ENVIRONMENTAL ETHICS FROM THE PERIPHERY: JOSÉ LUTZENBERGER AND THE PHILOSOPHICAL ANALYSIS OF AN UNECOLOGICAL ECONOMICS

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This dissertation provides a philosophical analysis about the influence colonialism had over capitalism's current configuration and how their intricate interplay impacts both the social and the ecological spheres, in both central and peripheral countries. Such analysis draws from the work of José Lutzenberger, a Brazilian environmentalist. The current capitalist economic system tends to disregard the environment, since it would be greatly affected by negative externalities. A negative externality is an economic activity that imposes a negative effect on an unrelated third party. Many negative externalities are related to the environmental consequences of production and consumption. In addition, this dissertation explores the fact that an ecological crisis is also a social crisis. A genealogical and existential thread going from Brazil's early days as one of Portugal's colonies to the present is drawn, showing how colonialism helped to create the foundations and the conditions for the current exploitative capitalist system, in Brazil and elsewhere. To change this situation, the environment should not be entrusted to private interests but to an institution responsible for the good of society as a whole. Genuinely green economies are more prone to appear on the periphery, but only if global economic justice is achieved first.

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CHAPTER 1

INTRODUCTION

1.1 A Critique of Colonialism and its Unecological Economics

The goal of this project is to demonstrate the influence colonialism had over the current configuration of capitalism and how their intricate interplay impacts both the social and the ecological spheres. To that end, I will focus on a key aspect pertaining to the work of a Brazilian environmentalist named José Lutzenberger. Such aspect is related to his critique of the apparent disregard the current capitalist economic system has for the environment – since it would end up being greatly affected by *negative externalities*[1]. A negative externality (also called 'external cost' or 'external diseconomy') is an economic activity that imposes a negative effect on an unrelated (and unwilling) third party. Many negative externalities are related to the environmental consequences of production and consumption. There are positive externalities as well, but they tend to be less common than negative externalities. While environmental ethics (or environmental philosophy) as a discipline first emerged in the so-called 'developed world' – United Stated, Australia, and Europe – I believe that a view from a different perspective, from the periphery, would be an important addition to this field of study. Lutzenberger was a fierce critic of capitalism (and of communism as well) and always thought about ecological crises as being also social – and about social crises as being

[1] In economic theory, an 'externality' can be either a cost (negative externality – which tends to be more common) or a benefit (positive externality – which tends to be less common), expressible in a monetary metric that is born or acquired by someone other than the agent. An externality is the cost or benefit that affects a party who did not choose to incur that cost or benefit. Air and water pollution are two examples of negative externalities. The costs of the pollution for the rest of society and for the environment are not compensated for by the producers of said pollution. On the other hand, an example of a positive externality is the benefit associated with the installation of scrubbers in producer's smokestacks. The people that live near the factory benefit from the scrubbers through cleaner air and better health even though they did not bear the cost of installing the scrubbers.

also ecological. For him, the ecological and the social cannot be separated. Thus, my idea is to create a genealogical and existential thread going from Brazil's early days as one of Portugal's colonies to the present, showing how colonialism helped to create the foundations and the conditions for the current exploitative capitalist system, in Brazil and elsewhere. In order to accomplish that I will utilize a few precepts that can be found in what Michel Foucault called the *genealogical method*[2]*.* By looking at the past, and how it has unfolded, one can discover new things about the present and how it was set up – and once ones knows more about the present, one can find some guidelines to help create, hopefully, a better future. What I believe is unique to the present analysis is the fact that when one is not at the center of a particular system (economic, social, or political), one can perceive things that people who are at the center usually cannot[3]. Being on the periphery, one has to know everything about one's point of view but also about the point of view of those at the center. One's cultural and philosophical horizons have to be expanded and enlarged. Thus, said horizons become, in a sense, richer. That being said, I am not trying to blame all of our problems on colonialism or on capitalism. This project aims to offer one additional way to understand how the current economic system was set up and what were, and still are, the consequences of it. It is not my intent at this point to try to provide the ultimate explanation about the intricacies and complexities of economics. This is beyond the scope of this dissertation.

[2] Michel Foucault used the term 'genealogy' to evoke Nietzsche's genealogy of morals, particularly with its suggestion of complex, mundane, and inglorious origins. The point of a genealogical analysis is to show that a given system (economic, political, social, or moral) – itself uncovered in its essential structures by archaeology, which therefore remains part of Foucault's historiography – was the result of contingent turns of history.

[3] This is sometimes called a 'liminal perspective.'

As it is well known, one of capitalism's main tenets is the necessity for a constant growth and a constant expansion – one of the many traits capitalism shares with colonialism. There is a need to extract and transport more and more natural resources, usually from the peripheral countries to the central ones. The global market needs to be constantly expanded. More and more goods have to be produced each year, thus creating more waste and damaging more ecosystems. Lutzenberger criticized the reliance governments and the private sector have on the GDP (Gross Domestic Product) index to measure how well a country is doing and how developed and successful it is. From a strictly economic point of view, every time there is an increase in the GDP people tend to think that things are going just fine. Thus, why should they change their actions or their values? However, there is a problem with this conception. There exists a plethora of elements that will increase the GDP while causing, at the same time, a great amount of damage to the environment and to society. If one had to judge how well humanity is faring *based only on an index like the GDP*, one would probably say that humanity is currently doing quite well, since almost every country has experienced a constant increase in its GDP during the past decades – with a few exceptions here and there. Even though the GDP is an important index used to measure many elements pertaining to a country's economy, it seems too superficial to consider it as the main indicator of the general well-being of a society. For instance, where are the loss of a forest, the disappearance of a species, the degradation of an ecosystem, and the contamination of a river accounted for in this economic equation? The answer to that question is: most of the time these losses will be relegated to the background and will be mostly overlooked. However, this scenario is no longer as

ubiquitous as it used to be before the emergence of environmental economics and its robust development. Now there exists something called ‘economic feasibility analyses,’ which are analyses conducted by companies that account for environmental penalties when making decisions on projects and determining product pricing. For instance, development of land that is currently a wetland requires construction of a new wetland to mitigate that loss. Furthermore, there are benefits or subsidies that are provided for certain behaviors: maintaining riparian buffers, leaving land fallow, etc., that are value-added, or offsets based on environmentally-responsible behaviors. Alan Randall, for example, calculated (in a monetary metric) the damages done by the Exxon Valdes oil spill in Alaska. Nevertheless, initiatives like this are still few and far between and tend to happen only when an environmental disaster takes place, or when economic interests align themselves with environmental concerns – something that still is not the norm.

1.2 Gross Domestic Product and the Environment

First and foremost, who was this South American environmentalist called José Lutzenberger? He was born in 1926 in Porto Alegre, the capital of Rio Grande do Sul, Brazil’s southernmost state. He died in 2002, in the same neighborhood he lived in for almost his entire life. As an agronomist, he worked for fifteen years for BASF, a multinational corporation that deals with agricultural chemicals. Lutzenberger grew increasingly disillusioned with the company and he started to feel that what he was doing was morally wrong. In his words, he was “prostituting himself.” His heart was elsewhere. He left the company in 1970 and returned to Brazil to start a vigorous and successful campaign against pesticides and for organic farming. In South America, he

was one of the pioneers of the environmental movement. I tend to see him as a 'Brazilian Aldo Leopold.' Lutzenberger's work in this field made him an acknowledged expert on soil science, organic fertilizers, and plant health. Agriculture, however, was only one of his concerns: he is also widely known in Brazil as the father of its environmental movement and as a strong critic of capitalism as we have conceived it, which can be better represented by neoliberal economics. From 1990 to 1992 he was the Special Secretary for the Environment, answering directly to Fernando Collor de Mello, Brazil's president at the time. Unfortunately, he had to step down due to conflicts with the Brazilian logging industry over its practices in the Amazon Forest. Unfortunately, Lutzenberger did not know Aldo Leopold's work and I believe it would be interesting (and perhaps even necessary) to bring these two different perspectives together: one from the center and one from the periphery.

First and foremost, it is important to stress that *economics is not a self-generated and isolated system or discipline*. It is constituted by social, scientific, philosophical, and epistemological aspects. According to Lutzenberger "[…] economics is not properly a science, it is a social discipline."[4] In economics, an externality is a cost or a benefit resulting from an activity or transaction *that affects an otherwise uninvolved party*, one that did not choose to 'sign the contract,' so to speak. Therefore, an externality exists when a person, a company, or a country make a choice that affects any other party in a way that is *not accounted for in the market price*. For instance, a factory that pollutes a river will typically not take into account the costs that its pollution imposes on others and on the environment. However, thanks to capitalism's current configuration, pollution helps to increase the GDP. This happens because, even if the polluting company has to

[4] Lutzenberger, José. *Crítica Ecológica do Pensamento Econômico*. Porto Alegre: L&PM, 2012, p. 76.

pay a hefty fine, the money spent on the cleaning will ultimately be added to the Gross Domestic Product equation. Hence, the act of polluting, which is detrimental for the environment (and to humans as well), can still be considered "good" for the economy[5].

Lutzenberger always stressed that the GDP index, which is currently the main standard for measuring the wellness of a country and its society, is a flawed and incomplete evaluation method. GDP is the main index used to determine the health of a country, but is not the only one. Be that as it may, GDP stands for the market value of all the products and services produced in one year by labor and property supplied by the residents of a particular country[6]. It should be clear that the GDP index cannot be completely conflated with the well-being of a particular society, they are not interchangeable – and that is precisely the problem. The Gross Domestic Product went, from being one among many other indexes, to being the most important and influential of them all. Many economic and political decisions are made based on how they will affect the GDP. William Petty came up with a basic concept of GDP to defend landlords against unfair taxation during a war that pitted the Dutch against the English between 1652 and 1674. Charles Davenant further developed the method in 1695. The modern concept of GDP was first developed by Simon Kuznets for a U.S. Congress report in 1934. Interestingly enough, in this report, Kuznets warned against its use as a measure of welfare. After the Bretton Woods conference in 1944, the GDP index became the main tool for measuring a country's economy and wellness. The problem is that it does

[5] Some people might consider that environmental regulations would hinder production, meaning an economical setback. This is not necessarily a wrong conception. However, this is one of reasons why there should be a shift of focus from a "dirty economy" to a greener one. There is no need to create a dualism between the economy and the environment, though. Both could co-exist and positively influence one another.

[6] Gross Domestic Product represents the total market value of all goods and services produced over a specific time period, usually one year. One can think of it as the size of a country's economy.

not distinguish between *qualitative improvements* in the state of the technical arts (e.g., increasing computer processing speeds), and *quantitative increases* in goods (e.g., number of computers produced), and considers both to be forms of 'economic growth.' Basically, GDP is the total value of all final goods and services produced within a nation in a particular year. It is a measure of the economic condition of a country, *under the assumption that a higher GDP leads to a higher quality of living, all other things being equal*.

This conception was strongly criticized by Lutzenberger, simply because all other things do not tend to be equal. The economic system does not exist in a vacuum. He postulated that people should not use terms such as 'economic progress' to evaluate if a country is actually improving or not. There are more sides to this story other than just the economic side. His main argument stemmed from the fact that indexes like the GDP cannot truly measure or evaluate what is really happening within a country. Sure, it can measure what was produced, invested, consumed, and etc. However, since those indexes are one-dimensional[7], they cannot assess if the overall quality of life is indeed getting better or worse, if society is getting more just or more unequal – or if nature is being destroyed or protected. For instance, from an economic standpoint, if a company builds a factory that produces vehicles and, in order to accomplish that, such company cuts down a large area of forest in a city that already has only a few green patches left, this would still be considered a 'good thing' for the economy. The construction of a new factory will increase the GDP; it will produce more money, and some temporary jobs here and there. In Lutzenberger's words, "If economics is the study of human

[7] *Ceteris paribus* or *caeteris paribus* is a Latin phrase, literally translated as "with other things the same," or "all other things being equal or held constant." It is commonly rendered in English as "all other things being equal."

businesses, that is, of the exchanges between humans – creation and distribution of wealth and resources in communities and societies – only the alienation prevalent in our culture can make us forget that economy is nothing but a chapter of ecology[8]. *This is a crucial point: economy is a chapter of ecology* (emphasis added)."[9]

What is hidden underneath this discourse and cannot be easily perceived (at least using assessment lenses based solely on economic factors) is the fact that the overall quality of life will be affected and hindered by this new factory: the city will become more polluted, air quality will diminish, animals will no longer have a place to dwell and will lose their ecological niche, people will get more easily frustrated and stressed since there are no more green areas around them, the overall quality of life will be reduced, and so on and so forth[10]. Nevertheless, these aspects are not present in an evaluation system like the GDP index – and while it is true other indexes that try to account for these elements exist, the GDP continues to be the most influential among them. Notwithstanding, Gross Domestic Product is an economic index, not an index that can express the social and ecological intricacies that also shape our world.[11] This situation greatly intrigued Lutzenberger. He thought that in order for us to change our economic system, we would need first a change in our moral system – something that would be achieved mainly through education. In this regard, his way of thinking was

[8] Or, in other words, human economy is a subset of the economy of nature.
[9] Lutzenberger, José. *Crítica Ecológica do Pensamento Econômico*. Porto Alegre: L&PM, 2012, p. 69.
[10] This is not always the case, though. There are species that will do well in urban areas, while others will do better in agricultural areas. Furthermore, production not always is accompanied by pollution. However, in general, economic interests still tend to come first. A good example of this mindset is the Canadian tar sands. From an ecological point of view, it is a calamity. From an economic point of view, it is acceptable.
[11] This is somewhat a thorny issue. Clearly there are important variables or gradients that lead to high variability at the local scale, but would perhaps be encompassed more systematically at the national level. Furthermore, 'quality of life' is a metric or concept of relevance to developed societies (but may not be relevant for indigenous societies in many regards, perhaps analogous to the issues related to land ownership) and thus inherently linked to economic metrics such as GDP.

very similar to Aldo Leopold's – especially when Lutzenberger talked about the encompassing optimism of technocracy[12], which presupposes some sort of 'technological omnipotence.' Moreover, both saw the strong correlation between the economic system and the way the environment is treated. I agree with both about the need for more education and the need for an improved ethic. However, I believe that while the capitalist economic system remains in place as it is, unaltered, these changes will not be possible. Since human agency in the modern world is so profoundly shaped by economic precepts, Leopold knew we would eventually have to come to terms with the premises and consequences of our economic system in order to address modern environmental challenges. In Leopold's mind, neoliberal economics[13] (which is the norm today) did not present a satisfactory way of handling concepts like wilderness, beauty, or land health – things he deeply cherished. Writing in 1938, he noted that "it seems likely that the present muddle in the pursuit of conservation through public ownership of land arises from the fact that the conservation problem involves a new category of economic phenomena; one with which economists are unaccustomed to deal."[14]

In terms of economics there are no easy answers, and Leopold was the first to admit it. By presenting evidence that humans do not view themselves as members of a community but rather as its conquerors, Leopold argued that humans must change their ways and their actions – another idea shared by Lutzenberger. To prove that, Leopold

[12] Technocracy, in Lutzenberger's definition, is the sum of all individuals and corporations, big or small, that take advantage of technique (*techné*). There is nothing essentially bad in doing that, though. The problems related to inequality and injustice start to arise when a part of said system grows too much and becomes too powerful.

[13] Neoliberalism is a free market economic philosophy that favors the deregulation of markets and industries, the diminution of taxes and tariffs, and the privatization of government functions, passing them over to private business.

[14] Leopold, Aldo. "Proposed Conservation Economics Study," 7 November 1938, *Leopold Papers*, 9/25/10-6 Box 12 Folder 7, 399-404.

highlighted the fact that decisions regarding the environment are done mostly for economic reasons rather than ethical ones. He believed that a system of conservation based solely on economic aspects is inherently flawed since it tends to ignore many elements in the land community that lack commercial value. The problem with this mindset is that said elements are essential to the proper functioning of a particular ecosystem – what Leopold called 'land health.' The most difficult part of adopting Leopold's Land Ethic is that the current economic system would have to radically change, and humans are generally reluctant to jeopardize their technological prosperity and their comfort. Furthermore, humans seem to have a tendency to think that technology will solve all of their problems, that there are no problems which cannot be solved using more technology, and that there is no limit to what humans can do. With that being said, and taking into account the contemporary social and ecological crisis the world is experiencing[15], this project presents itself as an important contribution to the current discussion about the environment, the economic system, and the ethics related to them – especially because it intends to bring a different perspective (from the periphery) into this matter. Lutzenberger used to say that humanity's problems should not be considered solely in terms of energy and/or materials.

> We need to assure ourselves that our actions are sustainable, if they do not imply the destruction of our planet's life support, and if they are oriented towards social justice. I would not like to see humanity disappear and I would like to see more equality within it. I cannot consider progress something that does not foresee the maintenance of life's integrity and the increase of human happiness.[16]

[15] Social and economic inequality is on the rise and, of course, there is the pressing issue of human-induced climate change.
[16] Lutzenberger, José. *Manual de Ecologia: do Jardim ao Poder*, Vol.1. Porto Alegre: L&PM, 2012, p. 9.

Based on this statement, his thought can be linked to Rachel Carson, a famous U.S. environmentalist. Lutzenberger knew her work quite well (especially *Silent Spring*). Carson was a fierce critic of the pesticide industry and suffered many personal attacks because of her criticism. According to her, said industry was more interested in selling pesticides to the farmers than helping them. Thus, said industry considered things strictly from an economic standpoint[17]. Trying to find a better way to measure the wellness of a country, Lutzenberger agreed with the precepts of an index called Gross National Happiness (GNH), first adopted by Bhutan in 1972. The GNH index was designed in an attempt to define an indicator that would measure quality of life or social progress in more holistic and philosophical terms rather than only using the economic indicator of Gross Domestic Product.

> Right now, we are stealing the future, selling it in the present, and calling it GDP. We can just as easily have an economy that is based on healing the future instead of stealing it. Whenever we exploit the earth, we exploit people and cause untold suffering to humans and non-humans. Working for the earth is not a way to get rich; it is a way to be rich.[18]

The four pillars of the GNH are: a) the *promotion of sustainable development*; b) preservation and promotion of cultural values; c) *conservation of the natural environment;* and d) establishment of *good governance*. At this level of generality, the concept of GNH is transcultural, meaning that a nation need not be Buddhist (as Bhutan is) to value sustainable development[19], cultural integrity, ecosystem conservation, and

[17] Something that Monsanto has been doing for quite a while.
[18] This statement was given by Paul Hawken during the 108th Commencement at the University of Portland on May 3rd, 2009.
[19] Development can be sustainable, even in the long run. The incompatibility seems to exist between constant growth and sustainability. Development and growth are not the same thing. One focus on the quality, the other focus on the quantity.

good governance. However, I do not think that the GNH index could simply be adopted as the only global index to measure the wellness of a country. People could learn a few things from it, though. Lutzenberger used to say that all the profits generated from the extraction of oil or from the export of minerals, from the logging of trees, from soybean crops, or from the building of a dam, are added to the GDP. Nevertheless, where in this equation do the depletion of an oil field or a coal mine, the loss of soil productivity due to erosion, the death of fauna and flora due to the use of pesticides, the degradation of a forest, and the loss of an area due to flooding appear? The GDP index seems to disregard all these ecological and social aspects – and ecological and social costs as well. This is the main purpose of this dissertation, namely, to use the philosophy of José Lutzenberger to demonstrate how the environment has been largely left out of the economic, and the political, scenarios. My idea is to go beyond Lutzenberger, though. I wish to demonstrate that while the economic system remains an unequal and unfair place, a system that exploits humans and the environment alike, it will be quite difficult to truly solve the problems posed by climate change, by our dependency on fossil fuels, and by an agricultural system heavily based on intensive animal farming and on the use of pesticides. The exploitation of the periphery by the center finds echo in the exploitation of the environment by human beings. I believe that a fairer world, environmentally-wise, can only exist if a fairer world, economically and socially-wise, precedes it.

1.3 Chapter Summaries

Beginning with the history of Brazil's development, first as a colony of Portugal and then as a country on the periphery of the world's economic and political spheres, Chapter 2 shows how colonialism and imperialism played a decisive role in the way Brazil's economy and society were shaped. Being the colonized and not the colonizer, Brazil was first considered simply as a place to be exploited for its natural and human resources. There was no regard for the environment or for the native people who were already living there for thousands of years. Exploitation was the only thing on the colonizers' minds.

Chapter 3 relies on the work of Georg Simmel and his book *The Philosophy of Money*. Simmel had an interesting take on money, the ubiquitous medium of exchange. Contrary to the old saying "Money is the root of all evil," Simmel demonstrated that it is not money per se that is evil or pernicious, but the way humans perceive it – and the value they assign to it. It would not be completely wrong to say that humans love money (to some extent) because without money there would be no way to sustain a global market. Money, being the universal medium of exchange it is, can create such conditions. However, it seems humans tend to love money too much – and as Aristotle used to say, everything must be done in moderation. We should strive for the perfect middle ground. Neither deficiency nor excess. This represents what he called the Golden Mean. However, colonialism thrived, and capitalism still thrives, on the excess, and it is precisely these excesses that are damaging the life-support system of our planet.

Chapter 4 deals with the issue of 'humans as components of ecosystems' and how the ecological and the social should be considered as being intertwined and interdependent. If one is affected, so will be the other. The chapter focuses mainly on Herman Daly's economic and philosophical thought – and Daly and Lutzenberger knew each other and even shared some principles and ideas. Lutzenberger was one of the first to realize how Brazil's past shaped its present – and will continue to shape its future, if nothing is to be done to change that. Linking social problems to ecological ones, and vice-versa, Lutzenberger fought for a change in the economic system because, according to his views, said system holds the most power and influence to affect the environment. The concentration of wealth and capital in the hands of a small group of companies and governments will facilitate and perpetrate the exploitation of human beings and the exploitation of the environment. Lutzenberger also agreed with Daly pertaining to something called the steady-state subsystem (or steady-state economy). In said system, the economy does not keep on expanding indefinitely. It could still 'grow in quality[20],' though. A solar-driven, cyclic economy could grow in terms of technological advance, wealth, and quality of life. Be that as it may, there should be a limit to how much the system can expand because an indefinitely quantitative growth is not possible. Earth and its natural resources are finite, after all.[21]

Finally, Chapter 5 presents the full scope of José Lutzenberger's thought and brings together all the aspects discussed up to that point. From the beginning of Brazil's history first as colony, then as a country, its place on the periphery, and the influence

[20] The economy could develop itself without necessarily growing or expanding in a strictly quantitative way.

[21] Thomas Malthus, in *An Essay on the Principle of Population*, first published in 1798, stressed that misery and suffering are endemic to the human condition because resources are limited and cannot support our capacity for population growth.

colonialism and capitalism had over its economy, politics, and society, Lutzenberger perceived like no one else the interplay between all those elements. He was well-aware that Brazil was just one example among many, and that the exploitation of the peripheral countries' natural resources (and societies) by the central countries usually tends to bring profit and development only to those doing the exploitation. To the rest of the world, to the exploited, there seems to be only one option: things will get worse. After all, the current economic system seems to function as a zero-sum game.[22] In its present configuration, said system will tend to create wealth and power to some by stealing wealth and power from others. What one gains, the other loses. Murray Bookchin once said that capitalism is an amoral system, that it is not concerned with ethics and morality. I agree with him. From Lutzenberger's perspective, as long as money and power remain concentrated in the hands of a few groups, there can be no environmental or social justice.

[22] In game theory and also in economic theory, a zero-sum game is a mathematical representation of a situation in which each participant's gain (or loss) of utility is exactly balanced by the losses (or gains) of the utility of the other participant(s). In a nutshell, what one side gains, the other side loses.

CHAPTER 2

THE GENEALOGY OF BRAZIL'S SOCIAL, ECONOMIC, AND ECOLOGICAL DEVELOPMENT

2.1 Introduction

The "discovery" of Brazil was one of the episodes in the creation of a Portuguese commercial empire, which, in less than a hundred years, extended to four continents. The Portuguese established West African coastal stations from early in the fifteenth century. In 1500, Pedro Álvares Cabral and his men sighted the hump of Monte Pascoal on the Brazilian coast and sailed north for three days to find a beach near what is now Porto Seguro, in the Northeastern state of Bahia. A reconnaissance party went ashore and the main landing was made the following day, when Cabral formally claimed what he called 'True Cross Island' for Portugal, proceeded to erect a cross and then held a Christian service to mark the occasion. From that day on, Brazil became a colony of Portugal, officially entering the known world and its incipient, but already strong, global economic market. It is important to bear in mind that the creation of said market was heavily influenced by the precepts of imperialism[23] and colonialism[24], with the colonizers exploiting the natural and human resources of the colonized. Instead of a

[23] Imperialism is a type of advocacy of empire, so to speak. Its name originated from the Latin word *imperium*, which means to rule over large territories. Imperialism is a policy of extending a country's power and influence through colonization, use of military force, or other means. Imperialism has greatly shaped the contemporary world. It has also allowed for the rapid spread of technologies and ideas and has been largely responsible for the creation of a globalized world. One could say that without imperialism (and colonialism) the current capitalist global market would not exist.

