

Climate change is not alone

In his essay, Hoffman tends to deal with climate change as if it were an isolated and unique transformation. This weakens his overall argument. As with the Intergovernmental Panel on Climate Change (IPCC) reports, produced by the planet's most prominent scientists, an exclusive focus on climate change facilitates questions and doubts – even among lay people

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– concerning the dimensions and the origin of ongoing ecological changes. That is, climates everywhere have always been volatile and unpredictable, and the evaluation of change requires complex longitudinal and multidisciplinary studies that are not intuitively understood by the population at large. The current scenario, marked by frequent extreme events, is particularly difficult for the lay person to comprehend given the apparent contradictions, such as unprecedented cold spells during the full bloom of "global warming." All of this makes it easy for conservative sectors, who do not want to even consider the possibility of climate change threats to ongoing economic processes, to manipulate public opinion and create confusion.

In reality, however, the environmental crisis is much broader and is more convincing when viewed in its entirety. Science has clearly demonstrated that the risks of continuing to ignore global environmental limits is extremely grave, since various intermeshed planetary frontiers are actually being threatened. A seminal study by the University of Stockholm's Resilience Center in 2009 showed that the abusive use of the Earth's material, energetic and biotic resources by the global economic system had already surpassed tipping points in three known areas – climate change, biological diversity and nitrogen input to the biosphere – and is threatening to exceed them in another six known areas (ROCKSTRÖM et al., 2009; UNEP, 2012a). More recent research, published by 22 scientists from the University of California, alerted us to the fact that our planet could soon be the victim of a "state shift" – that is, a critical transition which abruptly overrides known trends, producing unanticipated biotic effects and transforming the Earth rapidly into a state unknown in human experience (BARNOSKY et al., 2012). Climate change is the most obvious and most debated threat provoked by human activity, but not necessarily the gravest or the easiest to comprehend.

Happiness, consumption and development

Hoffman's explanation as to the sources of the discrepancy between science and public opinion on climate change neglects some important underlying factors. He observes that people's opinions regarding climate change, as in other conflictive issues, are based on a combination of ideological preferences, personal experiences and values – all of which are strongly influenced by their reference groups and individual psychologies. But he also suggests that the cultural war on climate change is part of a broader web of cultural/religious/political conflicts that generate interminable debates in the United States on such topics as abortion, arms control, health systems, evolution and so forth.

The first part of this argument is undoubtedly accurate in that personal attitudes towards all these issues reflect a complex network of values and personal experiences. Hence, the skeptical attitudes of the US population with respect to climate change science – which result in the absence of appropriate policies and decisions from the public sector – do indeed mirror the results of a given configuration of values, dominant views, ideologies and cultures at a given moment in time.

On the other hand, Hoffman's notion that the cultural conflict over climate change in the USA is simply another facet of typical divergences between conservatives and liberals is misleading. There is a huge difference between the sectorial discussions that typically distinguish liberals and conservatives and the debate on climate change. Issues such as abortion, arms control, evolution and so forth are of greater or lesser relevance, at different moments in time, to different population groups who, for one reason or another, feel affected by the topic. However, serious debate over topics such as climate change inevitably raises the question of anthropogenic contributions to such problems and this, in turn, invites questions that directly affect the meaning of life of **all** people **all** of the time. Thus, the cultural war over climate change and other major environmental threats is of a different nature and has much more profound implications than the usual cleavages that distinguish Republican from Democrat, liberal from conservative. Environmental threats are not simply issues that marginally affect some people some of the time; they strike at the heart of people's beliefs and their very existence. That is, once persuaded of impending climate change and its anthropogenic origins, people are inevitably forced to review the lifestyles and behavior patterns in which they have been steeped since birth – and which happen to be at the root of the climate change threats.

In this context, it would seem that Hoffman gives insufficient attention to a fundamental cultural determinant that not only sustains and intensifies the drivers of climate change, but that also prevents people from perceiving the etiology of climate change – the culture of consumption. This is what gives form, content and vigor to modern economic growth, which in turn generates most of the grave environmental threats of our day. The culture of consumption is so deeply ingrained in today's civilization that it manipulates people's behavior without their perception. Any person born and raised in a society that defines happiness, social status and success in terms of the capacity to acquire material goods will find it very difficult to accept the need to redefine his/her expectations and behavior as a function of a diffuse and poorly understood threat. In the case of Hoffman's text, the failure to consider the impact of the culture of consumption might simply be due to the fact that the latter is basically an American creation and that it is so profoundly ingrained in American society as to be unnoticed even by scholars.

Considering the well-recognized importance of technology in the evolution and substance of the culture of consumption, it is fairly easy for conservatives to propagate the belief that technological development will be able to sweep away all the environmental problems on the horizon. Within this framework, it is easy to understand why such a large proportion of the American population is predisposed to accepting arguments that deflect people's guilt from their role in climate change, that reinforce beliefs in technology's capacity to solve all problems and, most of all, that acquit people from the need to alter their behavior within the culture of consumption. Obviously, in such a situation, vigorous propaganda campaigns, financed by those economic sectors that make the biggest contribution to threats of ecological chaos, readily find fertile grounds for their ideas. Given the degree of popular ignorance

on scientific issues, as pointed out by Hoffman, any argument that defends the traditional American Way of Life ends up sounding plausible, justifying the use of even the most radical means, including war, to guarantee its continuity.

