Shadows in Schwartzman's Sunny Society

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Schwartzman's response to our article follows a strange line of argument. He seems to assume, first, that once you quote some author, you implicitly agree with what the author says in the quote, and second, if you do agree with that one statement, then you agree with everything that author has said and written. More specifically, although we quote Nicolas Georgescu-Roegen and mention him as a significant contributor to the growth debate and the development of ecological economics, this does not imply that Georgescu-Roegen's theory of entropy is "the theoretical basis for our critique." Schwartzman's argumentation appears to be based on the implicit assumption that you can only base your work on one single theory: you can either be a follower of Marx, or you can be a follower of Georgescu-Roegen! Distinct from such orthodoxy, we believe that the reality we have to deal with when discussing economic growth, climate, and the environment includes a multitude of different causal powers and disciplines operating at different strata of reality and at different scales. One single theory can of course not fathom all these mechanisms. Instead, we have to draw on theories from several fields and disciplines.

Studies into the relationships between economic growth and the environment are therefore highly dependent on an interdisciplinary approach. Within such an approach, theorists like Georgescu-Roegen may also have something useful to say. This does not mean that everything a particular theory postulates is relevant or true, nor does it mean that reference made to a particular theory implies the exclusion of relevant contributions from other theories. Actually, we agree with much of the critique of Georgescu-Roegen which Schwartzman refers to, especially his simplified differentiation between closed and open systems. However, Georgescu-Roegen is very right in claiming that nothing could be further from the truth than the notion that the economic process is an isolated, circular affair—as both Marxist and standard analysis represent it: "The economic process is solidly anchored to a material base which is subject to definite constraints." When reading the original article by Schwartzman, we are surprised to find that he seems to be supportive of just this notion of the economic process as an isolated, circular affair as long as it is a solarized energy economy.

Taming the Wild

Schwartzman also makes a case out of our use of the concept of nature. He points to the fact that there is almost no nature left that is completely unaffected by anthropogenic impacts. This statement dodges the fact that there are indeed huge differences in the degree to which different parts of the world are affected by such impacts and that the extent of human encroachments on nature is steadily increasing. Schwartzman takes a strongly anthropocentric and technology-optimistic view on nature management when he writes that the challenge is "to optimize the interaction of the technosphere with the rest of the biosphere," and "to maintain by *human* management the health of our ecosystems, oceans,

forests (old-growth and new-growth), wetlands, and deserts" (italics in the original). Unlike Schwartzman, we think that the "optimum" level of interaction between the technosphere and the rest of the biosphere is *lower* than the present level (cf. among others, *Living Planet Report 2006*). Moreover, if the global economy is to grow without limits, it will be very difficult in the short term and impossible in the longer term to avoid colonization of even larger parts of the biosphere by the technosphere Apart from putting the life-support systems of future generations of humans at risk, such growth will destroy ecosystems, wildlife, and vegetation which have moral status and value in themselves, and not only as recreational areas for humans or a "mythical untouched nature where Tarzan and Jane can swing from tree to tree," as Schwartzman depicts it.

Growth, Consumption and Mobility

Schwartzman makes some calculations about the space and mineral resources needed for a global solar-based energy supply system. He does not, however, discuss the increase in consumption that solar-powered continual economic growth would entail. Even if the energy needed for such growth could be supplied and used without any environmental harm, the increased consumption of commodities and services associated with this growth would hardly be environmentally neutral. Admittedly, some debaters have claimed that economic growth could take place without any increase in the consumption of commodities and services if the growth in Gross Domestic Product (GDP) was a result of increases in the average price but not volume of all commodities and services. However, what would then be the purpose of economic growth, if not to enable higher consumption?

Historically, for more than a century, fossil energy consumption and ensuing CO_2 emissions have grown together with industrial production and consumption. Some may consider this to be largely coincidental, without any major connections between the growth of product consumption and the actual levels of energy consumption or the sources used. Schwartzman seems to be among these. However, there are solid arguments supporting claims that the connections are, to a large extent, systemic and permanent relations. In that case, it is hard to substantiate how a minimum of 80 percent reductions in CO_2 emissions can be attained without any major implications for patterns or levels of consumption.

There is probably no large disagreement about the extent to which fossil energy consumption has historically been an important driver in the development and growth of the industrial production society in its version of classic modernity. The extent to which it plays a similar role in the growth of the consumption society of late modernity appears to be more open for discussion. Empirical proofs are, however, pressing. CO_2 emissions have continued to increase even in cases where fossil energy consumption for industrial production has decreased.