[24] Colonialism is a set of unequal relationships between the colonial powers and their colonies and often between the colonists and the indigenous (native) population. The European colonial period was the era from the 16th century to the mid-20th century when several European powers established colonies in Asia, Africa, and the Americas. At first the countries followed mercantilist policies designed to strengthen the home economy at the expense of rivals, so the colonies were usually allowed to trade only with the mother country. By the mid-19th century, however, the powerful British Empire gave up mercantilism and trade restrictions and introduced the principle of free trade, with few restrictions or tariffs. Thus, the foundations of our current capitalist market can be related to this event.

'true commerce,' one could say that what took place was more akin to a one-way extractive and exploitative enterprise. The colonizers – in this instance, the Portuguese – were concerned solely with exploiting their new 'acquisition' as much as possible. This situation remained more or less unchanged until 1822 – when Brazil got its independence from Portugal. Independence did not solve all of Brazil's problems, though. Brazil had to pay an incredibly large amount of money to Portugal and also to England, since the Portuguese, at the time, owed a huge debt to the English. Hence, Brazil now had to enter the global market – but from the periphery. There was no other choice.

2.2 Brazil as a Colony of Portugal

The development process of a nation will usually have or present a certain pattern. During the 15th and the 16th centuries, the European model of 'development' became the predominant system that almost every other Western country had to follow. This process culminated in the creation of a new world order, presided over by Europe. Its model of civilization dominated the world and was expanded to the four corners of the Earth. Brazil's social and economic development represents just a small piece in this enormous jig-saw puzzle. At first, the Portuguese were not interested in anything but extractive enterprises. They wanted to find a quick way of profiting from their new colony, and the availability of natural resources was incredibly high. The similarities between this economic system and the old format of purely commercial trading posts the Portuguese had on the western African coast were astoundingly clear. Wood from the forests was used for building and also for dying (Brazilwood is a good example of

such use). In Northern Brazil, the main activities were fishing and trapping. Silver and gold, which the Portuguese expected to find in troves in the North and in the Northeast regions, were discovered but in small quantities. Gold and silver mines never became an epidemic there. Brazil's 'gold rush' happened only later, in the 18th century and in the Southeastern state of Minas Gerais. After these early stages of a tentative development, which was more similar to exploitation, the next step – agriculture – would be a more definitive one. The agricultural system implemented by the Portuguese presented some characteristics from Brazil's purely extractive past but also incorporated a new element in the figure of the '*latifundiário'* (big landowner), which today still pervades most of the country.

Gilberto Freyre, in *Casa Grande & Senzala*, focused on explaining how race relations came to be established in Brazil and how they affected its social, political, and economic configuration. He, at the same time, produced a genealogy of Brazil's agricultural development. The sugar cane monoculture not only eclipsed the more democratic industries of *pau-brasil*[25] and fur, but also impoverished a large extension of land around the cane mills – in order to develop polyculture (used for subsistence) and to raise cattle. The industries of *pau-brasil* and fur were more democratic due to the fact that they were not conceived from the top-down. They were less centralized and possessed a smaller scale when compared to the sugar cane monoculture. Furthermore, the monocultural mode of production required a considerable number of slaves. Thus, in this Northeastern agrarian region, the development of an absorbing monoculture and a semi-feudal society took place – with a minority of white and polygamous Portuguese patriarchs ruling, from their mansions, not only over the slaves,

[25] *Caesalpinia echinata* – Brazilwood.

but also over small farmers and other inhabitants of that region. All of them became vassals of the emperor-like figure of the *latifundiário*. This system was formed by the *casa-grande*[26] and complemented by the *senzala*[27]. It represented an economic, social, and political system: of production, of transportation, of work, of religion, of sexual and family life, and of politics.

The main characteristic of the Portuguese colonization in Brazil was the formation of an agrarian society based on slavery. Thus, what took place was the accentuation, due to an economic and social pressure, of monoculture. Many alternative sources of agriculture were either perverted or stagnated by this monocultural system of cultivation. To exemplify this situation, Freyre quoted Professor Konrad Günther: "Nothing disturbs nature more than monoculture – especially when the crop that dominated the region comes from outside, meaning it is exotic to the region." Besides being ecologically harmful, this system of production also created a stark separation between town and country. The origins of this division can be traced, arguably, back to 16th-century England. The economic transformation that happened at that time profoundly affected the internal balance and distribution of its population. People started to abandon the country, moving in droves towards the cities. The proliferation of pastures, used for feeding the sheep, replaced former cultivated fields since the sheep provided wool for the up-and-coming English textile industry. From a global perspective, the colonization of the Tropics represented a huge commercial enterprise, mainly concerned with the exploitation of natural resources. That was the colonization process

[26] There is no English translation for this word. It means 'big house' but it actually represented the center of the power exercised by the landowner – who usually possessed large extensions of land.
[27] Again, there is no English translation to *senzala*. This word represented the place where the slaves lived. It was usually kept in extremely poor conditions.

Brazil went through. Said process laid down the key elements that shaped the country – in the economic, ecological, social, religious, and political spheres. Portugal's main goal was to create a commercial system clearly targeted at outside, without considering Brazil's needs. Its society and economy were forged upon this paradigm and this system deeply shaped the features and the life of its people for centuries to come. According to Caio Prado Jr., pertaining to the development of Brazil's agriculture, the first key element that took place was the establishment of a large monocultural property system, supported by the work of African slaves. *Agrarian exploitation is the direct consequence of the circumstances related to the model of colonization applied to the Brazilian territory*. The same system was applied by colonizers all over the world. Summing up, three main concepts arose at the time: 1) large properties; 2) monoculture; 3) slave labor. They were all combined and they all complemented themselves.

> Commercial farming in the tropics is today one of the most distinctive types of farming, and the oldest of the modern types of large-scale, specialized agriculture. It began with the colonization of the hot humid portions of the Americas, but its development has taken place largely during the past hundred years. This type of farming involves the growing and processing of a cash crop to be exported to temperate countries, chiefly located in the Northern Hemisphere.[28]

Brazil's gold rush started to boom in the 18th century and its only difference from monoculture was the landscape in which it took place. Everything else remained exactly the same. Large-scale exploitation supported by slave labor was the norm. It was a one-way road – extraction without replacement.

[28] Jones, Clarence Fielden. *Economic Geography*. New York: Macmillan, rev. ed., 1954, p. 156.

> What I am trying to do is to emphasize the fundamental elements that characterized the economic organization of the colony. They were, in all sectors, represented by the large unit of production, whether they be agricultural, extractive, or related to mining.[29]

If one could somehow look into the future from that point in the past, one would see the constant expansion of this system during the next centuries. This situation was aggravated by the concentration of wealth and power in the hands of the *latifundiários*. Lutzenberger viewed them as one of the poster-boys for the inequalities that would arise from this extreme concentration of power. As it seems to be the case, environmental degradation rarely takes place isolated from everything else. It is usually accompanied by social (and oftentimes political) inequalities as well. Portugal, as the metropolis, was 'in the right' to exploit its colonies. In the words of Prado Jr.: "Brazil existed to provide gold, diamonds, sugar, tobacco, and cotton."[30] It was as simple as that.

One of the main consequences of this policy, which reduced Brazil to a mere provider of a certain kind of goods, was the creation of a Brazilian identity geared towards subordination. Past, present, and future became tangled up in this 'economic genealogy.' What took place will influence what takes place, and will also influence what will take place. This 'faux development' was characterized by successive commercial cycles – and the end of each cycle represented the total depletion of a particular natural resource in a particular area or region. In chronological order Brazil went through the following cycles: Brazilwood, sugar cane, cotton, gold, rubber[31], and coffee. Brazil is going through another one of these cycles nowadays. Forests are being cut down and

[29] Prado Jr., Caio. *Formação do Brasil Contemporâneo*. São Paulo: Editora Brasiliense, 1963, p. 118.
[30] Ibid, p. 120.
[31] The participation of rubber in Brazil's exports went from 10% in 1890 to 39% in 1910.

ecosystems are being threatened[32] by the ever-growing soybean industry and the always expanding pastures used to feed the cattle. Both of them, by the way, aimed at external markets. This situation was not overlooked by Lutzenberger. He was a stark critic of this type of agriculture and he wanted to diversify and decentralize it. Another example of this mindset is hydropower. Much of what is generated ends up being exported either to richer regions within Brazil or to other countries. The pork and poultry industries in Brazil operate under a similar paradigm. Production (mostly via factory farming) is geared towards the external market – especially to China.

The development of this system can be thus summed up in the following way. First, a certain area had to be populated – with white European owners and slaves coming from Africa. Then, production was established and would continue at full speed until one of these two things (or both) happened: the complete exhaustion of the natural resources, or a shift in the economic conjuncture. After that, the area was simply abandoned. This procedure, repeated time and time again, would leave behind a scenario of environmental and social desolation. There were three key elements present in Brazil's economic development. They pertained to: a) its structure, b) its functioning, and c) its evolution. Structure-wise, Brazil was merely a provider of resources. An elite of white Europeans controlled the 'means of production,' as Marx would later describe them, while a huge contingency of people (slaves and non-slaves) worked for these owners and were exploited by them. Regarding the way this system functioned, Brazil was just one among many providers of natural resources to the international market. In its evolution, there was an extensive exploitation of the land and

[32] Especially the *Cerrado*, a biome that can only be found in Brazil. This biome is somewhat similar to the African Savanna.

the people, with irregular cycles appearing in different places and at different times. They left an indelible mark on Brazil's constitution as a country. As a colony, Brazil did not possess an advanced agricultural technology. The most common technique was the complete burning of a particular area, leaving the soil depleted of minerals. The solution to that, as already stressed, was simply to abandon the area. After a while, entire regions would be left behind since they were not able to recover from such an extensive damage. Land, thus, was traded for profit.

> The forest, always chosen due to the natural properties of its soil, and which used to cover a vast amount of the colonized areas, started to quickly disappear consumed by fire. Therefore, in the Northeastern cost, among other examples, from the once dense and uninterrupted forest that covered an area extending from the states of Paraíba to Alagoas, only tiny bits remained – both located on its fringes.[33]

In a similar fashion, the same process was observed in other parts of the globe. The devastation of forests tended to create huge infertile areas in its wake. The colonizer, then, would simply look for new areas to be exploited. Agriculture in the colonies, and especially in the Tropics, was characterized by its large scale. The monoculture paradigm (sugar cane, cotton, coffee, etc.) affected not only the environment, but also the people. Brazil's social and economic structures were largely built upon that system.

Sérgio Buarque de Hollanda, in *Raízes do Brasil*[34], a book that discusses how the development of Brazil's agriculture and urbanization took place, stressed that living in cities had an interesting effect on the people and on the environment. It concentrated large amounts of humans and resources, creating a snowball effect in which mass production agriculture (monoculture) would be required to support these ever-growing

[33] Prado Jr., Caio. *Formação do Brasil Contemporâneo*. Editora Brasiliense: São Paulo, 1963. 129.
[34] Buarque de Hollanda, Sérgio. *Raízes do Brasil*. São Paulo: Companhia das Letras, 2008.

numbers. And while it is true that an increase in production efficiency (meaning a greater yield per area) is a good thing in terms of sustainability – the focus would be on quality instead of quantity, after all – the current economic trend that links the pursue of a higher GDP to the status of a country also seems to require a constant expansion in the cultivated area. Using a very simple logic, the greater the area exploited, the bigger the profit. According to Buarque de Hollanda, the colonizers used the construction of cities as a domination tool. When power is centralized, it becomes easier to abuse it, as Lutzenberger would say many times during his life.

2.3 From Colonialism to Capitalism

Raymundo Faoro, in *Os Donos do Poder*, stressed that during the colonization period the predominant thought of those living in Brazil was to get rich as quickly as possible and then return to Portugal. Few people seemed to care about the land, its native people, or the slaves coming from Africa. Thus, the land was not properly cultivated and became easily depleted of nutrients – and since there was a considerable amount of land available, the exhausted areas were simply abandoned without a second thought. In the aftermath of Brazil's independence, in the 19th and in the 20th centuries, when cattle-raising became more widely spread, the same pattern used since the times of the sugar cane monoculture was repeated – expansion of the cultivated land and domination over the people. This example shows us the intimate relationship between the ecological and the social. Lutzenberger never believed that there could be a 'healthy land' in an 'unhealthy society' – or a healthy society in an unhealthy land.

> After the domestic production was dismantled – wounded by international competition or due to the depletion of mineral veins – the remaining landscape was riddled with scars. Poverty, sterility, burned soil, a desert. This was true for the sugar cane and it was also true for the Brazilian gold rush.[35]

The almost exclusive monocultural character of the country was still the norm many years later, during the heydays of coffee. Both the extension of the coffee plantations and the depletion of the soils helped feed the spirit of big landowners (*latifundiários*), who were usually called 'Coffee Barons.' The trend was to keep expanding their territorial domains, transforming their surroundings into an area belonging to a few rich families, which in turn controlled large extensions of land. The idea was to produce coffee in order to export.

It seems to be clear that, not only for Brazil but for the rest of the world as well, the economy was seen as something that should not be overlooked under any circumstances and should always receive the highest regard and consideration. It would be primary, whereas everything else would be secondary. The corollary was – and still is: "The stronger the economy, the stronger the country." That is why there seems to be a need for a constant expansion of everything related to the economy. Perhaps the best example of this mindset can be found in Friedrich Engel's work on political economy: "Political economy came into being as a natural result of the expansion of trade, and with its appearance elementary, unscientific huckstering was replaced by a developed system of licensed fraud, an entire science of enrichment."[36] Getúlio Vargas, one of the most influential Brazilian presidents of all time, once said:

[35] Faoro, Raymundo. *Os Donos do Poder*. Rio de Janeiro: Editora Globo, 2000, p. 156.
[36] Engels, Friedrich. *Outlines of a Critique of Political Economy* (1843).

> Only the economically strong nations are truly free. And this is the liberty I would like to give my country. The Constitution of 1937 is just an attempt, a provisory experience, which will help us withstand the approaching storm with the least amount of sacrifices. Let us say it is just a means to achieve an end. It is not an end in itself.[37]

This statement by President Vargas represents the spirit of Brazil's trajectory, which obviously does not diverge from the path taken by almost all other countries (central or peripheral) in the world. Economic growth means freedom and power. Brazil's position in the international market was, since the beginning, one of subordination to the already developed countries. The focus was, as previously discussed: *a) monoculture; b) large extensions of land belonging to a few big landowners; and c) exploitation of the people (first the slaves and then poorly paid workers).* During a large part of its history, every improvement in Brazil's economy was focused on products destined to be exported with the help of foreign investments and foreign capital. An example of this mentality is Brazil's history pertaining to coffee production. *In 1925, coffee represented 75% of the country's total exports. In 1929, this number dropped but still maintained its importance, representing 70.9% of its exports.* Monoculture definitely played a major role within Brazil's economy – and still plays.

Celso Furtado, Brazil's most prominent economist, used his research to demonstrate *how the genesis (genealogy) of underdevelopment is directly associated with a colonial past and with the continuity in power of the dominant classes.* Said classes would be obsessed with imitating the life style and the consumption patterns of the developed countries (central economies). This pattern of incorporation (or 'technological progress') produced and perpetrated an external dependency and social

[37] Vargas do Amaral Peixoto, Alzira. *Getúlio Vargas, meu pai*. Rio de Janeiro: Editora Globo, 1963, p. 247.

and economic internal asymmetries[38]. That is why it is extremely important to examine the social structures that drive the balance between capital and labor. The crux of the matter lies in the access to land and its mechanisms, the means of production, and the job market. *Underdevelopment is the product of a historical situation that divides the world in a "center-periphery" structure and a political decision that subordinates the incorporation process of technical progress to the objective of copying what the central economies have already done*. The yardstick of what progress would be – or what it means – is thus represented by consumption patterns. Hence, more equals better. Furthermore, by simply following an already established model, developing countries would hinder their own individual and internal evolution. In view of the transnationalization of economy, the *laisser-faire* option meant, for dependent subsystems, to renounce their own objectives, to accept the internal disarticulation, and even perhaps the loss of their national identity. They would then follow a model that worked[39] for the central economies. This model brought environmental destruction and social, political, and economic inequality for the peripheral countries.

For Furtado, the economic occupation of American lands was simply an episode of the commercial expansion of Europe. In Brazil, the occupation of the territory took place mainly due to political pressures that other European nations were applying over Portugal and Spain. The land had to be occupied in order for them to have any control or power over it. However, Portugal was much more successful than Spain regarding its colonial agricultural endeavors. This happened thanks to the precocious discovery of precious metals (gold and silver) in the Spanish America. Thus, Spain relied chiefly on

[38] Furtado, Celso. *Formação Econômica do Brasil*. São Paulo: Companhia das Letras, 2007.
[39] It worked if one thinks strictly on economic terms. It has failed socially and ecologically.

the extraction of said metals and paid little attention to agriculture. A third, and very important world player at the time, had a very different fate than Portugal and Spain. England did not suffer from a scarcity of labor. Truth be told, they had a surplus in that area. Starting in the 16th century, England abandoned the old system of collective agriculture in favor of the mass production of wool. This created a surplus of rural population, which in turn fled to the cities – and as already stressed, cities were used as tools to concentrate power.

> Britain could afford to send so many emigrants overseas without endangering the ample supply of cheap labour for her home industry. The changes in agricultural organization, particularly enclousures, had created in England a surplus rural population which brought wages down to subsistence level, and provided a large reserve in the labour market.[40]

A good example was the occupation of the Antilles. At first, subsistence agriculture was the norm. However, this was soon abandoned in favor of a sugar cane monoculture in the same vein as what happened in Brazil. This led to the disorganization of Antilles's subsistence farming and the islands soon became dependent on food imports. An interesting side effect of the expansion of sugar cane in the Antilles is found in the history of Barbados as seen in V. T. Harlow's work.

> Sugar mills had sprung up for crushing the canes, but Barbados possessed no water power to drive them. The alternative was to use tread-mills worked by horses; and horses were accordingly obtained from New England. Casks and barrels too were needed in which to pack the sugar. These were provided from the abundant forest of Massachusetts and Connecticut.[41]

[40] Isaac, Julius. *Economics of Migration*. London: K. Paul, Trench, Trubner & Co, 1947, p. 17.
[41] Harlow, V. T. *A History of Barbados.* Oxford: Clarendon Press, 1926, p. 274.

Hence, dependency was established. Also, this large scale agriculture was only possible due to the introduction of slaves from Africa. Brazil played a major role in the rise of the English Empire and its hegemonic economic system. The gold discovered in Minas Gerais in the 18th century helped finance (via agreements between Portugal and England) this ascension.

The sugar cane endeavor in Brazil always operated on a large scale, and this led to the concentration of economic, and thus political, power in the hands of a few groups. Furtado said: "It is evident that, if the external markets would absorb increasing quantities of sugar cane on an adequate price level, the system could grow – every time the external offer of labor was elastic – until all available land got occupied."[42] Due to the competition from the Antilles's sugar cane, this system became out of fashion in Brazil. It was simply not that profitable anymore. However, its basic structure remained intact and in place. When, during the 19th century, new and favorable conditions presented themselves, sugar cane monoculture received a new boost. This represents the maintenance of the same paradigm, the same way of thinking, the same worldview. The expansion of the sugar cane monoculture economy had two visible effects. First, due to the devastation of the coastal forests, an increase in the use of draft animals took place in Brazil. This was necessary thanks to the fact that increasingly long distances needed to be covered if people wanted to acquire more wood. Second, with the need for more draft animals there was also a permanent expansion of the land necessary to raise those animals. Furtado thought that these two systems, namely, sugar cane monoculture and cattle-raising, shaped the entire economic system in Brazil. Growth took place simply by incorporating more land and more workforce capability into the

[42] Furtado, Celso. *Formação Econômica do Brasil*. São Paulo: Companhia das Letras, 2007, p. 57.

equation – concomitantly maintaining the same structure, without any change in the rates of productivity. It was more of a quantitative improvement rather than a qualitative one.

As Furtado correctly asserted, the economic science originated in Europe became the dominant doctrine, almost a dogma. Therefore, people all over the globe had to accept it as the best possible course of action – even if their reality was very different from Europe's. The European reality, and its economic system, became the standard among most of the Western world. In Brazil's case, this led the country to blindly follow the European economic rules – which were based on, and closely related to, colonialism and imperialism. An interesting point made clear by Furtado's analysis is that, because the system was set in a particular way, it was easier for the landowners to keep expanding the land used for their monocultures than trying to improve the productivity.

> The destruction of the land, from a social point of view, may seem inexcusable, but from the perspective of a private landowner, whose goal is to obtain the maximum amount of profit from their capital, is perfectly conceivable. The preservation of the land only concerns the businessman when it has an economic foundation.[43]

The environmental and social problems arising from an incipient form of lobbying[44] could be observed in Brazil during the heydays of coffee. And lobby, money,

[43] Furtado, Celso. *Formação Econômica do Brasil*. São Paulo: Companhia das Letras, 2007, p. 169.
[44] Lobbying (or sometimes simply lobby) is the act of attempting to influence decisions made by officials in a government, most often legislators or members of regulatory agencies. It is done by many types of people, associations and organized groups, including individuals in the private sector, corporations, fellow legislators or government officials, or advocacy groups (interest groups). Lobby is another example of how money and power can influence the decisions that will affect the environment and society. The NRA (National Rifle Association) is an example of this type of practice. The oil and gas industry is also known for having a powerful lobby machine. However, there exist many environmentally friendly groups as well – even though they are not as powerful as those less environmentally friendly groups.

and power tend to go hand in hand. At that time, the costs of a decline in the price of that commodity were transferred to the population as a whole. The coffee barons had ways of influencing and interfering with the government and would always selfishly advocate in their own behalf. These costs would then be paid by the environment and by society. This is well represented by the concept of *economic externalities*. For Furtado, in an extensive rural economy, the increase in the productivity derives chiefly from the expansion of the workforce and the use of more and more natural resources. *Deforestation, the proliferation of monocultures, the opening of new roads, the increase of the animal herd – all of these elements – are consequences of this political and economic system.*

> The process of economic integration for the next decades will, on one hand, demand a rupture from archaic ways of land cultivation and the utilization of natural resources in certain regions. On the other hand, it will require a more holistic vision of the use of these factors in the country. […] As this redistribution happens, the incorporation of new land and natural resources will allow a more radical use of the available workforce, thanks to smaller investments in the units of this capital.[45]

2.4 One Economic System Fits All

Florestan Fernandes, in *A Revolução Burguesa no Brasil*, when discussing the Bourgeois Revolution, considered a plethora of economic, technological, social, psychocultural, and political transformations that were only achieved because the capitalist development had reached the climax of its industrial evolution. Brazil's situation at the end of the Empire and the beginning of the Republic (circa 1889), for instance, contained the initial stages of such development. For Fernandes, Brazil had

[45] Furtado, Celso. *Formação Econômica do Brasil*. São Paulo: Companhia das Letras, 2007, p. 251.

given itself to the "empire of power and domination specifically born out of money."[46] Thus, it seems clear how the economy was able to start tightening its grip over the political sphere. The bourgeoisie seized the political power via class domination and everything else became subordinated to their capitalist paradigm. "Our bourgeoisie converges towards the State and makes its unification in the political arena before achieving social-economic domination, in what Weber understood as indirect political power."[47]

In Brazil, the transition to the 20th century and the industrialization process that unfolded until the 1930s were part of the internal evolution of a competitive capitalism. The crux of such evolution could be found in the dynamics between exports and imports, which were obviously built under the auspices of a neocolonial economy. Brazil, therefore, simply copied an already existing economic system that was not suited for its reality – especially because said system was created based on a central perspective, disregarding the reality experienced by the peripheral countries.

> The legal and formal axiological foundations of the competitive social order were extracted from an idealized capitalist order (which existed, actually, in France, England, and in the Unites States of America at that time). Mimicking the imperial aristocracy, the republican bourgeoisie steals the ideological and utopic arsenal from the hegemonic and central Nations.[48]

During its economic development, Brazil suffered from an external pressure, born from the structures and dynamisms of global monopolist capitalism. This pressure threatened and affected several internal economic interests and crippled the country's autonomy. Moreover, an interesting political element was present, that is, precise conditions of

[46] Fernandes, Florestan. *A Revolução Burguesa no Brasil.* São Paulo: Zahar, 1975, p. 204.
[47] Ibidem.
[48] Ibid, p. 211.

‘safe development’ that could offer economic, social, and political guaranties to the external capital, its companies and its growth. The danger of this arrangement could be seen in the advantages the bourgeoisie was able to obtain. Thus, *it could establish a very close and intimate relationship with the international capital; repress, via violence or intimidation, any threat coming from the worker class or the people that could subvert the current order; and transform the state into an exclusive tool of the bourgeois power, in the economic, political, and social scenarios.* This is an excellent example of how political economy works. The reorganization of the state and the concentration and the militarization of its political power under the guidance of this very same state were the main drive behind the process Brazil went through. Nevertheless, this does not mean Brazil became independent or autonomous. A relationship based on dependency and subordination was still the norm, meaning that any form of redesign would have to be approved by the central countries – and they, in turn, followed a particular model of capitalism, based on exploitation, domination, and the search for profit at all costs.