In short, in discussing the cultural shocks surrounding climate change, Hoffman appears to overlook the importance of the dominant culture of our civilization – the culture of consumption. With ever-increasing dominance and breadth since the mid 20th century, this cultural paradigm motivates people and defines the character and the goals of the search for happiness, while also determining the socially-defined status of individuals and social groups. This search for happiness, in turn, nourishes constant increases in production and, in doing so, strains the planet's resources. Consumerism induces people to search for contentment and social acceptance through the acquisition of goods and services. In turn, the constant increases in production, which result from this generalized quest stimulate production and economic growth, thereby triggering the various ecological problems of our time, including the gravest environmental threats. The United States is the birthplace and still the major actor in this consumerist culture, which has now become global.

What social scientists?

In calling upon social scientists to be more effective in helping to raise awareness concerning the scientific facts about climate change, Hoffman appears to overlook that the most active and influential discipline in the social sciences – economics – is profoundly committed by formation, tradition, conviction (and sometimes personal interests) to supporting the paradigm of development that has taken us to the brink of ecological chaos. The science of economics, as taught in the majority of universities, fails to incorporate an ecological concern. Consequently, economists generally ignore the central function played by the natural system in the dynamics of the economy. At the same time, the teaching of economics transmits to future generations of economists a strong faith in free markets and the capacity of technology to solve any problem, including the ecological disasters that the inconvenient "greenies" are always decrying.

Obviously, there are many economists who hold a broader vision and who even lead or animate environmental movements. Nevertheless, in today's world, an economist who works for a government, an international development agency or a business corporation and, consequently, who exerts the most influence on the evolution of economic activity, has as his/her primary function to ensure, implement, defend, and justify economic growth and the reduction of poverty by extending and consolidating a model of growth that has already proven itself to be unsustainable.

The conjunction of these two factors – the strength of the culture of consumption and the predominant and negative influence of the most powerful class of social scientists in shaping public opinion and public policy – inspires little confidence in the ability of the strategies proposed by Hoffman to reduce the cultural gap on climate change in the USA or elsewhere.

Essentially, he recommends tactics inspired by the art of communication and negotiation. It is difficult to visualize that such approaches would be able to overturn values and beliefs that are so deeply rooted, particularly in view of the proven efficacy of the culture of consumption and of the institutional machinery created around it to stimulate the productive process and the generation of material wealth.

Necessary but unsustainable development

The issues raised by Hoffman's essay transcend the frontiers of the United States, since the rest of the world is also committed to the incorporation of the culture of consumption. It has to be acknowledged that the success of universal consumerism as the engine of economic growth has led to a widespread reduction in poverty and to levels of well-being never previously imagined in the history of humankind. Indeed, the globalization of the culture of consumption has operated what can be considered as the major socioeconomic transformation in the history of our planet. The motivation to consume, by functioning effectively at the individual level, produces great energy for economic growth at the aggregate level. This explains the vigorous support it receives, not only from large business enterprises, but also from national governments, international development agencies and even the United Nations system. In this sense, the promotion of consumption thus constitutes the only development paradigm we know today.

The significant progress made in human welfare on the basis of this model has effectively prevented national governments and international institutions from opposing it. Little wonder that politicians the world over – including the "leftist" presidents of Brazil – defend "development" that will allow increased consumption in their country with great energy. Given the undeniable success of the current development paradigm, no government, rich or poor, dares to take any measure that might threaten the continuity of the consumption cum economic growth spiral. This was dramatically illustrated by the pitiful results of the Rio+20 Conference, in which practically nobody dared to address the major running sore of the global environment – throughput growth[1]. The meeting preferred to focus on the stillborn myth of the green economy, which was promptly snatched up by the agents of cosmetic ecology or greenwashing.

Within the logic of the current development paradigm, it is no surprise that, when faced with the world economic crisis of 2008/2009, the Lula government in Brazil chose to reduce tariffs on a set of industrial products that, directly and indirectly, make some of the largest contributions to greenhouse gases. This example was then followed by Dilma Roussef right in the midst of Rio+20 Conference being held in Brazil. Tax reductions on new car purchases and the adjustment of gas prices below inflation levels regulated at the time contributed not only to global warming but also to the urban mobility crisis.

[1] That is, growth based on the increased depletion of resources, including non-renewable resources, and that produces increasing amounts of wastes, including the greenhouse gases that are triggering climate change. All stages of this process contribute increasingly to environmental threats.

Unfortunately, this development paradigm is unsustainable over the medium and long term, as has been amply demonstrated by the scientific literature. Although the world of global consumers still covers only one third of the world's population, it already presents a serious threat to our "civilization". Obviously, the incorporation of new consumers into this machinery invariably augments the size of this threat.