A main reason is found in increases of mobility. It is well known that personal mobility has continued to grow in the post-industrial consumption societies. Not only is this the case for *automobility*, use of private cars, but also *aeromobility*, passenger transport by airplanes. Less known is that goods mobility, including mobility of basic material resources, has also continued to grow. The transport intensity of goods and commodities has been increasing nationally as well as internationally. The same applies to the international and global flows of major material resources used in infrastructural development, buildings, and

industrial manufacture of commodities. The reason seems to be that while the late modern consumption societies still consume vast amounts of industrial and consumer products, the production itself increasingly takes place elsewhere, in the less developed and underdeveloped parts of the world. Additionally, the volumes and spatial requirements of the consumption societies' infrastructures and buildings have never been larger.

"Post-industrial" is thus a term with two sides. When global chains, from cradle to grave, are included in the analyses, we see that these societies are just as material-intensive as before. And never have their mobility intensities and CO_2 intensities been larger. Mobility, and the transportation activities on which it is based is *the* sector in all societies most heavily dependent on fossil energy. Historically the *mobile society* and the *fossil society* have grown together as *Siamese twins*. It is not possible to envisage how one—mobility—can continue to prosper and grow while disconnecting from the other, fossil energy.

Similarly, mobility and consumption are connected to each other regarding levels as well as patterns of consumption. The late modern consumption societies are tied to mobility in several ways. *Automobility* is in itself a major form of consumption as well as a precondition for other forms. Most late modern consumption cathedrals—shopping malls, in particular—are totally dependent on automobility. And *aeromobility* has increasingly taken the same form. Airports are huge cathedrals of consumption. And air travels for the sole purpose of consumption have become ever more frequent in Europe as well as in the United States. It seems to be quite some illusion to claim the possibility of upholding these mobilities and their manifold consumption infrastructures in an economy based on solarized energy.

Recycling Myths

Schwartzman strongly argues for a future recycling society and an economy where the same resources are used again and again—and again. However, a critical issue is how this can be combined with endless economic growth. With ever-increasing volumes of products, buildings, and infrastructures, the recycling rate must increase to give the growing economy continuous inputs of recycled resources. In practice, this implies that the products—and buildings and infrastructures—tying up resources must be taken out of use with a shorter interval each time. In a recycling growth economy, innovation will have to be very much about how to reduce the lifetimes of products and the like. And, as Georgescu-Roegen rightly reminds us, recycling is not environmentally neutral, not even in a solar energy economy. It ties up and consumes energy and material resources, increasingly so if the circulation rate is increased. Moreover, many materials begin to fail after a couple of recycling cycles and have to be put to different use, or become waste.

Why on Earth should we aim for Economic Growth?

Schwartzman is right in that several technological and institutional improvements can make it possible to reduce both the negative environmental impacts per unit produced of a commodity or service and the necessary input of labor. It is, however, not possible to reduce these impacts and inputs down to zero. Why should productivity gains and gains in "eco-efficiency" be harvested as growth in production and consumption? Why not instead use such improvements to reduce the number of daily working hours and the negative

impacts on nature? Schwartzman fails to explain why economic growth in already wealthy countries is at all desirable.

For proponents of the capitalist system, economic growth could be seen as desirable not only for the wealth it creates, but also because it can add legitimacy to the system among wide groups of the population: a rising tide lifts all boats. For anti-capitalists like Schwartzman, this can hardly be a valid argument. Why then does he consider economic growth a goal worth pursuing in rich countries? Does Schwartzman believe that people will become happier from consuming ever more commodities and services? There is considerable evidence indicating that this is not the case, once a threshold value has been reached. It is therefore difficult for us to understand why Schwartzman envisages that "the ecosocialist transition out of capitalism" should entail economic growth. Why cannot such a transition take place within the existing—or a decreasing—volume of the economy?

Instead of growth, we would recommend *radical redistribution*: Redistribution of wealth from rich to poor population groups within each country, from rich to poor countries at a global scale, and redistribution of resource consumption from present to future generations. The radical redistribution should also include a redistribution of the hours of the day toward a lower number of hours spent on wage-labor and a higher number of hours spent on family and friends, culture, experiencing nature, and participation in social life.

Needless to say, the prospects for such radical redistribution are meager within the frames of the globalized capitalist economy. This does not, however, mean that we should not try to push the development as much as possible in that direction. Moreover, it is crucial for the credibility of visions for an alternative, ecosocialist society that they are not based on the obsolete idea of economic growth as a goal worth pursuing in already affluent countries. Not the least, such growth would be highly unfair to poor countries, since it would imply that less space would be left for increasing consumption in poor countries if the global environmental load is to be kept below an ecologically sustainable level.