It is important to bear in mind that behind that internal political crisis was an external economic crisis. The solution to the crisis had, as one of its consequences, the increase in the external control over the country. What started as a competitive capitalism turned into a monopolist capitalism. Thus, the bourgeoisie was able to increase the power of the private sector and protect its interests (both internal and external), which became closely associated with the public sphere – blurring the lines between the private and the public. In the name of an ‘accelerated economic development,’ the assimilation of the national economy and its power structures by the global capitalist economy was greatly amplified and deepened. And for the sake of

clarity, in absolutely no way I am saying that capitalism is an intrinsically 'evil system' or that it cannot bring more benefits than it creates shortcomings. Truth be told, there is no universal and invariable type of capitalism. The same model of capitalist development can be subject to a myriad of different applications, which can stem from distinct interests and conditions. Thus, capitalism is not a huge monolithic block unable to change. Nevertheless, what was observed during Brazil's economic development (and that can also be applied to almost any other country) was that the capitalist transformation was defined by selfish interests arising from the dominant classes. Brazil became very attractive to the eyes of the capitalist world. France, Germany, England, and the United States all turned their eyes towards the South American country and its natural resources. A continental country had many things to offer, especially to a growing and ever-expanding global market.

The main problem with the kind of capitalist development Brazil went through resides in the fact that it followed the tenets and precepts established by the hegemonic and central nations. Brazil thus entered the system as one of the exploited. The only thing that changed was the intensity and the rhythm of this process. Conditioned from the outside, the articulation of the peripheral economies to the central ones completely prevented the elimination of this external imperialistic domination. This in turn led to another problem.

> The history of the market commands the economic, social, and political history until it, without moving to the background, finally engenders a more complex transition, in which the dynamic functions of the capitalist transformation will start to arise from the capitalist relations of production themselves.[49]

[49] Fernandes, Florestan. *A Revolução Burguesa no Brasil.* São Paulo: Zahar, 1975, p. 240.

Fernandes noticed that the intensity of this process depended upon the conditions of the transition from a competitive capitalism to a monopolist one observed in the central nations. In other words, it was based on the importance that private corporations had in the reorganization of the capitalist economy in the hegemonic nations. There were some pre-requisites to this type of capitalist development, which demanded relatively high levels of: *a) demographic concentration; b) per capita income; c) standard of living; d) technological modernization; and e) political stability and the effective control of the state power by the local bourgeoisie.* The upshot was that transnational corporations, albeit not assuming total domination over of the process, were able to control the intensity of the exploration and commercialization of natural resources. This can be used as a good example of why Lutzenberger was always such a stark critic of the concentration of power. The more centralized power becomes, the bigger the injustices related to it tend to be. A public good was thus turned into a private one. These corporations started to fight for this new 'division of the world,' pitting themselves against one another. However, it was in the political sphere that the process of 'neocolonization' truly took place. Controlling the periphery was of utmost importance, not only because the central economies needed its natural resources in order to keep expanding their economies, but also because on the periphery resided the last opportunity for the expansion of capitalism and its market. The economy became the main drive, with the political sphere now subordinated to it. It is quite interesting to notice the way hegemonic nations were able to control the political sphere of peripheral countries via economic inroads.

> The Governments of the hegemonic nations and the organizations or alliances linked to the international business community put forth (sometimes in a coordinated manner) several types of assistance projects, some economic, financial, or technologic, others military or educational in nature. The function of said projects is directly political: beyond their explicit targets, what they aim to achieve is the increase of the power to decide and influence the peripheral nations.[50]

It became impossible to reconcile, both in the short and in the long terms, democracy, capitalism, and self-determination if a country found itself on the periphery. The structural and historic transition to the model of economic development inherent to a monopolist capitalism required profound alterations in the mechanisms of the market, in the organization of the financial market, and in the dimensions of the industrial production. Besides, said transition also required correlated and concerted measures (which could be extremely harmful to several groups, social classes, and also the environment). A good example of this practice is the use of incentives and privileges towards economies that emphasize industrial production in a large scale and the export of goods. In order for this to happen, a strong internal support must take place – and such support is founded upon the power of the dominant classes and the increasingly common and ubiquitous bourgeois entrepreneurs. All of them possessed links to the government, blurring the lines between the political and the economic – and between the private and the public spheres.

2.5 Conclusion

This historic experience shows us that the state should not have, in and of itself, an inflexible vocation for a purely economic nationalism (with or without ties to the

[50] Fernandes, Florestan. *A Revolução Burguesa no Brasil*. São Paulo: Zahar, 1975p. 254.

external capital). It reflects, historically, in the economic as well as in the military and political spheres, the social interests and the economic and political orientation of the classes that control the government. The ‘capitalism of state’ had to merge itself with the functions that the economic intervention and the state policy should have filled in order for the irruption of a monopolist capitalism to take place. And again, I am not saying capitalism is inherently wrong, or that the bourgeoisie is an ‘evil class’ – but what happened in Brazil (and in other South American countries) reflects much more a style of domination represented by the complete control of the state and its interests by the privileged classes than a desire for democratization and equality. *Thus, it represents the spirit of an oligarchic system rather than a democratic one.* Capitalism could work to the advantage of the majority – this is not impossible. It could – however, and unfortunately, it does not. According to Lutzenberger, without political, economic, and social equality, a genuine respect for the environment would become much harder to be achieved.

In terms not only of the preservation of the status quo but also of the expansion of the monopolist capitalism to the periphery, there is no interest from transnational corporations and from the hegemonic capitalist nations to erode the economic basis of this domination. In order to keep extracting natural resources from the periphery, corporations and the central nations have to favor the stability and the efficacy of the bourgeois power in the peripheral capitalist economies. Perhaps this ‘capitalistic principle’ was, once upon a time, right – or somehow it made sense. Nevertheless, in today’s world, it does not seem to work anymore – or if it works, it works for a really small group of people.

> Natural resources, capacity of production and consumption, external commerce, human resources, economic surplus, all of this, after all, is mobilized from the inside out and in the service of the basic needs of the hegemonic economies and of the global capitalist market. […] The rapid passage to the capitalist-monopolist model of development implies, in a nutshell, a sudden and external mobilization of natural and human resources, as well as the economic surplus, in growing and excessive scales, which produces similar effects as an irrational diet would produce in a human organism.[51]

Thus, this drainage of resources assumes a snowball-like behavior. It accelerates, increases, and intensifies itself as the internal capitalist development accelerates, increases, and intensifies itself as well. They would go hand in hand. *Under a monopolist capitalism, imperialism became a total imperialism. It does not know any barriers or frontiers.* It operates from the inside out towards all directions, parasitizing the host's economy, culture, society, and government. The norm then becomes: what is good for the hegemonic economies will be good for the peripheral economies as well. The problem is that the differences between central and peripheral countries are rarely taken into account. In this scenario, industrialism and capitalist prosperity can finally become a reality. However, they also bring in their wake a particular model of articulation to the hegemonic capitalist nations that can never be undone, if the current conditions remain the same. Thus, this new model of capitalist development tends to increase and deepen the economic, social, and political inequalities.

> Not only the gap between the rich and the poor, or the social-economic, the cultural-politic and the historical distances between the haves and the have-nots has grown: *the path to achieve richness and the power based on richness became much harder and difficult to accomplish* (emphasis added). In this historic jump, once again the strategic position of the dominant classes and their elites allowed them to practically monopolize the direct and indirect advantages of these transformations – past, present, and future ones.[52]

[51] Fernandes, Florestan. *A Revolução Burguesa no Brasil.* São Paulo: Zahar, 1975, p. 271-272.
[52] Ibid., p. 278.

What tends to be ignored is the fact that the capitalist expansion to the periphery was inherently linked to the dynamism of the central economies and the global market – something demonstrated by Rosa Luxemburg in her general theory of capitalist accumulation.[53] Under this model, capitalism, in subordinated and developing countries, becomes savage and merciless. Its viability is decided, frequently, via policy-making and in the political realm. This economic power imposes itself from the top-down, using any means necessary to prevail, building itself and converting the democratic state into a mere instrument controlled by the dominant classes – which usually have ties to transnational corporations and to the external capital. The interests of these groups become the interests of the country. It is a capitalism that links luxury, power and wealth, on one hand, to extreme poverty, oppression and exploitation, on the other. Thus, a capitalism in which class relations return to a remote past, as if the worlds of the once antagonistic classes were today's 'nations,' in a ruthless, never-ending, and unequal war. And as long as humans are able to exploit other humans, what chance does the environment have of not being exploited as well?

Another problem inherently linked to this situation is the lack of societal control over the economic structures. Thus, the industrial outbreak will continue to follow the old and harmful model of economic cycles – destructive in a social and in an environmental ways. Furthermore, the penetration of private capital (national or foreign) becomes much more profound and it permeated all levels of Brazil's economic life.

> This ideological and utopic turnaround, pertaining to its consequences in the internal sphere, not only increases the degree of philosophical, historical, and

[53] Luxemburg, Rosa. *A Acumulação do Capital.* Rio de Janeiro: Editora Nova Cultural, 1988.

> political alienation towards national problems and their solutions. It also strengths the insensibility before them in that they do not perturb the development of capitalism or the balance of the 'global capitalist system.' […] it amplifies the ideological, cultural, and political space for the flourishing of a model of class liberty which is extremely selfish, egotistical, and irresponsible. Deep down, said turnaround bestows new psychological, moral, and political foundations to the growth of the bourgeois domination and its transfiguration into a social force specifically authoritarian and totalitarian.[54]

Despite all its wealth, security, and stability, the center of equilibrium of the capitalist world shifts towards a core constituted by an unjust and inhumane society. This social-historical, psychological, and political situation impoverishes and limits the 'bourgeois consensus,' which closes on itself when faced with concrete historical challenges. The inertia of the system will then lead to political inaction. Human-induced climate change is a good example of what the consequences of this mindset can be. Writing in 1989, Lutzenberger, among many others, expressed concern with the possible consequences of this situation.

> In this last decade, climate irregularities all over the globe have become more and more serious. Just consider the summer of 88 in the United States, the following winter in Europe, and the successions of droughts and floodings in Brazil. Long before we reach extreme climate imbalances, the ever-increasing irregularities will create a scenario in which safe crops are not possible anymore.[55]

At the end of the day, the bourgeoisie have always repelled any chance of 'conciliation between classes' because it would imply an open rupture with the prevalent model of capitalist accumulation. To accomplish this constant separation, the solution was to employ an organized form of violence, hardening the status quo in the process. The dominant classes imposed to all other classes their own economic, social, and

[54] Fernandes, Florestan. *A Revolução Burguesa no Brasil.* São Paulo: Zahar, 1975, p. 316.
[55] Lutzenberger, José. *Gaia, O Planeta Vivo (por um caminho suave)*. Porto Alegre: L&PM, p. 44.

political transformation, which brought about profound alterations in the institutionalized patterns of class relations, of state organization, and of the relationship between class interests and the environmental, economic, social, and political rhythms of national integration as a whole. In a nutshell, the dominant classes would be promoting a '*sui generis* state interventionism.' Controlled by the private sector, the State acquires capitalist functions and structures and will not serve the general interests of its population and its environment. From this angle, "[…] the bourgeois autocracy guides us towards a typical restrictive democracy, which could be designated as a *cooptation democracy*."[56]

After the present chapter, which mainly dealt with the interplay between colonialism, imperialism, and the current configuration of capitalism from the point of view of a peripheral country, a chapter that discusses the value of money as assigned by humans is next. To that end, I am using Georg Simmel's book *The Philosophy of Money.* Money does not have an ethical inclination, or a moral system. It exists to fulfill a function, that is, to act as a mediator between transactions, processes, and the exchanging of goods. Money, echoing what Murray Bookchin said about capitalism, is 'amoral.' Nevertheless, when money assumes the highest position on the human scale of values, there is a tendency to start seeing things from a perspective of 'the more money, the better.' Money, once a means to an end, becomes an end in itself. An excellent example of this is the GDP index. Such index focuses on the increase in production, consumption, and monetary exchange. It is a direct correlation. The problem with this is that non-monetary elements are not taken into account. If such system continues to follow its course unaltered, it will reach a point in which the resources it

[56] Fernandes, Florestan. *A Revolução Burguesa no Brasil.* São Paulo: Zahar, 1975, p. 358.

depends upon will no longer be available – or, if they still are, they will become increasingly scarce. I am not saying that capitalism should be burned to the ground, but I am saying that there is an urgent need to change the way capitalism is configured and the way it works.

CHAPTER 3

THE VALUE OF MONEY IN A CAPITALIST SOCIETY

Snapshots sub specie aeternitatis. Money alone does not make you happy.

George Simmel

3.1 Introduction

I would like to start this chapter with a basic understanding of the role money plays in a capitalist society. Money acts as a 'universal mediator' between things. Thus, people tend to become distanced from the objects by means of this mediator and will participate in a labyrinth of means and abstract relations between things, in which the dynamic mediator of all values appears as the firm foundation amidst the never-ending succession of phenomena. Humans, in a sense, become dominated by this common denominator, *which will in turn reduce all values to its mediations*. This will, according to Georg Simmel, contribute to the flatness (or one-dimensionality) of everyday life. For Lutzenberger, the price of wood in the domestic market and the profit from its export are added up without any sort of deduction from the disappearance of the forest. This would reinforce the idea that the environment could be easily exchanged by money. Another important aspect of this mediation via money is that it creates a situation in which the objects of economic transactions no longer confront us immediately – meaning that it becomes easier to dispose, destroy, or exploit these objects.

> Whilst all concrete things pass by in restless flight, burdened by the contradiction that in fact they alone can secure all definite satisfactions, but nonetheless acquire their degree of value and interest only after their devaluation into this characterless, qualityless standard. In this way money places us at even more basic distance from objects; the immediacy of impressions, the sense of value, interest in things is weakened; our contact with them is broken and we

> experience them, as it were, only by means of a mediation that does not permit their complete, autonomous, immediate existence to gain full expression.[57]

Hence, money stands as an absolute intermediary, via which everything else can be valued and traded. Simmel shared some of Marx's views as to the *domination of exchange value in a society based upon commodity production*. However, Simmel goes on to add that this substitution of exchange for use value seems unable to reach its consummation. Only money has attained its final stage; *it is nothing but the pure form of exchangeability*. Money also has an interesting relationship to the ends-means dichotomy and its effect upon the teleological sequences of human action. Simmel stressed that money also has a colorless and 'seemingly neutral aspect,' which will get in the way of a satisfactory theory of value. It is, so to speak, simply a means, a material or an example for the presentation of relations that exist between the phenomena and the most idealized powers of human existence. Marcel Mauss, in *The Gift*, which explains the origins and ramifications of the gift economy, can be used here to demonstrate how in both gift and barter economies the exchange process did not necessarily represent a distancing between the objects and the subjects of such system.

> Each of these precious things, these signs of wealth possesses – as in the Trobriand Islands – its individuality, its name, its qualities, its power. The large abalone shells, the shields that are covered with these shells, the belts and blankets that are decorated with them, the blankets themselves that also bear emblems, covered with faces, eyes, and animal and human figures that are woven and embroidered on them – all are living beings. The houses, the beams, and the decorated walls are also beings.[58]

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[57] Simmel, Georg. *Soziologische Aesthetik* (1896) in G. Simmel, *Aufsätze und Abhandlungen* 1894-1900, H. J. Dahme and D. P. Frisby (*Gesamtausgabe*). Frankfurt: Suhrkamp, 1992, pp. 197-214, esp. p. 213.
[58] Mauss, Marcel. *The Gift: the form and reason for exchange in archaic societies*. London: Routledge, 2002, p. 56.

Simmel was able to see the effects of the rapid development of a mature economy and the consequences of equally rapid urbanization in a metropolitan context and considered both to be problematic. Berlin experienced a rapid urbanization and development as a metropolis after the German unification in 1870. Later, Walter Rathenau would describe Berlin as 'Chicago on the spree.' Simmel viewed the modern economy of the nineteenth century and its view about money as a game changer – for the better or for the worse. *Money appears, for perhaps the first time ever, as the focal point, the key, the kernel of modern economic life and its pursuits*. Everything else could be exchanged, and therefore reduced, to money. Money, besides being a mediator, is also a facilitator – and this exchange system certainly made our lives easier. Humans moved from a gift economy to a barter economy and then to a money economy. By being able to substitute everything for money, a few steps in the 'chain of exchange' were eliminated. That being said, Simmel's critique is to be understood as a critique of culture rather than its economic social and political context. And this is, I think, a very important point.

> The analysis of money must be conceived of as extending beyond its economic concretion as the symbol or index for a much more fundamental process, one of the objectification of the subjective, the quantification of the qualitative, the equalization of what is not equal.[59]

Simmel's theory of value offers interesting insights that can be applied to the discussion between intrinsic versus instrumental value. According to him, the value of objects, thoughts, and events can never be inferred from their mere natural existence

[59] Simmel, Georg. *The Philosophy of Money*. Third enlarged edition. Edited by David Frisby. Translated by Tom Bottomore and David Frisby. London: Routledge, 2004, p. 33.

and content, and their ranking according to value diverges widely from their natural ordering. Nature, he stresses, "At one time offers us objects that we value highly, at another time withholds them."[60] Valuation would be a psychological occurrence and part of the natural world. However, what is meant by valuation (its conceptual meaning) is something independent of this world – but is rather the whole world viewed from a particular vantage point, humanity's. *Money, as the ultimate valuator, only cares about the exchangeability of things and their economic value – any other value becomes secondary. The exchangeability between nature and money is at the center of our environmental crisis*. Human-induced climate change, the dependency on fossil fuels, and the pernicious consequences of factory farming can all be linked to this mindset. Lutzenberger's critic of the domination the GDP index has over more qualitative and holistic indexes can be linked to this as well.

Simmel believed that humans are rarely aware of the fact that their entire lives, from the point of view of consciousness, *consists in experiencing and judging values, and that it acquires meaning and significance only from the fact that the mechanically unfolding elements of reality possess an infinite variety of values beyond their objective substance*. The subjectivity of value, therefore, is first of all only negative, in the sense that value is not attached to objects in the same way as is color or temperature since they would be, although determined by our senses, accompanied by a feeling of their direct dependence upon the object. However, in the case of value people soon learned to disregard this feeling because the two series constituted by reality and by value are

[60] Simmel, Georg. *The Philosophy of Money*. Third enlarged edition. Edited by David Frisby. Translated by Tom Bottomore and David Frisby. London: Routledge, 2004, p. 60.

quite independent from each other.[61] The possibility of experience is the possibility of the objects of experience – because to have experiences means that our consciousness creates objects from sense impressions. Therefore, the objects formed are characterized by their separation from the subjects, who at the same time establish said objects and seek to overcome them via the subjects' desire. These objects will thus represent a value. *Economic value, therefore, would act as the objectification of subjective values*[62]. And if these values are subjective, the 'evaluators' (us) will be able to ultimately decide what said values represent and how they work.

3.2 Nature as a Commodity

It is only the desire for an unlimited quantity of goods that led society to overlook that a certain proportion between scarcity and non-scarcity, and not scarcity itself, is the condition of value. Nonetheless, Simmel seemed to believe that aesthetics can also play a significant role in this scenario. So long as objects are merely useful, they would be interchangeable and, therefore, anything can be replaced by anything else that would perform the same service – or they can be replaced by money, the ultimate medium of exchange. *However, when an object is beautiful it has a unique individual existence and its value cannot be replaced by another*. Such a thing would be priceless. Yet, in a sense, it seems that this rule has been constantly broken. The environment, which is something irreplaceable, something that should have an intrinsic value (a value

[61] The fundamental activity of our mind, which determines its form as a whole, is that we can observe, know and judge ourselves just like any other 'object', that we dissect our Self, experiences as a unity, into a perceiving subject and a perceived object, without its losing its unity – but on the contrary with its becoming aware of its unity through this inner antagonism.

[62] However, 'economic value' only objectifies instrumental values. We objectify intrinsic value via legislation. A good example would be a law prohibiting human trafficking and the killing of endangered species.

in itself), is been increasingly exchanged for money. The more an object stands before us in its own dignity, the more we attribute to it a significance that is not exhausted by a mere subjective enjoyment – *and the more the relationship of valuing the objects merely as means is replaced by a feeling of their independent value*.

One of the problems created by this mindset is that the practical relation to objects produces a different kind of objectivity because the conditions of reality withdraw the object of desire and enjoyment from the subjective realm, thus producing the specific category called 'value' – economic, aesthetic, ethical, etc. Humans will then invest economic objects with a quality of value as if it were an inherent quality (or intrinsic value) and then hand such objects over to the process of exchange, to a mechanism determined by those quantities, to an impersonal confrontation between values, from which they return multiplied and more enjoyable to the final purpose, which was also their point of origin: subjective experience. This does not mean that if something is more expensive it will be more enjoyable, even though some people might hold this opinion. According to Simmel, we attain a definite relationship to the world only by continually abstracting from the phenomena, following our needs of thought and action, and investing these abstractions with the relative independence of a purely inner connection which the unbroken stream of world processes denies to objective reality. The economic system is indeed based on an abstraction, on the mutuality of exchange. Nevertheless, this form of existence does not differentiate it from the other spheres into which human beings divide the totality of phenomena for the sake of their interests. *The economic system is their creation and it becomes an extension of them*.

> Exchange is not the mere addition of two processes of giving and receiving, but *a new third phenomenon*, in which each of the two processes is simultaneously cause and effect. The process of exchange does not depend upon a particular object having previously acquired a value for a particular subject. All that is needed is accomplished in the act of exchange itself.[63]

An example of the phenomenological nature of value can be seen in the way economics tend to be regarded. If one considers the money economy as a special case of the general form of exchange[64], i.e., a surrender of something in order to gain something, then one shall at once suspect that the value of what is acquired is not ready made, but rather accrued to the desired object wholly or in part from the extent of the sacrifice required. What can happen sometimes is a confusion of the value experienced by the subject and the value that the object in exchange has according to other apparently objective forms of appraisal – and such confusion might sometimes result in detrimental effects for the environment. During a famine, for example, people will trade a jewel for a piece of bread because, under these conditions, the latter is more valuable to them than the former. *It will always depend upon circumstances whether sentiments of value are attached to an object*, *since every valuation is supported by an elaborate complex of feelings* – which are always in a process of flux, adjustment, and change.

For Simmel, an object A becomes an *economic value* only because I have to exchange it for object B. *It makes no difference* that the sacrifice is accomplished by transferring a value to another person through inter-individual exchange, or by balancing the efforts and gains within the individual's own sphere of interest. *Economic*

[63] Simmel, Georg. *The Philosophy of Money*. Third enlarged edition. Edited by David Frisby. Translated by Tom Bottomore and David Frisby. London: Routledge, 2004, p. 101.
[64] The gift economy and the barter economy are also special cases of the general form of exchange. As Marcel Mauss wrote in *The Gift*, the market (even in pre-money societies) is a human phenomenon that is not foreign to any known society – it is something inherently human. In pre-money societies (via gift and/or barter) the market existed before the institution of traders and before the invention of money.

objects have no significance except directly or indirectly in our consumption and in the exchange that occurs between them. This process through which an economic system is constructed from the presupposed values may be interpreted as the point of origin of economic values. Therefore, an economic value lies between two limits. On the one hand, it is the desire for the object, arising from the anticipated satisfaction of possession and enjoyment. On the other hand, is the enjoyment itself, which is not strictly speaking an economic action. *The bottom line here is that anything can become an economic object*[65]. Exchange based on money is the source of economic values mainly because said exchange is the representative of the distance between subject and object *which transforms subjective feelings into objective valuation*[66]. Hence, people are able to trade and exchange everything for money[67], which is, *prima facie*, something 'amoral.' Not necessarily bad or immoral, though. What will define this aspect is how much humans will value money – and how much humans will value everything else.

The first requirement for an economic object to exist, based upon the disposition of the economic subject, is utility. To this, scarcity must be added as a second determining factor if the object is to acquire a specific value. Utility thus appears as the absolute part of economic values, and its degree has to be known so that the objects

[65] Kant posed and tried to answer the following question: "Do some things improperly become economic objects?" His answer was: "rational beings." But asking the question opens up the opportunity to answer it differently. The most common alternative answer is "sentient beings." Sadly, there are a plethora of examples in which sentient beings are exchanged for money: human and non-human beings alike.

[66] Not all forms of exchange are based on money, though. If two bands of hunter-gatherers exchange wild rice for dried venison the distance between objects and subjects would greatly shrink. But by exchanging wild rice for money and then going and exchanging money for dried venison ends up increasing the distance between the objects and between the subject and the object.

[67] However, money *per se* is not the sole cause for the existence of an 'immoral exchange.' For instance, would it be moral for a hunter-gatherer to exchange his child who would be used as a sex slave for a horse? Not at all. Nevertheless, what money does is to make it easier for immoral exchanges to take place because of the "distancing" effect.

can enter into this economic exchange. The mere demand for an object does not create an economic value because it does not include the required measure. Only a comparison of demands (the interchangeability of its objects, so to speak) assigns a definite economic value to each of them. For Simmel, value could never have been established without the general phenomenon that is called price. *That an object is economically valuable means that it is of value to me, that I am willing to give something for it*. An ecosystem exchanged for profit or for money, for instance. Thus, without a price (in the most general sense of the word) there is no value. They would be ontologically linked. *The fact that one of two objects is more valuable than the other is represented only by the fact that a person is willing to exchange one for the other but not vice-versa*. The notion that every exchange must be consciously advantageous to the subject is false – and this is one the points neoliberal economists tend to overlook.