In this light, the major dilemma of the 21st century is – how do we control the rhythm of consumption without hindering the social progress of the enormous masses who do not partake of this consumption and who, in large measure, still cannot satisfy some of their basic needs? Finding the answer to this quandary seems to be the main issue which should concern us in today's world.

The current dilemma is spectacularly illustrated by the Brazilian case. Here, it has been calculated that the middle class (measured in income terms) expanded from 38% to 54% of the total population between 2003 and 2014. It now includes 108 million people, which is a larger number than the total population of countries such as Germany or France. This contingent, if it were a nation, would rank 18th in number of consumers and be richer than 54% of the world's population (OJIMA et al., 2014). Such income growth in Brazil's middle classes has evidently meant welcome and necessary improvements in the living conditions of an enormous number of poor people. At the same time, increases in consumption by these groups have had a beneficial effect on the country's economy. Yet, it is impossible to ignore the fact that the multiplication of this highly positive phenomenon, when generalized at the global level, helps to intensify the emissions that threaten to unleash an ecological crisis of unknown proportions. For instance, per capita energy consumption in Brazil increased by 67% between 1992 and 2011 in Brazil (OJIMA et al., 2014). Given the increase in Brazil's population over the period, this means that absolute energy use almost doubled in less than 20 years.

When the problem is viewed from that angle, it is easy to overlook the fact that the current global economic threat is the direct product of consumption in a minority of the world's population – residents of industrialized countries together with the elites in poor countries. Yet the aggravation of this crisis today reflects, to an important extent, the entry of large population contingents from what are now called "emerging" countries. Even so, the world class of consumers is still a minority. Despite a frenetic pace of growth in recent decades, the number of people who can be classified as consumers (and therefore emitters) in the global market today makes up slightly more than one third of the world's population (McKINSEY, 2012). Yet, this relatively reduced number has been sufficient to jeopardise the global ecological equilibrium. Moreover, it should be noted that, despite the enormous progress registered in recent times, a majority of the world's population is still not integrated into the global market; inequality has increased worldwide, and 1.2 billion people still live in extreme poverty.

But the number of consumers grows daily: according to McKinsey (2012), the global consultant firm, the world's middle class will increase from the current 2.4 billion to 4.2 billion

people by 2025. The thirst for consumption has been generalized worldwide. It has been found even in the ethnography of the recent "rolezinho" phenomenon in Brazil[2], wherein the power of the famous global brands was demonstrated in an unexpected manner. Nobody would dare deny the right of the still "under-developed" world to climb out of poverty, which in the present model, means becoming market-based consumers. Nevertheless, in the absence of a dramatic turnaround in the conception of development and in the culture of consumption that sustains it, the incorporation of significant masses of new consumers that so gladdens the heart of economists, corporations and development institutions evidently signals the aggravation of the ecological crisis.

In this light we can ask, are there sufficient resources and technology to guarantee minimal well-being for the entire world population? Of course there are, but to reach this goal would require a radical change in the development paradigm and would necessitate cultural modifications and dramatic reductions in consumption. This could only be achieved through a global governance focused on sustainability rather than on development. Unfortunately, as clearly demonstrated in the Rio+20 Conference, such a switch is not in the offing. No rich country or wealthy population group has any intention of discontinuing its trajectory towards growing consumption and material riches. In such a scenario, the non-rich in the other two-thirds of world are obviously unlikely to give up their own right to consume and "develop."

Such behavior by rich and poor in Rio merely reiterated trends and attitudes demonstrated in practically every previous global environmental initiative. A recent study, carried out by UNEP and the Stockholm Environmental Institute concerning 90 environmental commitments made by governments over the past few years, was able to identify progress in only four cases: removing lead from gasoline, improving access to safe water, promoting research to reduce pollution in the marine environment and halting further damage to the ozone layer. Given this situation, in which all nations, rich and poor, defend their right to continue growing and consuming, how can we expect to create effective mechanisms of global governance on planetary frontiers?

In short, Hoffman's article is interesting and presents an excellent discussion on the conflict between scientific and social outlooks on climate change, but it is unlikely to reach its objective. Its recommendations concerning the strategies that should be adopted by American social scientists in order to achieve greater social consensus, despite being technically well structured, are of questionable efficacy. When debating – "what can be done?" – it is essential to frame the discussion within a broader perspective, since both development and environment issues are essentially global. Climate change, along with other threatening ecological situations, is at the mercy of cultural transformations built into the hegemonic development model that has been adopted by practically the entire world. Given that the

[2] This refers to the sudden invasion of affluent shopping centers by masses of teenagers from poorer peripheral areas in several large cities of Brazil during recent months. Coordinated by social networks, these disruptive but non-violent demonstrations illustrated the frustrations of poorer yet 'connected' youth stemming from their inability to be part of the social scene and the consumption fests of the glitzy wares in the malls.

culture of consumption drives demand, and that the increases in production to attend to this demand under the present system generate several ecological problems that may even spell an abrupt destabilization of the global environment, the communication strategies suggested by Hoffman will probably have little impact.

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Recebido para publicação em 30/01/2014
Aceito para publicação em 28/02/2014