> This is not the case, because the whole action lies subjectively beyond the question of equality or inequality of the objects exchanged. The idea that a balancing sacrifice and gain precedes the exchange and must have resulted in an equilibrium between them is one of those rationalistic platitudes that are entirely unpsychological.[68]

Therefore, in any individual case no contracting party will pay a price that seems to be too high under these circumstances. If, for instance, a robber forces someone at pistol point to sell his/her watch and rings for three cents, what they will receive under these conditions is worth the price, since it is the only way to save their lives. And here *economic externalities* can be felt again – since the environment does not exactly have a 'choice' in being destroyed or exploited, it would act like that person being robbed (an

[68] Simmel, Georg. *The Philosophy of Money*. Third enlarged edition. Edited by David Frisby. Translated by Tom Bottomore and David Frisby. London: Routledge, 2004, p. 94.

unwilling party to this contract). The significance of the object for the individual is always determined by the desire for it, and its utility depends upon the qualities that it has. If the object is already on someone's possession, then its significance is not affected at all by whether there are many or few or no other specimens of its kind. If an entire ecosystem is gone or if it is extremely degraded and a handful of unique species is lost, but large quantities of money were created thanks to this exchange, it would seem, from the point of view of neoliberal economics, that such transaction was good, or at least not bad – which does not seem to be the case, at least from an ecological, and perhaps also moral, perspective.

It is interesting to notice, Simmel said, that the images of the world of an insect with its mosaic eyes, of an eagle with its superbly accurate sight, of an olm (also called proteus[69]) with its buried eyes, of ourselves and of innumerable other species, must be profoundly different from each other; and one must conclude that none of them reproduces the content of the external world in its inherent objectivity. However, these representations (although flawed and incomplete) *will form the presuppositions, the material and the directives for our practical activity*, through which we establish a relationship with the world as it exists in relative independence of our subjectively determined representation. We expect certain reactions to our actions, and these usually occur in an appropriate way, meaning one that is useful to us. Therefore, humans are able to decide what values are more important and what values are less important to them.

[69] The olm, sometimes also called proteus (*Proteus anguinus*), is an aquatic salamander in the family *Proteidae*, the only exclusively cave-dwelling chordate species found in Europe.

3.3 The Assignment of Values by Humans

Simmel's theory of value is not necessarily primarily an economic theory of value but rather a moral and aesthetic one. The mind creates the world – the only world that we can discuss and that is real for us – according to its receptivity and its ability to construct forms. On the other hand, though, this world is also the original source of the mind. From the early stages of our planet, by then a giant ball of incandescent matter, a slow and gradual development has resulted in the possibility of life. Therefore, those living beings, at first purely material and without mind, have finally, in ways still unknown, produced the mind (human consciousness). From a historical perspective, the mind with all its forms and contents is a product of the world – of the same world which is in turn a product of the mind because it is a world of representations. Much that was once considered *a priori* has latterly been recognized as an empirical and historical construct. On the one hand, we have the task of seeking in every phenomenon, beyond the content provided by sense impressions, the permanent *a priori* categories by which it is formed. On the other hand, the maxim stresses that we should attempt to trace every single *a priori* back to its source in experience. *Money became, then, the autonomous manifestation of the exchange relation*. Whatever the historical origins of money may be – and this is far from being a point of consensus – one fact at least is certain: money did not suddenly appear in the economy as a finished element corresponding to its pure concept. *Money can have developed only out of previously existing values in such a way that the quality of money, which forms part of every exchangeable object, was realized to a great extent in one particular object*. The function of money was at first still exercised, as it were, in intimate association with its

previous value significance. A good example of this is found in the use of gold as the standard economic unit. A gold standard is a monetary system in which the standard economic unit of account is based on a fixed quantity of gold. Three types of standards can be distinguished: *a) specie, b) bullion, and c) exchange*. In the gold specie standard the monetary unit is associated with the value of circulating gold coins or the monetary unit has the value of a certain circulating gold coin, but other coins may be made of less valuable metal. The gold bullion standard is a system in which gold coins do not circulate, but the authorities agree to sell gold bullion on demand at a fixed price in exchange for the circulating currency. Finally, the gold exchange standard usually does not involve the circulation of gold coins. The main feature of the gold exchange standard is that the government guarantees a fixed exchange rate to the currency of another country that uses a gold standard (specie or bullion), regardless of what type of notes or coins are used as a means of exchange. This creates a *de facto* gold standard, where the value of the means of exchange has a fixed external value in terms of gold that is independent of the inherent value of the means of exchange itself. Most nations abandoned the gold standard as the basis of their monetary systems at some point in the 20th century, although many still hold substantial gold reserves.

If the economic value of objects is constituted by their mutual relationship of exchangeability, then money is the expression of said relationship. *Money is the representative of an abstract value*, not a concrete one. By accepting to exchange, or to degrade, the environment for monetary gain is to consider that something abstract (or subjective) is concrete (or objective). Lutzenberger used to say that the environment can survive without us and our economy. However, we and our economic system

cannot survive without the environment. This is a fact, objective and concrete – not an abstraction. According to Simmel, the money price of a commodity indicates the degree of exchangeability between this commodity and the aggregate of all other commodities. For example, if the price of a quantity of A (wheat) rises from five to ten dollars, while the prices of the commodities of B (barley), C (corn), D (soybeans), and E (rice) remain stable, this represents a change in the relationship between A and B, C, D and E – in which wheat has now become more valuable than the other commodities. Therefore, the money price is related to the rate of exchangeability between things and it will be constructed upon that relationship – *meaning it will be relative, never absolute*.

> Money is simply 'that which is valuable.' All other objects have a specific content from which they derive their value. Money derives its content from its value; it is value turned into a substance, the value of things without the things themselves.[70]

Money is measured by the goods against which it is exchanged and also by money itself. Not only is money paid for by money, as the money market and interest-bearing loans show, but the money of one country becomes the measure of value for the money of another country, as illustrated by foreign exchange transactions. The interesting thing here is that *what is eventually measured as value is not money, which is merely the expression of value, but the objects, and changes in price signify a change in their relation to each other*. According to Simmel, this would be a mistaken conceptual realism, one that makes people believe that they experience the value of things by their reduction to a general denominator of value, by reference to a center of value where values present themselves as quantitatively different, but basically of the same kind. A

[70] Simmel, Georg. *The Philosophy of Money*. Third enlarged edition. Edited by David Frisby. Translated by Tom Bottomore and David Frisby. London: Routledge, 2004, p. 121.

high degree of sensitivity distinguishes very precisely between the amount of satisfaction that a certain possession provides, through which it becomes comparable and exchangeable with other possessions, and those specific qualities beyond its eudaemonistic effects, which may make it just as valuable to us and in that respect completely irreplaceable. For example, if I am consciously choosing a briefcase full of money over an ecosystem or over the home of a particular native people (meaning that said briefcase only exists now because that ecosystem or that indigenous settlement are now gone), I am saying (albeit implicitly) that I value money (which is an abstraction) more than these other things (which are concrete). The question that needs to be asked is: How is it possible for humans to value money (an inherently replaceable medium of exchange) over real, concrete, and irreplaceable things? Especially when the money produced is – as it seems to be the norm in a neoliberal economy – the end result of a morally questionable process of exploitation[71]. All values generated by human subjects would then travel back and forth between two extremes. On the one hand, there is the absolute individual value whose significance does not lie in any general quantity of value that could also be represented by another object, and whose position in our value system could not be filled by any other object, meaning it cannot be simply replaced by money – for instance, a human life. On the other hand, there is that which is clearly interchangeable, for instance, a bicycle or a table. Between these two poles things are arranged according to the degree of their replaceability, *their position being determined by the extent to which they are replaceable and by the variety of objects that can take their place*.

[71] Such exploitation can relate to humans, non-humans, or the environment.

> *The absence of any inherent worth in an object cannot be more distinctly expressed than by substituting for it, without any sense of inadequacy, a money equivalent* (emphasis added). Money is not only the absolutely interchangeable object, each quantity of which can be replaced without distinction by any other; it is, so to speak, interchangeability personified.[72]

Into this stream, which pervades the strictly separated objects and controls their value significance, money entered in order to compensate for the threatened interruption. *By giving money for an object that I want to consume, I fill the gap in the value movement that results, or would result, from my consumption*. Money facilitates such exchange while, at the same time, increasing the distance between subjects and objects. Making it easier for the economic system to overlook and disregard the detrimental consequences of negative economic externalities, for instance. Things were: A piece of land in exchange for services rendered, a goat for a pair of shoes, a jewel for twenty masses for the dead. These were things with which certain value sentiments were so *closely connected that their values might well appear as objectively corresponding to each other*. The more direct the exchange and the simpler the circumstances – so that the position of the object is not determined by a multitude of comparable relations – the more does the value appear as a quality of the object. Exchangeability is the prerequisite of economic values, through which the latter attain their objective mutual relation. It unites in one act the distance and the proximity of what is to be exchanged. It has acquired in money not only its technically perfect means, *but also a separate, concrete existence which embraces all its various aspects.*

Money becomes more and more a symbol of economic value, because economic value is nothing but the relativity of exchangeable objects. This relativity, in turn,

[72] Simmel, Georg. *The Philosophy of Money*. Third enlarged edition. Edited by David Frisby. Translated by Tom Bottomore and David Frisby. London: Routledge, 2004, p. 124.

increasingly dominates the other qualities of the objects that evolve as money, until finally these objects (whatever they are) are nothing more than embodied relativity. The philosophical significance of money is that *it represents within the practical world the most certain image and the clearest embodiment of the formula of all being, according to which things receive their meaning through each other, and have their being determined by their mutual relations*. Thus, money becomes (for the better or for the worse) the adequate expression of the relationship humans have to the world, which interweaves all singularities and, in this fashion, creates a new reality, in which everything becomes replaceable – humans, non-humans, the environment, it does not matter who or what.

Money, and everything that is measured by it, may be completely different, but they would have to coincide in the one point that they both have value (in the case of money, such value would be instrumental and not intrinsic). Hence, it is claimed that money has to have the quality of value because it is compared with values and enters into a quantitative equation with values. I think that commodities and money should not be measurable by each other in general. Evoking Aristotle, the unsold commodity is merely a possible commodity – not yet an actual one. The same thing happens to money. It only becomes ‘real (or actual) money’ when it buys something, when it exercises the function of money. The commodity becomes a commodity only when it is sold. Until that time, it is only a possible object for sale, an ideal anticipation. From an economic point of view, the environment would ‘spring into existence’ only when it is exchanged for money or when profit can be made from it. It is possible to exchange the most valuable things against a printed form of money only when the chain of purposes

is very extensive and reliable and provides us with a guarantee that what is immediately valueless will help us to acquire other values. I believe that nobody would be stupid enough to exchange something valuable for something that is valueless, unless he/she is sure of being able to convert the latter into values again. The point I am trying to make here is that *money could not have developed as a means of exchange or as a measure of value unless its material substance had been wrongly experienced as immediately valuable* – and we, the evaluators, were the ones responsible for such a transition. Thus, ecological systems can be traded, or exchanged, for soybean crops or pastures to feed the cattle. The endpoint of the chain of exchange becomes distant – far away from the point of origin. The significance of money should only be to express the value relations between other objects. *The problem is that, from a means, money became an end in itself.* Or, echoing Lutzenberger, Gross Domestic Product, from being one among many other indexes, becomes the central, the most important one. The GDP index became the standard, it became the norm.

3.4 From Quality to Quantity

The aim of state policy in earlier times was to acquire as much land as possible and to populate it with as many people as possible. Brazil's history is a good example of that mindset – a history which Lutzenberger was well aware of. Until the eighteenth century, it did not occur to any statesman that real national greatness could be promoted in any other way than by the acquisition of new territory. This means nothing but expansion of said territory, and yet again, this is strongly related to the colonialism of old. The institution of money depends upon this insofar as money represents pure

quantity in a numerical form, regardless of all specific qualities of a value object. An account from ancient Russia illustrates a very characteristic *transition from the qualitative to the quantitative symbolic representation*.

> Originally, marten furs served as a means of exchange. As trade developed, the size and quality of individual pelts lost all significance for their exchange value; each pelt simply equaled any other, and *only the number of pelts mattered* (emphasis added). Eventually only the tips of the pelts were used as money, and finally pieces of leather, probably stamped by the government, circulated as a means of exchange. This clearly illustrates how the reduction to a quantitative viewpoint supports the symbolization of values, which is the basis for the genuine realization of money.[73]

This is precisely what Lutzenberger criticized about an economic index such as the GDP. Quantity takes the place of quality. The value of money can only exist in co-ordination with all other values. Money, by itself, does not have an intrinsic value. However, money is also not completely valueless. *Money has acquired the value it possesses as a means of exchange. If there is nothing to exchange, money has no value.* If there was no environment, if there were no natural resources, if there was no substratum whatsoever, what would the value of money be? Would our economic system be able to exist? Economic value is originated by the derivation from primary, directly experienced values, by weighing the objects in which values are incorporated against each other, so far as they are exchangeable. *The idea of money is a striving toward the ideal of pure symbol of economic value which is never attained*, simply because, at least in my opinion, there are things that cannot (or should not) be replaced by money. That is why a recent idea for building a resort in the Grand Canyon was

[73] Simmel, Georg. *The Philosophy of Money*. Third enlarged edition. Edited by David Frisby. Translated by Tom Bottomore and David Frisby. London: Routledge, 2004, p. 150.

rejected. Can the Grand Canyon have a price tag? The answer should be “no.” Why not? Well, the Grand Canyon is absolutely unique and irreplaceable, money is not.

The specific quality of money becomes a basis for the divergence between the individual and the social interest, which has previously coincided to a certain extent. Only through the fact that the value of things became detached from the objects and acquired an independent existence in a specific substance, is it possible for money to develop interests, movements and norms that, on occasion, act contrary to those of the symbolized objects. *One should recognize that money, whatever it represents, does not have a function, but is a function.* Thus, money is a means and should not be an end in itself.

> Outside exchange, money has as little meaning as have regiments and flags outside the needs of communal attack and defense, or as have priests and temples independently of communal religiosity.[74]

Yet, humanity has been making a conscious choice of exchanging the environment for money. Money is totally indifferent to the objects because it is separated from them by the fact of exchange. However, humans will value some things instrumentally and others intrinsically. Furthermore, exchange in itself antedates the development of money. The earliest economies were gift economies and after that barter economies. Therefore, exchange is a fundamental aspect of who we are as humans and I am not trying to problematize exchange *per se*. My argument concerns money, not exchange in itself. The transition from a gift economy to a barter economy and then to a money economy happened in the following way: after the gift and the barter economies, a kind

[74] Simmel, Georg. *The Philosophy of Money*. Third enlarged edition. Edited by David Frisby. Translated by Tom Bottomore and David Frisby. London: Routledge, 2004, p. 176.

of pre-money economy emerged: precious metals like gold and silver, which were first just commodities like any other, began to be surrogates for other commodities and to mediate exchanges of these other commodities. After this first step, pure money (an abstraction) emerges. Pure money is not a commodity in and of itself and would be worthless if the money economy collapsed, away from the concreteness and qualitative differences among things. Human economy cannot exist in a vacuum, after all. The last stage in this process happened when money itself became a *transcendent commodity, that is, a means becomes an end beyond all other ends*. This paved the way to severe inequalities and injustices because, while no one would amass far more grain than they could possibly eat or blankets that they need for warmth, people amass far more money than they can use as a medium of exchange. The problem with this mindset is that money distances them from the actual things that have a qualitative value (nutritious food, clean water, etc.). Moreover, money's abstract and uniform nature means that the only difference is more or less, obscuring the qualitative differences among the things priced. Then, as a consequence of how the capitalist system was set, money improperly expands its grip so as to price also that which should not be priced, for instance, things of intrinsic or inherent value. The end result was that people – thanks to money becoming a transcendent end in itself – started to exchange things of real instrumental value (clean water, nutritious food) and things of intrinsic value (human beings, the environment, etc.) for money.

What money mediates is not the possession of an object but the exchange of objects. It is restricted to being a pure means and a tool in relation to a given end, *has no purpose of its own, and functions impartially as an intermediary in the series of*

purposes. Since money is the ultimate trading tool, it becomes, in a strange way, also the final purpose to a lot of people – it is their goal, their aim, their *telos*. Hans Sachs once said that “Money is the secular God of the world.” This refers back to the basic reason for the position of money. From an absolute means, money became elevated to the psychological significance of an absolute purpose. When people usually think about money, they do not tend to ask “what” and “how” (or even “why”), but simply “how much”. *The only thing that matters is the quantity*. This quality of money, or lack thereof, first emerges in all its psychological purity, however, only after money has been acquired. Only when money is transformed into positive values does it become evident that *the quantity exclusively determines the importance of money, namely, its power as a means*. The limitation of the interest in money to the question: ‘How much?’ – or, in other words, the fact that its quality consists exclusively in its quantity – has many important and deleterious consequences for both human beings and the environment.

If a social class or an individual is condemned to a low standard of living and therefore knows only crude and ordinary entertainments and forms of relaxation, then a somewhat higher income will only have the effect of extending these enjoyments still further. Yet, if the income rises dramatically, the demands for entertainment will move into a completely different sphere. If, for example, a bottle of gin is the main pleasure, then higher wages will lead to an increased consumption of gin. However, if wages are raised still further and more considerably, then the desire for very different categories of enjoyments will follow. And I am not saying that with higher wages people will necessarily start buying a more expensive gin. They will start looking for other, and more expensive, things other than just gin: a boat, a new car, a private jet, etc. This

does not imply that if a thing is more expensive, it would mean that said thing will be better than its cheaper counterpart. Price and quality should not be conflated into the same thing. People, in general, pay the price they are willing to pay in exchange for goods or services. Some might buy a very expensive bottle of wine while others will prefer not to spend half of their income on some fancy wine. It depends on what they will value. Within the historical-psychological sphere, *money by its very nature becomes the most perfect representative of a cognitive tendency in modern sciences as a whole: the reduction of qualitative determinations to quantitative ones*.

> The fact that more things are available for money and, bound up with this, the fact that money becomes the central and absolute value, results in objects being valued only to the extent to which they cost money and the quality of value with which we perceive them appearing only as a function of their money price.[75]

Pure economic value has been embodied in a substance whose quantitative conditions bring about all kinds of peculiar formations without being able to bring into being anything other than its quantity. *Thus, the reduction of quality to quantity achieves its highest and uniquely perfect representation in money. Money becomes the pinnacle of a cultural historical series of developments which determines its direction.* The example of the tar sands, hydraulic fracturing, the Keystone pipeline, deep-sea and Arctic drilling, and the huge amounts of CO_2 and CH_4 that are released each year in the atmosphere are good examples of that mindset. We seem to be trading quality and objects with instrumental and intrinsic values (the environment) for quantity (money and profit). There was a time when every change in personal direction or position meant, concomitantly, a corresponding change in economic interests. Today, that does not

[75] Simmel, Georg. *The Philosophy of Money*. Third enlarged edition. Edited by David Frisby. Translated by Tom Bottomore and David Frisby. London: Routledge, 2004, p. 279.

seem to be the case anymore. People see, touch, and are aware of the supreme mediator, money. However, they do not always see the consequences of such choices. They are not fully aware of what this process of infinite exchangeability is causing to the planet. Thanks to the mediation performed by money, the environment became distant from us. And, according to that chain of exchange, the farther away the object becomes from the subject, the harder it gets for the subject to care about the object – whatever that object may be.

3.5 Conclusion

The complete amorality of money is reflected in our social culture, which is itself greatly determined by money itself. Perhaps the power of the socialist ideal is partly a reaction to this. *Socialism (at least in theory) sought to abolish the individual's isolation in relation to the group as embodied in the form of the purposive association*, and at the same time it appeals to all the innermost and enthusiastic sympathies for the group that may lie dormant in the individual. Money, as the most mobile of all goods, represents the pinnacle of this tendency to distance ourselves from the things being exchanged. Money is really that form of property that most effectively liberates the individual from the unifying bonds that extend from other objects of possession. *In other words, the individual is chosen over the collective*.

> The very word 'interest' is itself recent, originally an accounting technique: the Latin word *interest* was written on account books against the sums of interest that had to be collected. In ancient systems of morality of the most epicurean kind it is the good and pleasurable that is sought after, and not material utility.

> The victory of rationalism and mercantilism was needed before the notions of profit and the individual, raised to the level of principles, were introduced.[76]

Simmel called attention to the increasing inadequacy of money, though. In the earliest periods of Jewish history, when money was already being used in exchange for women and for atonement, contributions to the temple always had to be delivered in kind. Whoever brought their offering in money had to exchange it again into commodities at the appropriate place. Similarly, in Delos, the ancient sacred shrine, the ox remained for a long time the standard unit of monetary value. Among the medieval journeymen's associations, the older, church-related brotherhoods imposed punishments for specific offenses in terms of wax (used to make holy candles). *The secular associations, on the other hand, imposed punishments mostly in money*. Along the same lines is the ancient Hebrew regulation that stolen domestic animals have to be replaced in duplicate, but if they are no longer available they have to be paid for in money four or five times their value. *Only a disproportionately inflated fine could substitute for the replacement of the original goods.* The hefty fine (a record 20.8 billion dollars) that BP (British Petroleum) will have to pay for the oil spill it was responsible for in the Gulf of Mexico is a good example. However, even though such a fine sends a strong message about responsibility over ecological disasters, it also implies that money can be seen as an adequate substitute for the ecosystem that was lost or severely impacted. It would be an acceptable 'trade-off.'

Money, no matter how much it translates impulsive-subjective modes of behavior into supra-personal and objective normative modes, *is none the less the breeding*

[76] Mauss, Marcel. *The Gift: the form and reason for exchange in archaic societies*. London: Routledge, 2002, p. 97.

ground for economic individualism and egoism. This can be exemplified by what Nestlé is doing with the water in a drought-stricken California. Water should be a public good. However, Nestlé is extracting water from a state that is going through an extended drought and selling it back to the people of California, thus generating huge amounts of profit in the process. Where objects are conceived in their direct relationship to other objects, that is, where they cannot be reduced to the common denominator of money, a much more spontaneous evaluation, a comparison of one unit against another, is to be found. Exactness, precision, and rigor in the economic relationships in life, which naturally affect other aspects of life as well, run parallel to the extension of monetary matters, though not exactly for the benefit of a better style of living.

However, there are positive examples of how the preservation of the environment and profit can coexist. A new study commissioned by the Pew Charitable Trusts is touting the economic value of “quiet recreation” on Bureau of Land Management lands, a value that, according to the study, rivals that of other commercial revenues such as logging. Conducted by independent firm ECONorthwest, Quiet Recreation on BLM-Managed Lands: Economic Contribution 2014 is a first-of-its-kind study to focus on the economic value behind quiet recreation activities – or, more simply put, non-motorized recreation. The study was significant not only in being the first to quantify the effects on the local economy, but also in the findings, which showed billions of dollars in economic output. The BLM manages 246.4 million acres of public land, most of which is found in the 11 western states – Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington and Wyoming, as well as Alaska. In 2014, people took more than 60 million recreational visits to BLM-managed lands, 38 million of which

were for non-motorized activities such as camping, hunting, hiking and fishing. Those quiet recreation visits resulted in $2.8 billion in overall spending impact, $1.8 billion in total direct spending within 50 miles of sites and $800 million in generated personal income to individuals tied to quiet recreation on BLM lands. Home to 15.7 million acres of BLM lands, Oregon saw 4.9 million visits, resulting in $214 million in overall spending impact, $185 million in total direct spending within 50 miles of recreation sites and generating $70 million in personal income for individuals tied to quiet recreation. The problem is that initiatives like this one are still few and far between in the current neoliberal model of economics, which still tends to put the earning of profit above everything else. The “quiet recreation” initiative, on the other hand, is also concerned with other elements other than just profit itself, showing that a change within the system is much needed – and also possible.

I believe I have demonstrated in this chapter that money results in an elimination of all personal nuances and tendencies, meaning that it objectifies all transactions, increasing the distance between what is exchanged, who exchanges it, and the medium used to perform said exchange. That the number of relationships based on money is constantly increasing, and that the significance of one person for another can increasingly be traced back, even though often in a concealed form, to monetary interests. In this way, a barrier between people – and between people and the environment – was created. This barrier, unfortunately, seems to have become almost indispensable for the modern way of life. The same function that money has for our current life style also penetrates even more deeply into the individual human subject, not as the distancing from other persons but from the material objects of life. *Since the*

emergence of a money economy people are no longer directly confronted with the objects of their economic transactions and choices. Their knowledge about said transactions is disrupted through the medium of money and their own objective significance becomes dissociated from their consciousness because it is more or less excluded from its proper position in their constellation of interests by their money value. The result of that increasing distancing from nature and that particularly abstract existence that urban life, based on the money economy, has forced upon us. This issue can be illustrated using the following explanation. *Money is, in a sense, similar to our technological progress.* It seems that technology, which is a means – like money is – has become an end in itself. The questions being asked will tend to be 'how?', and 'how much?' – they will rarely be 'why?'

> It is true that we now have acetylene and electrical light instead of oil lamps; but the enthusiasm for the progress achieved in lighting makes us sometimes forget that the essential thing is not the lighting itself but what becomes more fully visible. People's ecstasy concerning the triumphs of the telegraph and telephone often makes them overlook the fact that what really matters is the value of what one has to say.[77]

If one considers the totality of life, then the control of nature by technology (and by economics) is possible only at the price of being enslaved in it and by dispensing with spirituality (not religion per se) as the central point of life. To state that we have conquered or controlled nature is a very childish formulation since it presupposes some kind of resistance, a teleological element in nature itself, an animosity toward us. An insuperable barrier of media, technological inventions, abilities and enjoyments has been erected between us and our most distinctive and essential being. Money, as an

[77] Simmel, Georg. *The Philosophy of Money*. Third enlarged edition. Edited by David Frisby. Translated by Tom Bottomore and David Frisby. London: Routledge, 2004, p. 482.

institution of the historical world, symbolizes the behavior of objects and establishes a special relationship between itself and them. The more the life of society becomes dominated by monetary relationships, the more the relativistic character of existence finds its expression in conscious life, since money is nothing other than a special form of the embodied relativity of economic goods that signifies their value.

That being said, and to conclude this chapter, *the development of the mature money economy has played an important role in the separation of subject and object, with its impersonality and colorlessness*. It has contributed to the movement of modern culture in two contradictory directions: first, a social levelling and creation of ever more comprehensive social circles and, second, the development of the most individual aspects of the personality. *This contradiction has, in turn, contributed to the unrest and dissatisfaction of modern times through a shift from qualitative to quantitative valuations and, hence, to a devaluation that has contributed to the development of the blasé attitude towards other humans and also towards the environment*. Ends are replaced by means to the point that the economic system becomes some sort of 'whimsical ruler.' When everything can be replaced by money, value will be attached to it – not to the world itself, not to humans, and not to the environment. Value will be ultimately attached to money.

CHAPTER 4

THE INFLUENCE OF HUMAN ECONOMY ON THE ENVIRONMENT

4.1 Introduction

One important detail that used to be neglected in the past but that it is now starting to get more visibility is the fact that humans are inescapably components of ecosystems. The bucolic and idyllic conceptualization of nature as perfectly balanced (meaning that there would be no human influence whatsoever) helped us to conceive the environment as something to be protected and respected. However, this idea has been recently challenged and is no longer considered to be the norm. After all, it is incredibly rare to find an ecosystem today that remains untouched or not related to human activity. A non-equilibrium paradigm emphasizes the openness and historical contingency of ecological systems. Such a viewpoint is much more accommodating to the role of humans than the older view embodied in the balance of nature idea. The balance of nature paradigm would imply that if either a forest or a prairie were left alone, they would progress to a stable equilibrium and self-perpetuating state, and that conversely, once there must have been a pristine forest or grassland until European settlers devastated it, which was not entirely true. Most of the prairie openings and even large anomalous areas like the Kentucky Blue Grass country are a consequence of Native American burning. Their goal was to extend the range of game by continually burning the forest edge and also by burning abandoned fields to prevent forest regeneration. That is how the buffalo was able to spread through the country. Of course, the direct and more obvious influences humans have over different types of ecosystems have been already recognized: causes, patterns, and the effects of air and water

pollution, habitat destruction, accelerated species extinction, the introduction of invasive species, etc. Many of these issues possess a global scale and are common knowledge by now. However, there are other (and less visible) human-induced ecological effects.

In *Human as Components of Ecosystems: The Ecology of Subtle Human Effects and Populated Areas*, Mark McDonnell and Stewart Pickett[78] divided these effects into three categories: 1) bad, 2) good, and 3) subtle. 'Bad effects' refer to the obvious influences human activities have over ecosystems: a toxic spill in a lake or river, the black smoke that constantly streams from factory chimneys, the damming of a river, etc. 'Good effects' refer to what can be observed in and around human settlements and how human presence can affect the surrounding ecosystems. This means that not all human interference will be detrimental or pernicious to the environment and that some changes will be inherent to the system. Sometimes ecosystems can be benefited by the presence of humans – although this does not seem to be the norm. My focus will reside on the third type of effect, though. 'Subtle human effects' comprise indirect and historical effects, biological legacies, lagged effects, and also unexpected actions at a distance. *It is my belief that economic effects and economic externalities belong to this third category of human influence. This would be the case because economic behavior tends to affect an area or an ecosystem over a long period of time and the effects can be observed, usually, only after a couple of decades have passed*. Humans, after all, are an exceptionally powerful biotic factor. According to Wolf-Dieter Grossmann, these effects have the following characteristics: a) indirect effects occur when the focus is on two ecological entities but the outcome of interaction between them is mediated by a

[78] McDonnell, Mark J.; Pickett, Steward T. A. *Human as Components of Ecosystems: The Ecology of Subtle Human Effects and Populated Areas*. New York: Springer, 1993.

third party; b) historical effects are the alteration of a contemporary interaction as the result of a prior state of a system (forests today are, at least in part, a result of human influence in the past); c) biological legacies are persistent modifications in the biotic component of the environment (for instance, wood debris in a stream); d) an echo of the past is a historical effect that is apparent only sporadically (in the case of the destruction of a species refuge used only during a period of drought); e) lagged effects are those triggered some time before they appear (climate change, for example); f) unexpected action at a distance (also related to climate change). Human economy will traverse (and be present in) all these aspects. The bottom line is that humans[79] will function as important parts of ecological communities, ecosystems, and landscapes – and that the current economic system will play a major role in affecting and transforming them.

> Furthermore, the great question, of whether humankind is part or apart from nature, suggests the need to determine the correct proportion of anthropocentric and nature-centric explanations in any given situation. Even economic models take a fundamental but hardly recognized stance about the relationships of people to nature.[80]

Even if the word 'Ecology' was first used by Ernst Haeckel in 1866 to describe a branch of biology that dealt with interrelationships, it was only after the 1960s and 1970s that people started to realize an important aspect of ecology. The most pressing issues (ecological or otherwise) do not stand in isolation and usually cannot be solved in isolation. In other words, things are connected and intertwined. Nevertheless, it is important to recognize that some things are more strongly connected to some things than they are to other things. After the 1960s and 1970s, relative strength of connection

[79] Bearing in mind the ubiquity of human population, both now and in the past – but especially now.
[80] McDonnell, Mark J.; Pickett, Steward T. A. *Human as Components of Ecosystems: The Ecology of Subtle Human Effects and Populated Areas*. New York: Springer, 1993, p. 8.

became an important focus of ecological studies. Moreover, food webs and the concept of interaction networks provide a good example of this. The relatively recent development of ecosystem ecology based on the work of Raymond Lindeman is related to this scenario as well – especially a paper he published in 1942 called "The trophic-dynamic aspect of ecology."

Donald Worster, in *Nature's Economy: the Roots of Ecology*, stressed that some ecologists, possibly unwillingly, ended up conflating ecology with economics. Charles Elton's food chain could be then viewed as an economic model; August Thienemann spoke of producers, consumers, and reducers[81]. Both in nature and in capitalist societies, competition and cooperation[82] are important elements and their roles influence the outcome of the entire system[83]. If one is absent, the other will not work properly or will cause a considerable amount of shortcomings to the entire system. The relative importance of each varies by species pairs, ecosystems, and time periods, though. Be that as it may, it is not surprising that there are some theoretical similarities between economics and ecology. This does not mean that capitalism is 'natural' and, therefore, should always exist in its present configuration. Nevertheless, it seems to be clear that economic models and ecological models should not be subsumed into the exact same paradigm. They are not the same thing. *Capitalism – which is obviously not natural – encourages overconsumption, pollution, great disparity in wealth, and indefinite population growth. All of these aspects are clearly unecological.* These

[81] Carbon, in a sense, is the currency of ecosystems because its transformation in associated energy is fundamental for biomass development and conversion.
[82] However, and sadly, cooperation often receives much less attention than competition, even to the point of going unnoticed.
[83] However, Bertness and Calloway, in *Trends in Ecology and Evolution* (1994), discuss a few more recent ecosystem models that rely on mutualism or at least commensal interactions. For example, the stress-gradient model predicts the relative importance of beneficial versus antagonistic interactions in plant communities relative to environmental stress and grazer pressure.

consequences were one of the main causes for Lutzenberger's criticism of our current economic model.

4.2 The Web of Life and the Human Economy

Charles Darwin believed nature to be a web of complex relations and that no individual organism or species could live independently from their environment. Life is only possible within that web. This is similar to what Aristotle thought about human beings. Humans would be the political/social animal (*Zoon politikon*). People need other people. For Darwin, we are all "netted together." Exemplifying the relationship between humans and nature, Arthur Tansley wrote in 1935 that:

> It is obvious that modern civilized man (sic) upsets the 'natural' ecosystems or 'biotic communities' on a very large scale. But it would be difficult, if not impossible, to draw a natural line between the activities of human tribes which presumably fitted into and formed parts of 'biotic communities' and the destructive human agencies of the modern world. Is man (sic) part of 'nature' or not? Can his (sic) existence be harmonized with the concept of the 'complex organism'? Regarded as an exceptionally powerful biotic factor which increasingly upsets the equilibrium of pre-existing ecosystems and eventually destroys them, at the same time forming new ones of very different nature, human activity finds its proper place in ecology.[84]

Perhaps it is time to move away from the usual dichotomies of uncultivated/cultivated, nature/culture, and wilderness/settlement. Instead, why not talk about gradients of human impact? For instance, that would be the case with 'cultural landscapes,' which would be created out of a natural landscape by a cultural group. Culture would be the agent, the natural area the medium, and the cultural landscape the result. Humans have found an ecological niche in almost every part of the Earth, after all. *Ecosystems do not*

[84] Tansley, Arthur. *The Use and Abuse of the Vegetational Concepts and Terms*, 1935.

exist in isolation from their surroundings – human created/influenced or not. Human beings work in the same way. They live in an interconnected world, in which an incredible number of ecosystems co-exist and co-constitute each other. However, humans have an unparalleled and unprecedented amount of power when it comes to change or to alter their environment. The charcoal industry is a good example of this power. Between 1855 and 1910 around 4800 square miles of forest were felled in the United States in order to produce charcoal to fuel its growing capitalist industry. However, clearing for agricultural purposes represented an even bigger environmental threat. The charcoal area accounted for only 0.8% in comparison with the forest area cleared for agriculture. Along the lines of a 'subtle effect,' agricultural clearing *was considered natural and part of the progress*, in the same way that felling forests for charcoal was also considered natural and part of the progress. Natural and human forces operate in tandem and what or how much can be attributed to either is often difficult to determine. However, this is not always the case.[85] One of the most pernicious aspects of subtle effects is their ability to escape attention until they reach a threshold that makes them obvious. Nevertheless, a simple threshold could easily be reversed with an equal change in the opposite direction. This does not happen when hysteresis is present, which has two change points (or tipping points) separated by a zone of instability. Beyond a certain point, though, they become difficult to be managed or controlled.

[85] There is quite a lot of data to corroborate the theory that early hunter-gatherers eradicated the megafauna of the Western Hemisphere. Another example is the introduction of potato (*Solanum tuberosum*) and maize (*Zea mays*), which altered land uses and supported increased populations in many parts of the planet.

If one takes into account the past 300 years, the Industrial Revolution will represent the watershed of change in the global nature/culture (or nature/society) relationship. On the other hand, if one takes into account the last 500 years, the watershed will be represented by the Columbian Encounter. It becomes irrelevant which one is chosen, though. *For one, they are interrelated, in the same way colonialism and capitalism are*. *Furthermore, their results today are evident in the rise of mass-consuming societies whose reach in affecting the global environment and specific ecosystems was never higher.* Population, production, and consumption – they are all related to the current economic paradigm. It seems clear that the operation of free markets (via the so-called 'invisible hand') encourages degradation through rapid depletion and unsustainable land use geared towards immediate profits. Turner and Meyer adopt a distinction between human beliefs (either correct or mistaken) about the environment and how the environment actually operates, and attitudes or cultural valuations regarding the environment and the subsequent behavior that arises from it. Both can be considered as driving forces of ecological change.

> Erroneous beliefs regarding the richness of tropical rainforest soils under permanent cultivation, it is sometimes claimed, help to drive excessive clearing. Attitudes that accord cattle ranching high prestige in Central American societies have likewise been ascribed part of the responsibility for a degree of forest conversion to pasture exceeding what the market would dictate; other attitudes cause grass to be maintained on lawns, cemeteries, and other such locales in water short areas (e.g., the American Southwest).[86]

In an interesting case, Japan was only able to successfully reforest large areas of the country thanks to indirect (and subtle) effects. While Japan was going through said

[86] Meyer, William B.; Turner, B. L. "Environmental Change: The Human Factor." *Human as Components of Ecosystems: The Ecology of Subtle Human Effects and Populated Areas*. Eds. Mark J. McDonnell and Steward T. A. Pickett. New York: Springer, 1993, p. 47.

reforestation process, Japanese companies were concomitantly clearing forests in Southeast Asia to satisfy domestic demand. In Japan's behavior there is also an echo of the colonialism of old. Colonialism still exists, it has just changed costumes. In a nutshell, human responses to environmental changes will be strongly related to the perception of the extent to which said changes are damaging or innocuous to society. *The implications for how human economic behavior affects the environment can be better seen in the nature of economic models and how they are used to formulate policy*. *The body politic often makes decisions and creates laws or principles based on the apparently precise prognosis of economic models* (and the GDP index is directly related to this). Reliance on these models will generate policies – which will, therefore, affect human behavior and human choice – based on the assumptions of the models that produce these estimates. These assumptions, then, become embedded in the behavior they are used to predict. This represents the good old 'self-fulfilling prophecy' paradigm. The more is known about the way our economic system works and what its consequences are, the greater our ability to understand what is the role human presence and behavior play in an ecosystem will be. The economic system, in its present configuration, is one of the main drives behind environmental degradation and social inequality.

4.3 Is the Current Economic System Flawed?

Neoliberal economics, which is the model most countries currently follow, has six fundamental tenets according to Jane V. Hall[87]. First we have 1) optimization: which stresses that the pursuit of individual self-interest leads naturally to the best possible outcome for the entire system, given resource constraints. This means that if the individuals are free to pursue their self-interest, the outcome would be optimal. Related to this is maximization (more), which in turn will be perceived as the same as optimization (better) – even though they are clearly not the same thing. Consumers maximize satisfaction; producers maximize profits (by minimizing costs). Next we have 2) value: usually, what something is worth is measured by how highly it is valued by humans – and generally they recognize only those values that can be exchanged by money (along the lines with Simmel's thought). Nonetheless, and unfortunately, this is the basis for the price system of exchange and, as a direct consequence, for human production and consumption. *Evoking Simmel again, one could say that the value humans assign to the economy ranks higher than the value they assign to the environment or even to other humans.* For Robert Costanza and Herman Daly, because many ecosystem services are not captured by commercial markets or cannot be quantified in economic terms, they are generally undervalued and overlooked in decisions regarding the use of natural capital[88]. After that comes 3) rationality: the assumption that all players know what is the best course of action for them and for all the others. The information, though, must be complete, accurate, and fully understood.

[87] Hall, Jane V. "The Iceberg and the Titanic: Human Economic Behavior in Ecological Models." *Human as Components of Ecosystems: The Ecology of Subtle Human Effects and Populated Areas*. Eds. Mark J. McDonnell and Steward T. A. Pickett. New York: Springer, 1993.
[88] Costanza, Robert; Daly, Herman. "Natural capital and sustainable development." *Conservation Biology* 6: 37–46.

The advocates of the 'invisible hand of the market' tend to forget that the decision-making process humans go through is based on making choices that result in the most optimal level of benefit or utility for the individual. Furthermore, most conventional economic theories are created and used under the assumption all individuals taking part in an action/activity are behaving rationally, which is not always the case. Moving on we have 4) marginalism: it says that past decisions to invest, produce, or consume will influence current and future prices (historical trends, the Industrial Revolution, or Brazil's monocultural past as a colony, for instance). *This means that the positions assigned to the peripheral countries in the global economic system will hardly change,* which would be some sort of 'diet colonialism.' Another point Lutzenberger constantly tried to make clear. Almost closing the list, there is 5) impersonal transactions: a good example of this can be perceived when people buy an orange. They will tend to be nowhere near the grove where that orange grew – and they are probably miles and miles away from the diverted river used to irrigate said grove. *This removes humans from the environment itself, echoing Simmel and the distance between subjects and objects that money generates as the ultimate medium of exchange.* The last item on the list is 6) indefinite and unlimited growth: this is, arguably, the most pernicious and influential tenet of them all. Taking a quick look at what happens in the world today one might assume that economic growth and the use of natural resources could both keep constantly increasing. In other words, there would be no cap or ceiling whatsoever for such increase. Costanza[89] criticized the position that the associated increased rate of resource mobilization and that increased pressure on natural sinks and other species

[89] Costanza, Robert, et al. "The value of the world's ecosystem services and natural capital." *Nature* 387: 253–260, 1997.

are both inevitable and unlimited. In response to this mindset of an ever-increasing use of natural resources, the 'degrowth movement' was created. Sustainable degrowth is a downscaling of production and consumption that would increase human well-being and enhance ecological conditions and equity on the planet. It calls for a future where societies live within their ecological means, with open, localized economies and resources more equally distributed through new forms of democratic institutions. Such societies will no longer have to "grow or die." Material accumulation will no longer hold a prime position in the population's cultural imaginary. The primacy of efficiency would be substituted by a focus on sufficiency, and innovation will no longer focus on technology for technology's sake but will concentrate on new social and technical arrangements that will enable us to live convivially and frugally. Degrowth does not only challenge the centrality of the GDP index as an overarching policy objective but proposes a framework for transformation to a lower and sustainable level of production and consumption, leaving more space for human cooperation and for ecosystems[90]. It is interesting to notice that this movement is extremely new. For instance, the word 'degrowth' is not recognized on Microsoft Word. I just added it to the dictionary, though. That being said, and on top of the mistaken assumption of unlimited economic growth, its proponents believe that better technologies will always be invented, thus reinforcing humanity's apparent unlimited faith in technology – another aspect heavily criticized by Lutzenberger. This can be related to the Gross Substitutability Axiom (GSA), which stresses that when a resource is depleted its price will tend to rise, stimulating entrepreneurs to invest in discovering or inventing a substitute that will be cheaper. Sometimes it works, sometimes it does not. A good example is copper, which was used

[90] http://www.degrowth.org/

for telephone and electrical wires. As it grew scarcer and more expensive it was replaced by fiber optics. There was a problem with this situation, though. Before moving from copper towards fiber optics, the exploration of copper mines created both severe ecological and social problems. Most mines, by the way, whether coal, iron, gold, or silver, tend to create the same problems wherever they appear. In other words, there would be no need for people to worry about the exploitation of resources, about production, and about consumption. After all, humans will always find a way to maintain their life style intact.

> […] that even a larger population can (will) always be materially better off than its antecedents were as long as growth is sustained. It also appeals to economists who would otherwise have to face the messy issues of equity, distribution[91], and anthropocentric values. It is not a fluke that many winners of the Nobel Prize for economics were recognized for their work in championing the virtues and possibility of perpetual growth or demonstrating the mathematical mechanisms by which it can take place (Friedman, Samuelson, and Leontief, to name a few).[92]

That being said, let us take a look at what, in my opinion, are some of the inherent flaws of neoliberal economics. *First of all, it turns out that the consequences of individual choice do not all fall on the person who made it*. I already spoke about economic externalities and this is a great opportunity to explain the concept in further detail. Imagine that I just decided to cut down a tree and I will pay 200 dollars for someone else to do it. For me, the price will be 200 dollars (coming out of my pocket). However (and this is also exemplified by Simmel and criticized by Lutzenberger), the

[91] Delfim Netto (a former Brazilian Minister of Economy) has famously stated that: "First we have to make the cake grow, then we can divide it." This is trickle-down economics and simply does not work. It will keep creating more and more inequality and disparity between the very rich and the very poor.
[92] Hall, Jane V. "The Iceberg and the Titanic: Human Economic Behavior in Ecological Models." *Human as Components of Ecosystems: The Ecology of Subtle Human Effects and Populated Areas*. Eds. Mark J. McDonnell and Steward T. A. Pickett. New York: Springer, 1993, p. 55.

total cost (unhidden cost[93]) has to include also the loss of habitat for the birds, insects, and other animals. One also needs to take into account soil conservation, shade, reduced heat island effect (if the tree was located in a city, for instance), and the aesthetic values the tree held for people. When I made my decision I never thought about these other external costs (hidden ones, so to speak – and not expressible in economic terms). These costs will, in turn, fall on everybody else – not just me. Maybe I am optimizing things for myself, but what about other people and what about the environment? It will not be optimal for them. However, they did not have a choice in this matter. *It was something I unilaterally did*. This type of behavior can clearly be observed in the pollution of rivers and streams. Some factories do not think twice about dumping their chemical waste into a river. Thanks to a particular and individual decision, both the society and the environment are now paying the price. Everybody should have a right to clean air and clean water, but it only takes one person, or one factory, to pollute them.

Garrett Hardin[94] explained this behavior quite well in his article "The Tragedy of the Commons." The price (i.e., the monetary cost) to dump industrial water in a river tends to be, not surprisingly, zero. The same thing happens with clean but warm water from a power plant that ends up in a body of water.[95] All these events are unpriced and, therefore, do not seem to be taken into account. A factory that wants to maximize its profit will probably select the least costly production process, and the least costly waste management process, as measured in price that must be paid. *There will be, thanks to this mindset, a tendency to use such processes that externalize costs*. Here is where

[93] Cost is used here in a more metaphorical sense and does not represent merely a monetary metric, e.g., money.
[94] Hardin, Garrett. "The Tragedy of the Commons," *Science*, 162:1243-1248, 1968.
[95] We recently witnessed the events that took place in Fukushima, in which radioactive water leaked into the ocean.

policy-making could play an important role in trying to protect the environment, in the form of prohibitive behaviors, laws, and financial penalties – among other measures. Many (if not most) of the biological and geochemical foundations of individual ecosystems are unpriced[96]. Thinking on a global scale, the planet's ecosystems are still also largely unpriced. Let us now consider the following scenario. A ton of coal was just extracted from a mine in Wyoming. The ecological consequences of coal mining are well known to most people. Hence, as clean air and water – as well as grassland and even mountains (in the case of mountaintop removal) – become scarcer, the price of coal will not reflect this. Now there will be an abundance of it. *As a consequence, the price of coal will not rise to stop its extraction (as most neoliberal economists would think).* Nevertheless, all the associated support structures necessary to mining will rapidly become depleted since they are obviously finite.

A good way to solve this conundrum would be to make market prices reflect what society is willing to pay for a product – because that is what is actually paid. It would be the 'real price.' However, this move alone would not completely solve the problem. *If one could transform a 'non-priced' product into a 'priced' one (thus revealing its exchange value), one would have a surrogate for price and the economic models will continue to work just fine*.[97] This is what economists call market failures and they do propose some solutions to address this problem, which typically comes down to 1) cap and trade and 2) taxation. Carbon pricing (cap and trade) is a market-based strategy for lowering global warming emissions. The aim is to put a price on carbon emissions (an

[96] There are ecosystem services and there are ecosystem goods. The first is represented by nutrient cycling, provisioning of clean water, etc. The latter is represented by lumber, fish, etc. Ecosystem services produce a flow when left in place whereas goods are harvested once and are thus gone.

[97] We would have two options, then: 1) price the unpriced and 2) drop the concept of price/profit altogether.

actual monetary value) so that the costs of climate impacts and the opportunities for low-carbon energy options are better reflected in our production and consumption choices. Carbon pricing programs can be implemented through legislative or regulatory action at the local, state or national level. Thus, it would be the job of environmental economists to calculate the real price of deforestation, coal mining, overfishing, etc. However, there is a caveat here. People would have to avoid thinking that by simply putting a price (a monetary price) on everything the problem would be solved. This is economic imperialism, after all. Economic imperialism seeks to expand the boundary of the economic subsystem until it encompasses the entire ecosphere. The goal is one system, the macro-economy as the whole. This is to be accomplished by complete internalization of all external costs and benefits into prices. Those myriad aspects of the biosphere, not customarily traded in markets, are treated as if they were by imputation of "shadow prices" – the economist's best estimate of what the price of the function or thing would be if it were traded in a competitive market. *Everything in the ecosphere is theoretically rendered comparable in terms of its priced ability to help or hinder individuals in satisfying their wants.* Implicitly, the end pursued is ever-greater levels of consumption, and the way to effectively achieve this end is growth in marketed goods and services. Economic imperialism, even though a better alternative than the current economic system, is basically the neoliberal approach coated in green sugar. Furthermore, according to Lynn White[98], *economic models can be taken as reflecting the significant values of a particular society*. These values would be, if one is talking about human beings, based upon an anthropocentric point of view. Public policies are a

[98] White, Lynn. "The historical roots of our ecologic crisis." *Ecology and Religion in History*. New York: Harper and Row, 1974.

direct result of this way of thinking and they in turn determine the way non-market resources are managed. The interesting thing about this is that these same policies will end up influencing human behavior.

> Understanding the human factor is, therefore, based on assumptions that individual maximization optimizes the system, that the past is past, that very simple signals, i.e., prices, encapsulating extraordinarily complex information are sufficient to maintain this optimization process, that human values are captured in such signals which are adequate measures of value, that each economic actor knows what he is doing, and that growth is inevitable, unlimited, and desirable.[99]

Individual maximization will rarely optimize a natural system since growth within any system (natural or not) cannot be unlimited. Optimizing and maximizing are not the same thing. On top of that, all of these elements will end up having an effect (subtle or not). *The problem is that, as political and economic system were developed, all these erroneous assumptions about an unlimited growth became deeply rooted in people's behavior and social imaginary.* Thus, these precepts are now a constitutive part of the body politic as well. More and more economic models are being used to help making decisions in the political sphere. And *since the resulting policies are determinants of economic behavior, the behavior predicted by these same models will become a self-perpetuating prophecy*. The main issue here is that, even if these assumptions are incorrect, they will still influence human behavior.

Perhaps the best way to incorporate the human economic factor into the equation is to ask what human behavior is predicted to be – concerning anything that could possibly affect the environment. After this first step, an analysis of how that

[99] Hall, Jane V. "The Iceberg and the Titanic: Human Economic Behavior in Ecological Models." *Human as Components of Ecosystems: The Ecology of Subtle Human Effects and Populated Areas*. Eds. Mark J. McDonnell and Steward T. A. Pickett. New York: Springer, 1993, p. 58.

predicted behavior would alter a particular ecosystem – either directly or indirectly – could be produced. In order to properly address the problem, two things would have to happen. *First, the consequences of human action upon environments and ecosystems would have to be successfully predicted. Second, the results would have to be communicated to the public, in hope of producing changes in the political system.* This would work as a 'circuit': knowledge – communication – politics – change. "This is a propitious time to start finding ways to explicitly incorporate the economic manifestations of human behavior into ecological models."[100] Moreover, the awareness that social, political, and economic decisions affect basic ecology would have to be reinforced. Knowledge of ecological and human processes can (and must) be combined to create new insights – ecological but also political, social, and economic. Always bearing in mind the subtle effects humans are capable of producing.

4.4 Human Power and its Undesired Effects

Humans always have affected the environment they lived in. However, the interplay between nature and culture, which started around 500 generations ago, suffered a significant alteration with the advent of an important game-changer, i.e., agriculture. After its inception, humans were able to start changing their local ecosystems at unprecedented levels. This process involved displacement and redistribution of animal and plant life, loss of soil fertility, and also an increase in soil salinization – although, in some regions, soils are more fertile now because of application of fertilizers. Another important consequence of this scenario was that,

[100] Hall, Jane V. "The Iceberg and the Titanic: Human Economic Behavior in Ecological Models." *Human as Components of Ecosystems: The Ecology of Subtle Human Effects and Populated Areas*. Eds. Mark J. McDonnell and Steward T. A. Pickett. New York: Springer, 1993, p. 60.

thanks to agriculture, an ever-growing increase in human population and its concentration took place. And the more people there are, the greater the stress upon any ecosystem will be. Then, about eight generations ago, we witnessed the rise of the Industrial Revolution. The interplay between nature and culture reached new heights. There was a surge in population growth and, from that point on, human population exploded, so much so that today there are more than 7 billion people in the world, whereas around the time the Industrial Revolution started (circa 1760), Earth had a population of 1 billion people. According to UN predictions, we could have a population ranging from 10 to 12 billion by 2100. Since the Industrial Revolution started, the levels of CO_2 and CH_4 in the atmosphere never stopped increasing. For the first time in our planet's history, a single species is causing ecological change and ecological damage on a global scale. Be that as it may, not all the effects caused by human action are easily visible.

Subtle effects denote human influences on ecosystems or interactions of humans with ecosystems that are not obvious, conspicuous, or direct, but are lagged or influenced by past developments or consequences at a distance in time and space, or any combination of these. *However, from the fact they are subtle it does not mean they can be ignored or that their influences are negligible.* Emily Russell considered a "cause" to be anything (human-related) that has the ability of creating a series of effects or consequences (intended or not). Her examples are four: 1) obvious activity with an obvious effect – for example, the production of SO_4 and other pollutants by the burning of fossil fuels, and the loss of fish populations in lakes or rivers; 2) obvious activity with a subtle effect – for instance, the repeated logging of forests located in North America's

Northeastern region led to an increase in the amount of birch (*Betula spp*.) in the forests that regenerated in the 19th and 20th centuries; 3) subtle activity with an obvious effect – releasing small amounts of DDT into the environment will result in major declines in raptor and bee populations; 4) subtle activity with a subtle effect – the already famous increase in CO_2 and other greenhouse gases in the atmosphere, which causes alterations in global climate. These subtle effects are not easily spotted. An interesting example can be found in the use of DDT Rachel Carson's *Silent Spring* exposed the effects pesticides have (up to that point, no one knew for certain what said effects were) upon non-target species – in ways that were not predicted at all. Because of the slow accumulation of pesticides in animal tissue it was not possible to see the effects happening in real time. Moreover, such pesticides were often non-lethal. However, they would cause a reduction in reproductive rates, thus having a very strong but subtle effect on population sizes. In the long run, these effects made themselves quite visible. In England, for instance, dead birds and undeveloped eggs usually had high concentrations of DDT. Of course the pesticide industry suppressed early warnings about the harmful effects of their biocides because this would affect their profit. Lutzenberger quit his job at BASF due precisely to disagreements about how the company was using pesticides and other agrochemicals. Recently, shareholders of Exxon Mobil and Chevron have *voted to reject a series of resolutions aimed at encouraging the companies to take stronger actions to battle climate change*. There is a silver lining, though. Exxon Mobil shareholders voted in favor of a rule that could make it easier for minority shareholders to nominate outsiders to the company's board, a potential victory for environmentalists. Perhaps the best example of a subtle human

effect is climate change. It is not merely a change in the climate (the planet goes through its own cycles and fluctuations over time), it is a 'human-induced and accelerated global climate change.'

> The causal connection is at first glance fairly direct, as CO_2 and other greenhouse gases, e.g., CH_4 and O_3, allow solar radiation, including high energy wavelengths, to penetrate the atmosphere, but absorb outgoing infrared radiation, thus causing an increase in the heat loading of the atmosphere. Complicating factors relate to global circulation patterns and especially to the effects of different categories of clouds on both incoming and outgoing radiation. The effects of the climatic changes on organisms are even more difficult to predict.[101]

Emily Russell stated the above in 1993 and, it seems, not all of the effects of climate change have been discovered. Two huge problems that arise from this 'subtlety factor' are: 1) systems can often cope for a long time with a subtle influence before an effect becomes obvious; *2) subtle influences may further be hidden because human perception tends to adapt to slow changes*. Complexity is nearly inevitable if the human and the ecological systems are regarded, more properly, as one. Different facets of a complex problem should be treated with different, but equally adequate, tools. It is generally agreed that the modern view of humans was significantly influenced by the writings of George Perkins Marsh, especially his book *Man and Nature*: "Marsh not only perceived humans as separate from nature, he viewed natural systems as being in balance (i.e., in equilibrium) and self-regulating. […] This is the classical paradigm in ecology referred to as the "equilibrium paradigm."[102] He regarded human disturbances,

[101] Russell, Emily. "Discovery of the Subtle." *Human as Components of Ecosystems: The Ecology of Subtle Human Effects and Populated Areas*. Eds. Mark J. McDonnell and Steward T. A. Pickett. New York: Springer, 1993, p. 89.
[102] McDonnell, Mark J.; Pickett, Steward T. A. *Human as Components of Ecosystems: The Ecology of Subtle Human Effects and Populated Areas*. New York: Springer, 1993, p. 312.

particularly deforestation, as having not just lasting but irreversible deleterious effects. He got this notion from his observations as a diplomat in Greece and Turkey. Even Plato, in the *Critias*, notes that the deforestation of Attica caused massive soil erosion, comparing the former highlands around Athens to a rich, fat man whose death left only a skeleton of his former self. This paradigm would imply that ecologists, the ones trying to understand how ecosystems work and are affected, would have to work in areas free of human influence and human presence. However, and to address this apparent conundrum, a new 'non-equilibrium paradigm' has emerged – one that incorporates current knowledge of how ecological systems are structured. In the non-equilibrium paradigm, ecological systems are viewed as driven by a process rather than an end point, and as open systems potentially regulated (and affected by) external forces (human and non-human factors). *The economic system can certainly be included among said forces. It is perhaps the most influential one. After all, this new non-equilibrium paradigm allows for (and I would say even requires) the inclusion of humans as components of ecological systems.* This would be paramount in order to properly understand the ecological consequences of human actions – especially the ones causing subtle effects.

> Ecologists who do not account for the effects of humans in their research and scholarship are likely to miss important factors structuring and organizing their systems. […] The level at which humans need to be included as components of an ecological system depends on the questions being asked and the processes under study. Leaving humans out of ecology may result in erroneous explanations of phenomena in the natural world.[103]

[103] McDonnell, Mark J.; Pickett, Steward T. A. *Human as Components of Ecosystems: The Ecology of Subtle Human Effects and Populated Areas*. New York: Springer, 1993, p. 316.

Human impact over the environment, even if subtle or historically distant, is virtually everywhere now. Natural systems became inconstant in the face of changing modes of human use, management, habitation, and neglect. More integrated models and theories are required in order to effectively address questions and environmental problems that arise in human dominated ecosystems.

One example of such response can be found in the joint work of J. Baird Callicott and Karen Mumford[104]. In a paper called "Ecological Sustainability as a Conservation Concept," they stressed that we should try to find a way to meet human needs without compromising the health (or functionality) of ecosystems. There can be space for both. Constraints on human economy[105] thus become a necessity. *Biodiversity and sustainability are important terms that are at risk of being coopted and subverted. What many advocates for a "sustainable development" really want is to push an agenda of endless growth, swaying sustainability towards an orthodox anthropocentric approach*. What can be seen in our society today is a tendency for a misinterpretation of the meaning of 'sustainability.' It should not mean, from a point of view of *throughput* (Herman Daly's term for the materials and energy that the economy turns from raw inputs into waste) or GDP, simply a 'quantitative growth[106],' but it should represent a 'qualitative development.' *Sustainability and never-ending economic growth, in*

[104] Callicott, J. Baird; Mumford, Karen. "Ecological Sustainability as a Conservation Concept." *Conservation Biology*. Volume 11, No. 1, February 1997.

[105] It basically refers to human exchanges of goods and services. Such exchanges are basically part of our humanity. Economics is a term that refers to the study of human economies in all their diversity. Economics is, however, both a descriptive science (or study) and a normative one. That is, contemporary neoliberal (and as for that, also Marxist) economists not only describe the way human economies work, they prescribe the way they ought to work.

[106] To clarify this point, Daly and Costanza believe that it would be possible (albeit quite rare) to have growth in wealth (which would be quantitative) without growth in consumption and growth in the throughput of natural resources. An example of that would be a human economy run on the basis of a solar energy budget in all its forms (thermal, wind, photoelectric, wave, etc.) and recycled materials. Said economy, unfortunately, is not the norm today.

throughput or GDP, cannot go hand and hand. Nevertheless, as exemplified by Brazil's situation, most countries (if not all) still seem to be trying to grow their economies at any cost. Anything can be sacrificed in order for this goal to be achieved. *The current model of economic growth cannot be used as the only (and I would say not even as the main) reliable index of human development*. The human economy is just one among many important aspects of life on Earth. That being said, I do not want to create a scenario in which people would have to choose between economic improvement and the preservation of the environment. In order to have both, the focus the current economic system has would have to change. Profit is important, yes – but do we really need huge amounts of it? Is this constant economic growth, as it is, absolutely necessary? And what are the costs (monetary and otherwise) of said profits? Thus, for example, if the necessity for these extreme profits could be reduced and a shift in the reliance the economic system has on fossil fuels and factory farming would take place, I believe we would be able to keep creating jobs while, at the same time, reducing the social and ecological undesirable effects we are currently creating.

> There must be more good faith, more sensitivity, more generosity in contracts dealings with the hiring of services, the letting of houses, the sale of vital foodstuffs. And it will be necessary to find a way to limit the rewards of speculation and interest.[107]

Callicott and Mumford then advocate for the creation of biodiversity reserves, which they understood as "areas from which human habitation and economic activities are largely if not completely excluded in order to provide habitat for viable populations of

[107] Mauss, Marcel. *The Gift: the form and reason for exchange in archaic societies*. London: Routledge, 2002, p. 88.

other species."[108] This is a great idea. The only shortcoming here is that more and more areas will be required in order for a constant economic expansion to take place. Or, as Aldo Leopold put it, it seems that the wilderness is something that, unfortunately, can shrink but never grow. The more the economy grows, under its current configuration, the less wilderness areas there will be. Sustainability, after all, is the ability to maintain natural resources or an ecosystem undiminished over a long period of time. Sustainability does not simply mean a "constant and steady growth."

According to Costanza and Daly[109], there is a clear distinction between economic growth and economic development. Economic growth simply means increasing the amount of matter-energy going through the economy. It is a quantitative process. Development, on the other hand, represents a refinement – it is a qualitative process. Economic development has its focus son efficiency, not sheer output. Its main goal is getting better, not bigger.

> In the vernacular, *development* often means the wholesale replacement of wild biotic communities with tract houses, shopping malls, office buildings, industrial parks, and pavement. […] Development thus commonly denotes urbanization, the industrialization of agriculture, and, more abstractly, an expanding market economy. Hence, it is not surprising that *sustainable development* has been interpreted to mean sustaining economic growth.[110]

A good example of a true sustainable development can be found at the Menominee Indian reservation. The 100,000 ha Menominee forest, located in Northeastern Wisconsin, is managed by Menominee Tribal Enterprises. The main goal is to preserve

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[108] Callicott, J. Baird; Mumford, Karen. "Ecological Sustainability as a Conservation Concept." *Conservation Biology*. Volume 11, No. 1, February 1997, p. 34.
[109] Costanza, Robert; Daly, Herman. "Natural capital and sustainable development." *Conservation Biology* 6: 37–46, 1992.
[110] Callicott, J. Baird; Mumford, Karen. "Ecological Sustainability as a Conservation Concept." *Conservation Biology*. Volume 11, No. 1, February 1997, p. 34.

the structure of the biotic community and to harvest forest products in a truly sustainable way. *For the Menominee, turning a profit is subordinate to sustainability*[111]*.* Sustainability comes first. By following the neoliberal economic approach we are constantly decreasing the available area for ecosystems to thrive. *Our constant economic expansion will tend to reduce the biodiversity, the integrity, and the health of all planetary ecosystems.*

4.5 Economics in a Full World

According to Herman Daly, growth in throughput or in GDP tends to be perceived as the ultimate panacea for all our economic shortcomings. This is related to the famous 'trickle-down economics paradigm.'[112] First and foremost, though, trickle-down economics does not address the problem of the distribution of wealth – even though, in theory, it would. Theoretically, wealth is supposed to trickle down from the rich to the poor. According to this theory, that is how wealth would be distributed. However, this seems to be a flawed theory because the wealth is not in fact trickling down. Wealth is getting more and more concentrated at the top of the pyramid, where the richest people are. Thus, a country that is increasing its GDP at a fast pace, but that it is not distributing its wealth, is not a rare sight these days. This will in turn lead to considerable income inequality. This is just one of the many social downsides of a

[111] This is an example of an alternative form of renewable resource extraction. I believe it is not productive to simply say: "Growth is bad. We should stop growing." We should produce wealth in a sustainable way. Profit is subordinate, but it is not regarded as an inherent evil. However, extreme profit, which is mainly based on exploitation, tends to be much more problematic. It is a question of balancing several goods, not good versus evil.

[112] People who subscribe to the trickle-down theory believe that providing economic benefits to those with upper-level incomes would benefit society as a whole. The extra wealth would be invested into the economy and therefore would create jobs that would provide wealth for lower-income earners - and that wealth in turn would be spent back into the economy. This idea does not seem to work very well in practice, though.

trickle-down economics. There are several ecological drawbacks as well. For Daly, contra the neoliberal approach, global economy does not exist in a vacuum. *Economy is a subsystem of the finite biosphere that supports it* – and the biosphere has a limit.

> Once we pass the optimal scale, growth becomes stupid in the short run and impossible to maintain in the long run. […] One problem is that some people benefit from economic growth and thus have no incentive for change. In addition, our national accounts do not register the costs of growth for all to see.[113]

One of the first examples of a qualitative (or sustainable) development can be found in the writings of John Stuart Mill. In his famous chapter "Of the Stationary State[114]," Mill welcomed, rather than regretted, this state of non-growth. *Human-made capital cannot be a substitute for natural capital* – and this is precisely what distinguishes ecological economics from neoclassical/neoliberal economics. To ensure long-term economic health (and not sheer growth), countries should sustain the levels of natural capital (the environment), not just the total wealth – which nowadays tends to be translated in purely economic terms. The path to achieve such sustainable development would require the transformation of the economy so that it could be sustained over a long period of time. Along these lines, Daly talks about three precepts in order to accomplish that: there is a need to *1) limit the use of all resources to rates that ultimately result in levels of waste that can be absorbed by the ecosystem; 2) exploit renewable resources at rates that do not exceed the ability of the ecosystem to regenerate the resources; 3) and deplete non-renewable resources at rates that, as far as possible, do not exceed the rate of development of renewable substitutes*. It is not a secret to anybody that

[113] Daly, Herman. "Economics in a Full World." *Scientific American*, September 2005, p. 100.
[114] Mill, John Stuart (1848). "Of the Stationary State", Book IV, Chapter VI in *Principles of Political Economy: With Some of Their Applications to Social Philosophy*. London: J.W. Parker. Accessed June 25, 2016 from http://www.econlib.org/library/Mill/mlP61.html

humans are not doing any of these things very well (or not doing them at all). If we could perceive our human lives as being embedded in and thoroughly dependent on the biosphere, I believe most of our problems would be solved and the overall quality of our lives (and the lives of non-human animals) would improve as well. It would be a "win-win scenario." I am sure we are able to do it, but we have to choose to do it.

Borrowing an example from microeconomics[115], individuals and businesses get a clear signal of when to stop expanding an activity. Here is how it works. When an activity expands, it eventually displaces some other enterprise and that displacement is counted as a cost.[116] People will stop at the point where the marginal cost equals the marginal profit. In other words, they will stop spending money on beer (to use a pleasant example) when a dollar spent on beer gives us less satisfaction than a dollar spent on something else. In macroeconomics, there is no such thing. For Daly, "the alternative for a sustainable economy, an ever growing one, is biophysically impossible."[117] Some people will say that it would be impossible to really change things at this point, and that it would be a political impossibility. However, "In choosing between tackling a political impossibility and a biophysical impossibility, I would judge the latter to be the more impossible and take my chances with the former."[118] This truly seems to be, to use a very colloquial expression, a 'no-brainer.' And since I am talking about a sustainable economy, what exactly should be maintained at a sustainable level from year to year? Not increased but maintained. Some people would say that by maintaining a steady rate of growth, sustainability could be achieved – a constant

[115] The branch of economics that involves the careful measuring and balancing of costs and benefits of particular activities.
[116] The same does not happen in macroeconomics, especially when one is thinking about GDP.
[117] Daly, Herman. Economics in a Full World. *Scientific American*, September 2005, p. 102.
[118] Ibid, p. 103.

increase in the GDP (3% every year, for instance). However, under the current configuration of our economic system, and from an ecological point of view, this seems far from being sustainable or desirable. Economists have discussed five possible 'candidate quantities' to use as a measurement of a country's wellness: a) GDP; b) "utility"; c) throughput; d) natural capital; and e) total capital (the sum of natural and human-made capital). The main problem with the GDP index is its inherent tendency to conflate qualitative improvement (development) with quantitative increase (growth in throughput). *An economy, to be truly sustainable, must stop that kind of growth at some point.* The main concept behind sustainability is the necessity to shift the idea of 'progress' (already a tricky word in itself), from growth to development. Moreover, such index does not account for the depreciation of natural capital assets – for instance, the degradation of ecosystems. *Thus, GDP can be (and currently is) a misleading index of human well-being and human development.*

> Among the many types of natural capital whose depreciation do not appear in the World Bank figures are freshwater, soil, ocean fisheries, forests and wetlands as providers of ecosystem services, as well as the atmosphere, which serves as a sink for particulates and nitrogen and sulfur oxides. […] We could well discover that the growth in wealth in China and the world's wealthy nations has also been negative."[119]

Next there is utility, which refers to the level of satisfaction of wants, or level of well-being of the population. *However, utility is an experience, not a thing*. It has no unity of measure *per se* and cannot be transferred or left to future generations. The third candidate is throughput. Throughput is the rate at which the economy uses natural resources, taking them from low-entropy sources and transforming them into useful

[119] Sir Partha Dasgupta (a Frank Ramsey Professor of Economics at the University of Cambridge College). Daly, Herman. "Economics in a Full World." *Scientific American*, September 2005, p. 106.

products and then dumping them back into the environment as high-entropy waste. Our current economic system tends to see a growth in throughput largely as something good and even welcomed. Sustainability can be measured using throughput by determining the capacity of a particular environment for supplying each raw resource and for absorbing the end waste products. Some might object to this approach and could perceive it as being ‘resource-oriented’ and biased towards more quantitative aspects – which seems to be a fair assessment. Moving on, there would be two broad types of capital: natural and human-made. Neoliberal economists believe that human-made capital can act as a substitute for natural capital. This is called ‘weak sustainability,’ an idea within environmental economics based upon the work of Nobel Laureate Robert Solow and John Hartwick. Ecological economists, Daly among them, think that both of these forms of capital complement each other – they are not interchangeable and they are not substitutes. *Natural capital, for them, should be maintained on its own because it has become the limiting factor. The same ecological economists call this approach ‘strong sustainability.’*

4.7 Conclusion

Economic theory has mainly dealt with allocation of resources. It has not dealt with the issue of the temporal and spatial scales of human activity and human economy. Humanity’s ability to influence the environment is currently unprecedented. Scale, as seeing by Daly, is simply a measure of the size of one object relative to another. In this case, we are concerned with the size of the human economy relative to the ecosystems that contain it. Sustainability is achieved when the human economy fits within the

capacity provided by Earth's ecosystems. Economic activity currently tends to degrade ecosystems, interfering with natural processes that are critical to various life support services. In the past, the amount of economic activity was small enough that the degree of interference with ecosystems was negligible. The unprecedented growth of economic activity, however, has significantly shifted the balance with potentially disastrous consequences. Markets (when properly functioning) allocate resources efficiently, but they cannot determine the sustainable scale. *This part can only be done and achieved by government policy.* A good example of this is the cap and trade system. In said system, a limit is placed on the total amount of throughput allowed, in conformity with the capacity of the environment to regenerate resources or to absorb pollution. *The cap and trade system is an example of the distinct roles of free markets and government policy.* According to Daly, a few adjustments would be required in order to achieve such sustainability: 1) longer product lifetimes: longer-lived and more durable products can be replaced more slowly, thus requiring lower rates of resource use; 2) GDP growth: due to qualitative improvements and enhanced efficiency, GDP could still grow for a while. *This form of growth should be pushed as far as it can go. It has several limits, though*, *meaning it cannot expand forever*. The information technology sector, for instance, thought to be mostly qualitative, has a substantial physical base and requires its constant expansion, after all; 3) taxes: for Daly, humans should tax what they want less of (pollution and depletion of resources, for example) and cease to tax what they want more of (income). This would represent a regressive tax, thus making the poor pay a higher percentage of their income than the wealthy would. However, this could be solved by introducing a progressive factor. A tax on luxury items and on high incomes

could also be instituted. Nevertheless, what is happening today? Billions of dollars in tax breaks are being given to the oil and gas industry annually when the norm should be heavy taxes on fossil fuels; 4) happiness: one of the main culprits behind an unsustainable growth is the 'axiom of insatiability,' which stresses that people will necessarily be happier if they consume more. However, there are recent studies[120] contradicting this statement. Happiness does not consist merely in buying more goods. In fact, overconsumption seems to lead to disappointment. *The correlation between absolute income and happiness extends only up to a threshold of 'sufficiency' – beyond that point only relative positions will influence self-evaluated happiness.*

> The wealthy countries have most likely reached the "futility limit", at which point further growth [in GDP] does not increase happiness. […] increasing consumption beyond the sufficiency threshold, whether fueled by aggressive advertising or innate acquisitiveness, is simply not making people happier, in their own estimation. […] If we do not make the adjustments needed to achieve a sustainable economy, the world will become ever more polluted and ever emptier of fish, fossil fuels and other natural resources. For a while, such losses may continue to be masked by the faulty GDP-based accounting that measures consumption of resources as income. But the disaster will be felt eventually. Avoiding this calamity will be difficult. The sooner we start, the better.[121]

Furthermore, the following issues would have to be addressed as well: a) uncounted household services; b) increased international debt; c) loss of well-being resulting from increasing concentration of income (the well-being induced by an extra dollar for the poor is greater than that for the rich); d) long-term environmental damage such as ozone layer depletion or loss of wetlands and estuaries; and water, air and noise pollution. When all these points are properly addressed, the end result is the index of

[120] A good example is the research developed in the mid-1990s by Richard A. Easterlin. It suggests that growth does not always increase happiness (or utility or well-being).
[121] Daly, Herman. "Economics in a Full World." *Scientific American*, September 2005, p. 107.

sustainable economic welfare (ISEW), as developed by Clifford W. Cobb and John B. Cobb, Jr. Indexes such as the ISEW have been used by ecological economists but are still largely ignored by mainstream economics[122].

Human economy is (or at least should be) a subsystem of the environment. It exists within it, and the closer our economy approaches the scale of our entire planet, the more it will have to conform to the physical, chemical, and ecological paradigm that rules Earth's behavior. In other words, the more the economy expands itself, the more it will have to adhere to the same rules governing the environment – meaning too much economic growth would become, at some point, unsustainable and detrimental to the system. According to Daly, said 'ideal behavior' would be a steady-state economy, which would allow for a qualitative development in the standard of living (for example, in a solar-powered fully cyclical economy), not an indefinite quantitative growth in throughput or in GDP. Growth is 'more of the same stuff,' development is 'the same amount of better stuff.' The constant expansion of the current economic subsystem increases environmental and social costs faster than it creates benefits, making us poorer, not richer. *Since neoliberal economists are unable to demonstrate that sheer growth (in throughput or in GDP) is making humans better off rather than worse off, it is nonsensical on their part to continue preaching said growth as the solution to all of our problems.*

In a steady-state system, the rich would have to reduce their throughput growth to free up resources and ecological space (since Earth's ecosphere has a finite amount of resources) for the use by the poor. What I am saying here is that, because rich countries always had the opportunity to consume much more than the poor countries,

[122] Sadly, mainstream economics today seems to be almost a synonym of neoliberal economics.

now it is their turn to consume less. I am not sure if an appealing to their consciences would be enough to accomplish such move. Thinking in more realistic terms, the United Nations could create a program in which the OECD (Organization for Economic Co-operation and Development) members[123] would receive benefits for a reduction in their consumption rates. Said benefits could be economic, drawing from a global pool of contributions, or even social and political. Therefore, those countries (central countries) would have to focus their efforts on development (a qualitative approach), technical and social improvements – and this could entail growth in certain sectors of the economy and growth in social services as well. All these things could be shared with poor (peripheral) countries. This was one of the key points in Lutzenberger's philosophy.

> Accepting the necessity of a steady-state economy, along with John Stuart Mill and the other classical economists, let us imagine what it might look like. First a caution – *a steady-state economy is not a failed growth economy* (emphasis added). An airplane is designed for forward motion. If it tries to hover it crashes. It is not fruitful to conceive of a helicopter as an airplane that fails to move forward. It is a different thing designed to hover. Likewise, a steady-state economy is not designed to grow.[124]

A steady-state economy could be defined as a subsystem with a constant population[125] and a constant stock of capital. However, this situation is not as simple as it may see. It is important to understand how birth and death rates vary with age, education level, income, etc. Demographics related to those factors convey strong and highly relevant trends for the issue at hand. Thus, simply stating that low birth should equal low death

[123] Not all the members can be considered as being "central countries". The majority of the OECD members are, though.
[124] Daly, Herman. "A Steady-state Economy." *Sustainable Development Commission*, UK (April 24, 2008), p. 3.
[125] According to UN studies, this will be achieved in the near future. By that point, the global population will have reached 10 to 12 billion people.

rates is a vast over-simplification – and not easily achievable. That being said, in a steady-state economy, throughput would be within the regenerative capacity of the ecosystem. This would mean that birth rates (a low rate) equal death rates (also a low rate). Realistically, though, we are far from achieving this. However, a low production rate would be something easier to achieve – which would imply a low depreciation rate[126] as well. More durable goods that would last longer should be produced. To use an economic jargon, low throughput means high life expectancy for people and high durability of goods. One might ask: "And what about poverty? How do we deal with it in a steady-state economy?" The answer is redistribution – by limits to the range of permissible inequality, by a minimum and a maximum income.

Daly and Lutzenberger strongly agreed on the fact that big corporations (particularly multinationals) are able to grow at a fast pace because they do not tend to pay the costs of the environmental and social degradation they are causing. And when they pay, they pay because some major disaster took place. The everyday ecological damages are still largely overlooked. International capital mobility, coupled with free trade (the invisible and unregulated hand of the market), allows corporations to avoid national regulations, playing off one nation against another. A few adjustments in this scenario would have to be made: a) minimum residence times for foreign investment in order to limit capital flight and speculation should be promoted; b) the creation of a small tax on all foreign exchange transactions; and c) a proposal for an international multilateral union that would directly penalize persistent imbalances account-wise (both deficit and surplus – minuses and pluses), as conceived by John Maynard Keynes,

[126] A population of 1000 cars that last 10 years requires new production of 100 cars per year. If more durable cars are made to last 20 years then we would need a new production of only 50 cars per year.

should be put forth. Ideally, then, we would have two accounts, one that measures the benefits of physical growth in scale, and one that measures the costs of that growth. This is why getting the scale of the economy right (technically the point at which the marginal costs of growth equal the marginal benefits) is the highest priority for a steady-state economy. Currently, the GDP approach only performs the first one. And even though we have indexes to measure the second, for instance the DPSIR Index: a) *driving forces* (the changes in the social, economic and institutional system that directly and indirectly trigger pressures on the environmental state); b) *pressures* (anthropogenic factors inducing environmental change); c) *states* (they can refer to a wide range of features, from the qualitative and the quantitative characteristics of ecosystems, the quantity and quality of resources, living conditions for humans, exposure to the effects of pressures on humans, to even larger socio-economic issues); d) *impacts* (changes in environmental functions affecting social, economic and environmental dimensions, which are caused by changes in the state of the system); and e) *responses* (policy actions which are directly or indirectly triggered by the perception of Impacts and which attempt to prevent, eliminate, compensate or reduce their consequences) – the problem is that indexes like the DPSIR or the ISEW are not taken into account as much as the GDP. The Gross Domestic Product index carries much more power and influence over policy-making than these other (and more holistic) indexes.

CHAPTER 5

JOSÉ LUTZENBERGER AND THE UNECOLOGICAL ECONOMICS

And nothing is at a like goodness still, for goodness, growing to a pleurisy, dies in its own too much[127]*.*

William Shakespeare – Hamlet

5.1 Introduction

Lutzenberger hailed from a peripheral country and was able to see the effects that colonialism had on Brazil's development first-hand. It is my belief that the current configuration of capitalism, with its main tenet of an unlimited growth in throughput or in GDP, is a direct descendent of that system. The principle – back then as well as now – is one and the same, that is, the indefinite expansion of an exploitative system. I do not think imperialism and colonialism have completely disappeared. They still exist, only in a different form. After all, the more colonies one had, the bigger its market would become. The same principle can be seen at work today in neoliberal economies, which are largely the norm in the global economic system. This same system was also largely applied worldwide. Capitalism, in its current configuration, seems to be creating more drawbacks than benefits and needs to be 'tweaked.' What about a capitalist system in which most actions performed having in mind some sort of economic benefit would also work towards preserving or conserving the environment? There are some examples of this mindset today: tax breaks for the renewable energy industry, subsidies for the construction of solar panels and wind turbines, among others. However, they were conceived as, and somehow remain, unorthodox initiatives. They are not at the center

[127] Shakespeare was certainly not thinking about extreme economic growth when he wrote this. However, it conveys the message that anything which grows too much, which goes through an excessive growth, will end up being destroyed by said growth. Everything in moderation, after all.

of the system, so to speak, just like the peripheral countries. This 'green capitalism' could and should be much more widespread. One way to implement it would be via political and economic decisions. Decisions made at national congresses and at multinational board meetings. The problem is that many of such decisions are still made by people with a more neoliberal mentality. Thus, they would still value profit over a distant reality of a species disappearing or an ecosystem being destroyed. The younger generation seems to care more about the interconnectedness of life in our planet. Perhaps a paradigm change will happen naturally and gradually over time. Perhaps not. That is precisely why it is so important to talk about power and its concentration and distribution. If neoliberal-minded people are the ones still making most of the political (and economic) decisions, they will tend to follow a more neoliberal path. Such mindset can be seen in the distance between subjects (humans) and objects[128] (the environment) that was created by the current economic system. A distance made explicit by Simmel's philosophical analysis of money. When the environment is considered as something distant, having almost no relation to the subject, it becomes a little bit harder for this subject to value that distant relationship. Thus, the environment becomes either too distant for people to care about it or, if the fact that humans are the most powerful biotic factor in the history of our planet is acknowledged, there is a tendency to think that nature somehow will be able to shrug its damages off and bounce back every time. Lutzenberger used to say that it becomes much more difficult to develop an ecological conscience when the environment is distant from you. When one is not confronted by this or that reality it becomes harder to care about said realities.

[128] I am not saying that the environment would be an object or that it should be treated as one. Subject and object here are used in a phenomenological sense.

I believe that a better distribution of power would be one of the major contributors to a change in our economic system. More voices being able to feel represented would imply different decisions being made, and alternative paths being taken. One quick look at today's global market would show that the majority of transnational corporations that obtain their profits from the environment (Monsanto, Cargill, Tyson, BP, Chevron, Exxon, Bunge, etc.) are not exactly known for their environment concern or for their environmentally friendly practices. Policy-making could (and should) be used to redistribute wealth, create more equal opportunities for everybody, and focus on renewable energies. Social and economic equality would create a better chance for the environment to be preserved – one of the principles in which Lutzenberger firmly believed. I consider him to be some sort of 'Brazilian Aldo Leopold.' Leopold wrote extensively about the influence the economy has over the environment. From a critique of boosterism to the concept of the A-B cleavage, he was well-aware of the pernicious effects an unchecked economic growth will have on the biotic community. The difference between him and Lutzenberger is that one lived in a central country; the other lived on the periphery. Lutzenberger knew that without more economic and social equality and justice, there can be no solution to the fact that the environment tends to be disregarded and be left out of the economic and political scenarios. A more just world would also mean a more eco-friendly world because the social and the ecological would go hand in hand.

5.2 Aldo Leopold, the Land, and the Economy

"Wilderness is a resource which can shrink but never grow." Aldo Leopold wrote that in *A Sand County Almanac*, his most famous book. For him, the expansion of our economic system meant the reduction in the areas available for ecosystems to thrive. Growth, of any kind, would be something that needs to be carefully approached. For instance, when talking about the problem of boosterism, Leopold enumerated ten items discussing the downsides of it. They could be easily related to Lutzenberger pertaining to the implicit and explicit critiques of the way our economic system currently works. I selected four out of his ten items here[129]: *1) to be big and grow even bigger is the end and aim of cities and citizens* (and also nations, I must add). *To be small when young is excusable, but to stay small is a failure*; 2) the way to grow big is to advertise advantages and ignore defects, thereby abolishing them. Self-criticism is similar to treason; *3) Growth by labor, frugality, or natural increase is slow and old fashioned*. Growth in wealth is attained by attracting tourists or capital from elsewhere, or by extracting appropriations from public treasuries; 4) Unanimity is the only defensible attitude towards public questions. Minority opinions merely complicate the issue. "The booster's yardstick *is the dollar*, *and if he recognizes any other standard of value, or any other agency of accomplishment, he makes it a point of pride not to admit it* (emphasis added)."[130] This aspect of boosterism can be related to the one-track mind of neoliberal economics. Money and profit tend to become the standard and the norm and many times they are the most important elements taken into account when a political decision is made.

[129] Leopold, Aldo. *Writings: Unpublished Manuscripts*, p. 1419.
[130] Ibid., p. 1423.

Leopold, in his piece about boosterism, demonstrated his disgust with advertising when he criticized the ever-growing use of billboards. Today they seem to be everywhere. According to him, to advertise services and their respective locations through an outdoor billboard at the entrance of a city would be acceptable. However, to "put a gauntlet of billboards fifty miles long is not only bad business, but miserable bad taste."[131] Advertising, since its inception, has been unavoidably linked to capitalism and played (and still plays) a major role in this 'grow or die' paradigm. Without advertising, it becomes harder to have a situation in which production and especially consumption would keep indefinitely increasing. One of the main goals of advertising is to produce the demand for things people do not actually need – and such demand must always increase because that is the way neoliberal economics works. Advertising (at least the kind related to big corporations) aims at making one thinks that one needs to keep buying new products: a new car, a new iPhone, etc., even when there is not necessarily a need for it. I may need a phone and I may need a car – but do I need a new one every year or two? More consumption can only exist via more production – and more production means that more natural resources would have to be employed to that end. It is like a domino effect. One thing leads to another. Capitalism depends on that important, but apparently overlooked by many, detail. Without advertising, capitalism would not be able to thrive as much as it currently does. Along the same lines, Leopold used the example of a friend he knew to illustrate the spirit of endless growth. *In other words, what boosterism[132] does is to improve a place by destroying it*.

[131] Leopold, Aldo. *Writings: Unpublished Manuscripts,* p. 1424.

[132] Perhaps Boosterism has a partner now – and its name is Lobbying. Through lobby, what we have more and more today is something like: "We want less government (thus, less regulation) in business and more business in the government."

> I once knew a doctor, who on the completion of his medical studies, returned to his home town to practice. He soon saw that the place was too small for him. "I realized", he says, "that I would either have to move to the kind of town I needed, or else make over my hometown into that kind of place. I decided to make over my hometown." And he did. He did it through a Chamber of Commerce.[133]

Leopold knew that economic activity is the main drive behind human agency in the modern world. It became the standard for action, the substrate for laws, the guiding light for humanity's ship. To talk about our environmental crisis and not mention the impact neoliberal economics had (and has) over it would be a mistake. Writing in 1938, he already pointed out this tendency of considering economics as the ultimate referee. "It seems likely that the present muddle in the pursuit of conversation through public ownership of land arises from the fact that the conservation problem involves a new category of economic phenomena – one with which economists are unaccustomed to deal."[134] The end of the 19th century and the beginning of the 20th marked an era in which the United States of America tried to address the conservation problem and, more importantly, how to reconcile infinite growth with a finite world. The effect neoclassical/neoliberal economics has on the environment, and its apparent tendency to produce ecological degradation, led Leopold to think about conservation economics. To that end, he employed the work of George Wehrwein and William Vogt[135]. For Leopold, the relationship humans have to the land must not rest solely on economic considerations, but on ethics, aesthetics, and in the maintenance of land health and its integrity. His famous A-B Cleavage perfectly represents such perspective. He described

[133] Leopold, Aldo. *Writings: Unpublished Manuscripts,* p. 1427.
[134] Leopold, Aldo. "Proposed Conservation Economics Study." *Leopold Papers*, p. 399 – 404.
[135] This one is the author of *Road to Survival* (1948), one of the precursors to contemporary ecological economics.

two different attitudes towards land systems that will influence the choices people make pertaining to the conservation of the environment. Group A regards the land solely as soil or substrate. Its function is entirely captured in its role in commodity production, whereas group B regards the land as a biota. Its function includes commodity production, but its value and function is much broader and *therefore not exclusively economic.*

> Leopold's discussion of the tension between private and public interests and the difficulty of achieving conservation goals through economic laws alone anticipated the growing issue of the "tragedy of the commons" and the management of common resources during the 1960s and 1970s.[136]

Leopold was deeply concerned with preserving wilderness areas, sustaining organic resources, maintaining and restoring land health, and especially evaluating the concept of economic growth. He believed that human beings could maintain a high quality of life only if our economic system was able to work *with the land, not against it*. In other words, human action, which has been primarily driven by short-term economic policies and practices, would need to become much more measured and careful than before[137]. Humans do not completely understand nature in its complexity and, thus, should refrain from thoughtless and careless actions[138], something that finds echo in the Precautionary Principle[139]. Leopold was also worried about the relationship between humans and the land, which for him tends to be heavily skewed toward economic

[136] Li, Feng Qi. "Aldo Leopold: Reconciling Ecology and Economics." *Minding Nature 6.1*, p. 24.
[137] This would represent a different aspect, namely, temporal scale.
[138] This reminds me of the Precautionary Principle, which states that if an action or policy has a suspected risk of causing harm to the public or to the environment, in the absence of scientific consensus that the action or policy is not harmful, the burden of proof that it is not harmful falls on those taking an action.
[139] The Precautionary Principle, proposed as a new guideline in environmental decision making, has four central components: a) taking preventive action in the face of uncertainty; b) shifting the burden of proof to the proponents of an activity; c) exploring a wide range of alternatives to possibly harmful actions; and d) increasing public participation in decision making.

considerations. Therefore, human beings would have rights and privileges but no obligations towards the environment. The construction of the Belo Monte Dam[140] in the Brazilian Amazon is an example of this worldview. Now over fifty percent complete, the Belo Monte Dam complex is designed to divert eighty percent of the Xingu River's flow which will thus devastate an area of over 1,500 square kilometers of Brazilian rainforest and cause the forced displacement of up to 40,000 people. This project gravely impacts the land and livelihoods of thousands of riverine, urban families and communities, and indigenous peoples from several neighboring areas as well. The Xingu River basin is a living symbol of Brazil's cultural and biological diversity; it is home to 25,000 indigenous people from 40 ethnic groups. The Xingu flows north 2,271 kilometers from the central savanna region of Mato Grosso to the Amazon River. Nominally protected throughout most of its course by indigenous reserves and conservation units, the Xingu basin is severely impacted by cattle ranching and soybean monocultures. Belo Monte is the first in a planned network of mega-dam projects which will pose additional devastation to an already threatened region. It is clear in cases like this how the social and the ecological spheres are inescapably intertwined. The evident lack of care towards the land was exemplified by Leopold in 1933: "[…] to build a better motor we tap the uttermost powers of the human brain; to build a better countryside we throw dice."[141]

[140] The project was strongly criticized by indigenous people and numerous environmental organizations in Brazil and also by organizations and individuals around the world. Belo Monte's 668 square kilometers of reservoir will flood 400 square kilometers of forest, about 0.01% of the Amazon forest. The environmental impact assessment listed the following possible adverse effects: a) the loss of vegetation and natural spaces, with changes in fauna and flora; b) changes in the quality and path of the water supply, and fish migration routes; c) temporary disruption of the water supply in the Xingu riverbed for seven months. Besides these effects, indigenous people were already displaced from the area. And it is important to bear in mind that they did not have a say in any of this.

[141] Leopold, Aldo. "The Conservation Ethic", in *The River of the Mother of God and Other Essays*, ed. Susan L. Flader and J. Baird Callicott. Madison: University of Wisconsin Press, 1991, p. 189.

> What we need is a positive inducement or reward for the landowner who respects both the private and the public interests in his (sic) actual land-practice. What should this reward or inducement be? What is a practical vehicle for it? These are the two basic questions in American conservation. An answer seems to require the collaboration of economists, jurists, regional planners, ecologists and esthetes. I here plead for a joint search for an answer.[142]

Leopold believed that neoclassical/neoliberal[143] economics was built on two premises: 1) private property and 2) the notion that social welfare should be achieved via the pursuit of individualistic interests – as seen in Adam Smith and *The Wealth of Nations*. This situation, as experienced in the United States of America, led to social customs that still hamper the efforts to protect the environment. The problem with economics in the United States is that it had individualism as one of its main focus. This resulted in economics being a dominant doctrine of coordination through competition while overlooking cooperation. Thus, the pursuit of rational private self-interest would be thought to lead to a healthy and well-functioning market, maximizing social welfare in the process. Nevertheless, this simply does not seem to be the case.

> With larger scales of production, competitive pressure, and goods being sold in distant markets, the tendency for producers was to overlook environmental and social (e.g., labor) concerns while pursuing private profit. Consumers generally lacked information on the decisions made during the production process and the resulting impacts, which they could not recognize until the environmental and social transgressions became too serious to be ignored.[144]

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[142] Leopold, Aldo. "Some Thoughts on Recreational Planning," *Parks and Recreation 18*, no. 4, 1934, p. 136-37.

[143] During Leopold's lifetime the term 'neoliberal economics' was rarely employed. It started to be used in the 50s and it became prevalent during the 70s and 80s. Before that, the term 'neoclassical economics' was the norm. Neoclassical economics is most closely related to classical liberalism, the intellectual forefather of neoliberalism. In a sense, the neoliberal movement between 1960 and 1980 represented a partial return to the neoclassical assumptions about economic policy and partial rejection of the failed central planning arguments of the 1930s. As far as public policy is concerned, neoliberalism borrowed from the assumptions of neoclassical economics to argue for free trade, low taxes, low regulation and low government spending.

[144] Li, Feng Qi. "Aldo Leopold: Reconciling Ecology and Economics". *Minding Nature 6.1*, p. 30.

Furthermore, Leopold knew that, besides all detrimental effects that this kind of economic thinking created, the management of resource consumption through the 'resource-scarcity and high prices argument' is flawed and, therefore, had failed to materialize. *He realized that endless growth in economic activity contradicts ecological principles*. There is always a limit to everything – or at least, this should be the case. Industrialization and the increasingly common urban life style also contributed to hide nature and make it more and more distant from us. And while it is true that the concentration of people in one place (cities) can lead to rural areas having less people, it does not mean that those rural areas would be free from human interference. The mechanization of agriculture drove many people out of the farms, but the area occupied by the crops (cash crops for the most part) does not revert to their pre-human interference state. Animals that used to roam freely are now confined to the opaque walls of factory farms. Why is that? There are several reasons for it: to cut costs, to increase the logistical efficiency of the system, to maximize biomass gain, etc. Nonetheless, another reason behind it is to hide these animals from our sight so that we cannot see what goes on inside those walls. If I do not see, I do not know; and if I do not know, it becomes much harder for me to care about it. I can provide a first-hand testimony here. Once I showed a documentary called *Earthlings* about factory farming in one of my classes. Everybody agreed that it was extremely difficult to watch – and some people even left the classroom (which I had previously allowed my students to do, if they wanted).

Leopold thought that the solution to ecological problems would not arise solely from the field of economics. Hence, he turned his attention to ethics. Perhaps a new

concept of what economic activity means would be needed, one that would take into account not just profit and economic growth but also (and primarily) the ethical, social, and ecological complexities of the relationship between humans and nature. For Leopold, it is time to

> […] quit thinking about decent land-use as solely an economic problem. Examine each question in terms of what is ethically and esthetically right, as well as what is economically expedient. A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise.[145]

Hence, his Land Ethic combined the emotional, the practical, and the intellectual. It represented a shift from a strictly quantitative system of beliefs – the importance the GDP index has assumed being a perfect example of the consequences this mindset can produce. Why not have, on the same level of importance, the GDP, the GNH (Gross National Happiness), the ISEW, and the DPSIR working together? Why does the GDP index still have a bigger political importance and influence than all these other indexes? Even if Leopold said that in the first half of the 20th century, today this situation does not seem to have changed much. Mainstream economics is still largely separated and distant from ecology and its precepts. *This can be seen as a reflection of the restrictions imposed by economics and political expediency to any meaningful and profound change in our economic status quo.*

[145] Leopold, Aldo. *A Sand County Almanac*. New York: Ballantine Books, p. 224-25.

5.3 Environmental Ethics from the Periphery

Lutzenberger enjoyed talking about something Pat Roy Mooney, in *Seeds of the Earth: A Private or Public Resource?*[146], wrote: "Who controls the seeds, controls humanity." Control and power are thus closely related. Around 500 types of vegetables were cultivated since the dawn of agriculture and in one thousand years there was a reduction to 200 – among those, only 80 were commercialized. Nowadays, around 20 types of vegetables are cultivated, representing 90% of the human diet: wheat, rice, and corn feed 75% of the human population, and the patents for the main varieties are in the hands of a few, but extremely powerful, multinationals dealing with seeds and agrochemical products. That being said, *most people tend to overlook the fact that the so-called 'Green Revolution' contributed to turning agriculture into a business, and as such, a follower of the market laws.* Using the pretext of population explosion and hunger in the Third World[147], the Rockefeller Foundation, Ford and Kellogg's, with the financial support from the World Bank and the UN, began a revolution in the 40s and 50s with the selected varieties of corn and wheat in Mexico and of rice in the Philippines and India. With the Green Revolution the consolidation of an industrial agriculture around the globe, largely based on chemicals, took place. However, it is also important to understand that most of the detrimental consequences of the Green Revolution were not necessarily intended. Dr. Norman Borlaug, referred to as the father of the Green Revolution, wanted to help humanity. His efforts were driven to reduce hunger and starvation, but also to avoid deforestation and environmental damage by increasing yields on the best farmland to reduce the need to utilize additional land. He also

[146] Mooney, Pat Roy. *Seeds of the Earth: A Private or Public Resource?* Inter Pares: Ottawa, 1979.
[147] A term no longer used. Now the world is 'divided' into developed and developing countries.

expressed concerns with overuse of pesticides and fertilizers and the environmental impacts, part of which drives the development of GMOs (genetically modified organisms). I do not want to convey the message that the rationale behind the Green Revolution was entirely economic. Economic factors played their role, but they were not the only factors at play back then. What I would say is that the Green Revolution ended up being largely co-opted by the global capitalist system. Monsanto is a case in point here. Even if GMOs, at first, were created with the pretext of fighting world hunger, now they are being used also as a tool of control. GMOs need specific pesticides, and such pesticides are also provided by Monsanto. Moreover, Monsanto does not allow for farmers to save their seeds in order to be used in next year's crop. They want to control that as well. Thus, what was once created with the best of intentions became subverted by the inner workings of our current economic system. To cite an example of land misuse derived from this model of agriculture in Brazil, Lutzenberger explained how the acceleration of mechanized farming, using technology imported from more temperate climates in Europe and North America, oftentimes damaged the soil. Brazil possesses a great amount of *oxisolic* and *podzolic* soils, and this kind of technology was not adapted to them. Therefore, during the period known as the 'Economic Miracle,' in which Brazil faced one of its darkest periods in history due to a military dictatorship, the focus of agriculture was on producing cash crops for export. That caused great damage to the soils of the Southeast and South regions, where erosion, lixiviation, among other pernicious effects, were observed.

To illustrate how the inherent expansionist behavior that capitalism possesses represents a destructive force, one could go back a few thousand years and pay heed

to the teachings of Shakyamuni Buddha, who believed that the human mind can present two behaviors: one is expansionist and the other is internalizing. The former discriminate concepts, delimits objects and relates them, always creating new objects and concepts and relating them to sensations and perceptions, thus creating an ever-expanding process of constant acquisitions. The other option is the internalizing principle that, looking at the appearances, comprehends both the emergence of the objects in the mind as well as their characterization and definition as mere appearances and conventions produced by our senses. Alfredo Aveline, a Physics Ph.D. and a close friend of Lutzenberger who is nowadays known by his Buddhist name Lama Padma Santen, said: “Evidently, our current crisis is not a crisis of materials and energy, even if scarcity would present itself. It is, indeed, a crisis of ideas, an exhaustion of a philosophical model, it is a crisis caused by a lack of clarity.”[148] Even the Romans knew that their empire should have an optimum size; that they could not keep growing and expanding it indefinitely. Augustus, in his will, explicitly asked for the Roman Empire to stop growing, which was in fact carried out – with the exceptions of the conquest of Britain and Mesopotamia circa 115 A.D. by Trajan. He knew (or at least believed) that there must a limit to any kind of growth, and that nothing (that we humans know of) can keep expanding indefinitely. This expansionist mindset is not the only way in which humans can behave themselves, though. *However, most people in positions of power do not seem to believe that a world in which growth and constant expansion are not the norm is possible. Or they believe that it is indeed possible to indefinitely maintain an unchecked economic expansion. Today, the search for objects, for things, became almost like an ideology.*

[148] Lutzenberger, José. *Política e Meio Ambiente*. Porto Alegre: Mercado Aberto, 1986, p. 103.

> The postulate of satisfaction, which stresses that, one way or another, we can find true fulfillment in the objects; it is what gives creed to this kind of behavior. Excluding the way in which this satisfaction should be distributed to all through objects, everybody would agree that these objects have this power and that the expansion in the number and options of the objects is beneficial to the general satisfaction.[149]

When talking about the situation in South America, Lutzenberger always thought that "The countries of our continent, even if already seriously dilapidated and devastated, still have the conditions for a full recovery and we have a unique chance of avoiding many deplorable and irreversible mistakes made by other societies."[150] Lutzenberger believed in the symphonic nature of organic evolution, in which a species has meaning only when related to another. There could be no life in isolation. Nature is not a plethora of isolated facts and circumstances. Everything is connected. For him, every instrument in this symphony, no matter how big or small, is essential and indispensable. Everything counts. Ecology, for Lutzenberger, is the *science of survival* – and human economy is just a partial aspect of nature.

> Nature is a symphonic process; it is like an orchestra that has an incredible number of instruments and musical sheets. Our current problem (also a problem for the orchestra) is that we, human beings, one of the last musicians to join the company have started to miss the rhythm. Instead of representing a new, enrichening instrument, we are behaving ourselves like musicians gone mad, that got up from their seat, started to play their instrument extremely loudly and out of tune, without looking at the musical sheet. We are dancing on the stage, pushing over colleagues, instruments, furniture, and even killing other musicians. To these mad musicians, both the orchestra and the stage are mere background noise.[151]

[149] Lutzenberger, José. *Política e Meio Ambiente*. Porto Alegre: Mercado Aberto, 1986, p. 114.
[150] Lutzenberger, José. *Fim do futuro? Manifesto Ecológico Brasileiro*. Porto Alegre: Editora Movimento, 1999, p. 9.
[151] Lutzenberger, José. *Crítica Ecológica do Pensamento Econômico*. Porto Alegre: L&PM, 2012, p. 127.

I partially agree (and partially disagree) with Lutzenberger on this. He believed in the somewhat obsolete 'balance of nature' paradigm, assuming that humans would be the only ones (or at least the main ones) causing ecological disturbances on a major scale. However, this 'balance of nature' paradigm, this 'homeostasis' is not the ecological norm anymore. For example, extinction also is a natural phenomenon. The struggle for existence and survival of the fittest are natural mechanisms and are natural phenomena as well. It is important to notice that many species behave like the musician gone mad Lutzenberger alluded – at least in certain places and at certain times. One thing I keep asking myself, though, is this. Why do humans keep performing actions that they know are not good for the environment and sometimes not even good for humans themselves? Can one blame a swarm of locusts for destroying (eating away) an entire area? It seems that the answer would be 'no.' However, can human beings be blamed for destroying an unique ecosystem in exchange for money and/or profit? It seems that the answer to this question would be 'yes.' Capitalism could be used as an ecological tool. The problem is not capitalism per se. The problem is what humans tend to value more – and what they tend to value less.

The current economic model postulates an open flux. This flux is unidirectional and moves in between two infinites: on one extreme, inexhaustible natural resources and energy, and on the other, unlimited capacity to absorb waste. *Since this flux connects two infinites, what follows is that, logically, it is indefinitely expandable in volume and speed – there would be no limits to 'progress' and 'economic growth.'*[152] Whereas the development of life, through countless eras of evolution, meant a constant increase in the 'ecological capital,' the progress made by modern humans seems to rely

[152] Here we can see more connections between Leopold, Lutzenberger and Daly.

on an ever-accelerating consumption of capital. In a short amount of time humanity was able to mar and destroy what took nature millions of years to build. Hurricanes, tsunamis, earthquakes, and other major natural phenomena can also create great destruction. However, humans are the only species (or the only factor, if you will), as far as we know, that creates such destruction consciously. Humans might know that some of their actions are extremely detrimental to them and to the environment. They might even know that these actions, sometimes, are not necessary and could be avoided. Nevertheless, they will do them all the same.

> The chainsaw and the tractor that in a few minutes cut down the ancient tree seem to be, for us, an entrancing progress. However, they make us forget that there was, and never will be, a technology capable of replacing, in the same spot and at the same rate, this felled giant. […] For technocrats, economists, and bureaucrats, money became the measure of all things – universal and exclusive. […] The destruction of a swamp, the transformation of the Amazon forest into grassland, or the cutting down of the last araucarias, for these people, will be perceived as wealth creation, not ecological undercapitalization.[153]

In the GDP equation, the degradation of the environment is largely overlooked and is not usually deducted from it. The undercapitalization of the ecosphere and the exploitation of human beings are not deducted as well. How can this be the measure used to determine if a country is doing well or not? For Lutzenberger, this was quite baffling. Therefore, in a neoliberal economy, people who spend the most amount of money in futilities, who manipulate more materials, who negatively impact the environment the most, would contribute more to the GDP than frugal people, who are concerned and aware of the ecological and social consequences of this lavish life style. Interestingly enough, if – thanks to environmental degradation, for instance – a public

[153] Lutzenberger, José. *Fim do futuro? Manifesto Ecológico Brasileiro*. Porto Alegre: Editora Movimento, 1999, p. 14.

health crisis would take place, spending on medicine, doctors and so on and so forth would produce an increase in the GDP. According to Lutzenberger, such index is "indeed proportionally to the undercapitalization of nature. Far from being an index of real progress[154], GDP is an index of auto-destruction."[155] Perhaps too extreme of a statement. Perhaps not.

It is not a well-kept secret that humanity is now divided into two groups: a) developed and b) developing countries. The former have already reached an advanced state of industrialization, consumption, and ecological squandering. However, they want to keep expanding their economies largely using neoliberal precepts to accomplish such growth. The peripheral countries are seen as backwards and behind schedule due to the fact that they are not yet fully integrated into the current economic paradigm. They are on the periphery, after all. However, they also want to become as developed as their richer counterparts – and who could blame them? *After all, there would be just one way of becoming a successful country.* Developing countries should thus follow the same steps developed countries already took – *and that path would lead to the exploitation of humans, non-humans, and the environment.*

> Progress, in those terms, implies the gradual substitution, and even a complete substitution, of the Ecosphere by the Technosphere, that is, of everything which is natural by something artificial. […] We do not realize that, in the same way the wind vane needs wind, the Technosphere depends upon the Ecosphere. Wind can exist without the wind vane, the contrary is not possible.[156]

[154] Which, according to Lutzenberger, is seen as anything that can lower the costs and improve profit. We are privatizing the profits and socializing the environmental costs.
[155] José Lutzenberger. *Fim do futuro? Manifesto Ecológico Brasileiro*. Porto Alegre: Editora Movimento, 1999, p. 15.
[156] Ibid., p. 17.

Writing in 1980, Lutzenberger drew attention to the fact that the Amazon forest was being targeted for integration into the global market system. It had to be populated. In order to accomplish that, the Brazilian government would have to act in the same predatory way Portuguese colonizers did when they “discovered” Brazil in 1500. However, technology today is able to exponentially create much more damage to the environment than in the past. It is like comparing two mass murderers. One has several automatic rifles, grenades, and a rocket launcher. The other one has a kitchen knife. Who do you think will be able to kill more people in the least amount of time? The answer to that is quite obvious. I know this sounds a bit dramatic, but I want to make this point clear. The ability humanity possesses to alter the environment today has never been so great – and the greater the power is, the greater the responsibility should be. In a short amount of time, human beings were able to cause more destruction than all the damage they have caused in the past 500 years precisely because their power is now unprecedented. According to estimates based on data from the National Institute for Space Research and the Food and Agriculture Organization (FAO), the Brazilian Amazon Forest has experienced an exceptional extent of forest loss over the past two generations. An area exceeding 760,000 square kilometers, or about 19 percent of its total surface area of 4,005,082 square kilometers, has been cleared in the Amazon since 1970, when only 2.4 percent of the Amazon's forests had been lost. The increase in Amazon deforestation in the early 1970s coincided with the construction of the Trans-Amazonian Highway (conceived during Brazil’s military dictatorship, by the way), which opened large forest areas to development by settlers and commercial interests. In more recent years, growing populations in the Amazon region, combined with increased

viability of agricultural operations, mainly soybean (used as a cash crop for export) and pastures used to feed the ever-expanding cattle industry, have caused a further rise in deforestation rates. The companies exploiting the forest, many being multinationals (and coming from central economies) and with no agricultural or forestry tradition, are mainly interested in their own financial gain. They see the Amazon as a source of profit. Given the nature of the Amazon soil, this type of agriculture cannot be sustained in the long run. The soil will, as time goes by, lose most of its nutrients. The Amazon soil is not – and this might not be common knowledge to some – very rich. According to a study by the International Institute for Environment and Development[157], in the second half of the 20th century, Brazil and other countries of the Amazon basin initiated land reform and colonization programs to finally encourage permanent settlement. Migrant farmers to the Amazon basin soon discovered however that rainforest soil was unsuitable for many forms of permanent cultivation. Amazon soil is old and intensely weathered, generally acidic, infertile, and subject to compaction from intense solar radiation. Most nutrients are stored in aboveground vegetation. Cutting and burning enriches soil but nutrients are leached or unavailable to crops after just a few growing seasons. Cutover lands turned over to cattle pasture, but in many cases returned to secondary forest.

> When it is easy to make money from coffee beans, we cut down every tree to plant coffee; if wheat and soybeans promise huge profits, we would destroy the last forests surrounding important fluvial basins; if rice or sugar cane can create capital or influence votes, nothing will stop the drainage of valuable wetlands.[158]

[157] International Institute for Environment and Development (2015). "The interface between forests, agriculture and climate change: understanding the implications for REDD." Retrieved 22 June 2016, from http://www.iied.org/interface-between-forests-agriculture-climate-change-understanding-implications-for-redd

[158] Lutzenberger, José. *Fim do futuro? Manifesto Ecológico Brasileiro*. Porto Alegre: Editora Movimento, 1999, p. 26.

A good example used by Lutzenberger to explain how the economic approach could trump or subvert everything else is one particular kind of ‘reforestation’ process. In Brazil, during the 80s and the 90s, the government created some incentives and subsidies for said reforestation. However, due to the largely economic nature that this enterprise quickly assumed, ecological concerns went down the drain. Forests and other still-intact and not-threatened floral formations were summarily brought down with heavy machinery to make room for a monoculture of exotic species. Before this reforestation incentive, the marred forest at least had a chance at getting back on its feet. After this initiative, it became much harder for the forest to bounce back. Some people realized that the more native forest was cut down, the more they could ‘reforest’ using exotic species – meaning more profit for them. I do not think that these people consciously wanted to destroy the ecosystem or substitute native species for exotic ones. However, their system of values seems to emphasize money or immediate profit, which somehow feel closer to them, instead of the environment (in this case the native forest). If the GDP index had a built-in feature that would make explicit all the detrimental effects economic and political decision have over the environment, I believe such emphasis would become much harder to be maintained. This ‘reforestation’ created a much more difficult scenario for that particular area to recover itself naturally. With the monoculture of pines and eucalyptus what happened was not a true reforestation. *What was created was a readily available source of resources for the wood and the cellulose industries.*

Lutzenberger was always opposed to the construction of mega-dams, especially in the Amazon Forest, and he should probably be turning in his grave now. Brazil

recently saw mass protests against the construction of the Belo Monte Dam, located precisely in the Amazon Forest. The reasons for this project were, as told by the Brazilian government: it is 'clean energy,' it does not harm the environment as much as the burning of fossil fuels, it is a renewable energy, etc. The energy generated by a dam is not exactly clean energy, though. Moreover, a dam heavily disrupts the life of an ecosystem and its effects are two-fold, affecting both the social and the ecological. Projects like the Belo Monte Dam in Brazil and the Three Gorges Dam in China have many flaws. They serve a logic that is also two-fold: *1) the logic of the bureaucrat, who wants to centralize control; and 2) the logic of the contractor who, once a project is completed, quickly needs to find another one.* Lutzenberger warned us about this one-sided way of being in the world.

> The engineer who projects the mega-dam is only interested in the megawatts generated by it or in the acres that it will irrigate. For him (sic) there is no beauty in the landscape, even if incredibly sublime, the cosmos of life that will die flooded does not matter, and the fish that during the *piracema*[159] need to swim upstream to lay their eggs and reproduce face an insurmountable barrier in the dam.[160]

The construction of a dam is but one example of how the externalization of costs works in a capitalist system. Lutzenberger once said that similar mega-dam projects in the middle of the Amazon Forest would represent the same thing as if the Pyramids of Egypt were to be demolished and their rocks were to be used for construction.

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[159] *Piracema* comes from the Tupi (one of the Native Brazilian tribes) language "pirá", which means fish and "sema", which means exit. "Fish exit" would be a rough translation. The *piracema* represents the period of time during which the fish have to swim upstream to lay their eggs and reproduce. The *piracema* season varies from region to region. It depends on which drainage basin you are located and also on the fish species you have in mind. Thus, each state sets its own time frame during which fishing becomes prohibited, and they have to relay this information to the Ministry of Environment. In general terms, though, this restriction period usually goes from November to February.

[160] Lutzenberger, José. *Fim do futuro? Manifesto Ecológico Brasileiro*. Porto Alegre: Editora Movimento, 1999, p. 31.

Technocrats of all specialties tend to base their work on the presupposition that nature should adjust itself to their technologies and not the other way around. Even though technology can help us solve some of our problems, it also creates a plethora of new (and possibly more dangerous) ones. The key is to not rely too much on technology and start seeing it as something that can also be destructive. For Lutzenberger, the thought that technology will save humanity from itself plays into the current political and economic paradigms. Even anti-pollution technologies also help to increase the GDP. According to Lutzenberger, "pollution is good for business and we do not even consider the possibility of consuming and producing less and of eliminating our prodigal behavior."[161] Therefore, if a company pollutes a river, a brook, or a stream with millions and millions of tons of sulfuric acid, it is better to extract fresh sulphur from the mine (in order to create more sulfuric acid) than it is to recycle the sulfuric acid which has already been created. This is still largely the case because, according to the company's calculations, and following the current economic rules of the market, this would be much cheaper. It is an economic calculation. Cutting costs is, after all, one of the main elements in a neoliberal economy. Now, what if there was a heavy tax on the use of new natural resources or perhaps a subsidy[162] for the recycling of used materials? This would lead to an economic decision that would also be the best alternative for the environment. Is it impossible? No, it is not impossible and it can certainly be achieved. How can this be done? Via policy-making and via political action. The problem is that the same people who are responsible for harming the environment in the name of profit

[161] Lutzenberger, José. *Fim do futuro? Manifesto Ecológico Brasileiro*. Porto Alegre: Editora Movimento, 1999, p. 36.

[162] For Lutzenberger, in their current configuration, subsidies (usually), besides not solving the ecological problems they are trying to solve and adding even more issues due to the additional devastation they create, also represent an anti-social maneuver. They favor the rich in detriment of the poor.

can many times also be found sitting in the government or influencing it. Some of the dire effects of lobbying can be particularly felt in such examples. One has only to remember the case involving Halliburton, one of the world's largest oil field services companies, with operations in more than 80 countries, and Dick Cheney, by then United States' vice president. And while there are many environmentally friendly lobby groups as well, they do not possess as much power, money, and influence over policy-making as less environmentally friendly lobby groups have. After all, who do you think will have a bigger influence over a particular government and the decisions it makes? Monsanto and its lobbying juggernaut or an NGO like Amazon Watch?

Lutzenberger, along the lines with what Aldo Leopold thought, also saw the close relationship between capitalism, lobbying, and advertising. The current configuration of the industrial society requires constant growth in throughput, meaning a constant use and/or increase in the usage of natural resources. This is still largely perceived as being the best way to become a 'better country.' To keep growing, the system employs a vast advertising apparatus, with the help of mass communication, which in turn will use a plethora of psychological tricks to convince us that we need to buy things that are ultimately superfluous. Appealing to frivolity, vanity, and a hunger for status, the advertising industry has created a feeling of necessity for unnecessary things that, instead of creating happiness, seem to generate unhappiness.

> An irreplaceable capital is only destroyed once. The biotic, mineral, and energetic resources, so greedily extracted by our Consumption Society, are the result of a long geologic and organic evolution that acts as a one-way road. The natural resources we dissipate, the petroleum we burn, the species we erase, will never

> come back. If we were a truly rational species, we could not be doing what we are doing today.[163]

It is in the best interest for today's consumption society that products are created having in mind a short life span and, thus, they need to be quickly replaced. It is the good old planned obsolescence paradigm. Let me use the iPhone example here – which is just one example among many. Each year people are led to believe that they somehow *need* to purchase the newest iPhone model because of reasons A, B, or C. Not everybody will buy into this mindset, though. However, this practice of having the 'newest model' (of cars, phones, and etc.) is still largely considered as something positive – or at least more positive than negative. The problems arising from over-consumption and over-production are never advertised and, most of the time, tend to be overlooked or shielded from the public gaze. I have yet to see a commercial or an ad criticizing this consumption frenzy. Some people seem to disregard that in order to build an iPhone we need to take valuable natural resources from the Earth. An iPhone, and everything else we produce, do not come out of thin air. They are created using resources from our planet – resources that are finite. This is a fact.

> Things are created to not last because we want to sell more and more of them. If you dare to criticize this approach you are seen as being against the creation of jobs. However, if we were only to produce what we truly need and if the products would last longer and be more durable, we could all work less and dedicate more time to intellectual, artistic, recreational, and social activities. The outcome would create a materially better world – a less degraded one. […] The decision is not technical, it is political, moral.[164]

[163] Lutzenberger, José. *Fim do futuro? Manifesto Ecológico Brasileiro*. Porto Alegre: Editora Movimento, 1999, p. 40.
[164] Ibid., p. 38.

Lutzenberger believed that the biotic and the human communities are one and the same thing, thus echoing the words of Aldo Leopold. The ecological and the social would be two sides of the same coin. Human action should be based on the presupposition that the fundamental ecological principle should mean that the health of soil, plants, animals, and humans are the same indivisible thing. Lutzenberger had an interesting insight about the human tendency to centralize things, with a particular interest in our propensity to concentrate power. For him, decentralization would be beneficial for both the human and the non-human worlds. Decisions, technologies, and capital should be decentralized. A renewable energy revolution is yet to take place mainly due to the fact that petroleum centralizes economic and political power and creates dependency. The more transnational corporations control the market, the harder it will get for the system to change. I like to call this the 'inertia of power.' Maintaining the status quo benefits said companies, thus, they are not particularly excited about such a dramatic change. Lutzenberger used to tell a story about how human behavior could be related to a 'snowball effect.'

> However long the mountain slope may be, at the bottom of the valley the avalanche will end in a roaring bang. This example illustrates two fundamental aspects of this exponential behavior: 1) a long slope only leads, in the long run, to a bigger bang. This means that, in this type of behavior, *more resources do not solve anything, they only enhance the problem because in the end they will cause a bigger disaster;* 2) initially the exponential process can be very orderly but, after an initial stage, it becomes chaotic and incontrollable. It the beginning the snowball rolls smoothly just like a wheel but, after a certain size is reached, it becomes an avalanche that destroys everything in its path. […] If we closely observe the current state of humanity, we will be able to conclude that we are already entering the avalanche stage.[165]

[165] Lutzenberger, José. *Fim do futuro? Manifesto Ecológico Brasileiro*. Porto Alegre: Editora Movimento, 1999, p. 76.

The development of highly industrialized countries like the United States[166], France, Germany, and England, for instance, was only possible because natural resources were taken from developing (peripheral) countries like Brazil. This represents the echoes of colonialism. These countries are still taking the resources from the periphery and bringing them to the center. Thus, in a sense, what happens is a situation in which a few countries, having already exhausted their resources in order to keep expanding their economies, will continue to do the same thing. Unfortunately, this constant growth creates environmental as well as social drawbacks and the advocates of a 'trickle-down economics'[167] seem to be missing the point here. Trickle-down economics is closely related to the idea of a constant growth in throughput or in GDP. Such advocates believe that, simply by making the economy bigger, the problem of inequality will be solved – which does not seem to be case[168]. In a nutshell, a sheer quantitative growth in throughput or in GDP, under the current economic system, tends to lead to a wider gap between the richest and the poorest while creating, at the same time, environmental degradation. Even though I do not necessarily agree with the assumption that simply by internalizing all external costs such problems would be solved (since this could lead to the idea that everything has a price), that would be a step forward in

[166] The United States started as an English colony. However, they achieved their independence relatively quickly (if compared to Brazil and most peripheral countries) and soon followed a more 'colonialist behavior.'

[167] It is a term for the theory that providing economic benefits to those with upper-level incomes will ultimately benefit society as a whole, through the extra wealth being invested into the economy and therefore creating jobs that provide wealth for lower-income earners (with that wealth in turn being spent back into the economy).

[168] Joseph Stiglitz, a Nobel-winning economist, believes that the American middle class is worse off after 35 years of the supply-side economics experiment. The policy's mix of lower taxes at the top and less regulation has failed to deliver on its promise of giving middle, and low-income, Americans a bigger piece of the pie as the entire economy grows. In his book *The Great Divide: Unequal Societies and What We Can Do About Them*, Stiglitz argues that capitalism does not have to produce inequality. Inequality is the result of choices capitalist countries make. Hence, trickle-down economics does not work as its proponents think it does.

slowing down or deemphasizing this model of growth. By making the hidden costs visible (and adding them to the equation), the true ecological and social costs of a constant growth in GDP would become visible as well.

Most modern humans, predominantly urban, are born and grow up in a largely artificial environment. Their perceptions and feelings are forged by circumstances that were not present when our species first appeared and started to evolve. Nowadays, how can a child, whose mind is developed in such a degraded environment, so distant from nature, have an appreciation for it? Sure, such thing is possible – but it becomes much harder to achieve this ecological sensibility. Nature, for Lutzenberger, has become something 'profane.' It has lost its status as something 'sacred.' The relationships between humans, and between humans and God, became the only valid ways to be in the world. Nature became one among the many possessions humans have. Something that can be compartmentalized, abused, and exploited. Capitalism (a form of relationship between humans and between humans and the environment), with its amoral foundations, does not seem to care that much if a few pieces of the ecological puzzle are lost. Capitalism will find a way to explore another option, another path. It is interested in the parts, not in the whole. If piece A is lost and no more profit can be made from it, piece B will be then exploited in order for the system to keep working as it is. Thus, by focusing on this compartmentalization, it becomes easier to disregard this or that species, or this or that ecosystem. For Lutzenberger, "the fish is not better than the mussel, the fig tree is not better than the palm tree; everything acts

in a complementary way[169], the differences are the key to complementation. Hence, our future lies in the *Ecological Culture,* in the *Ecospheric Patriotism*."[170] He was an avid advocate for the Gaia Theory, which was put forth by James Lovelock and Lynn Margulis. Even if I do not agree with said theory, there is a very important element that they brought into this ecological and philosophical discussion, namely, sentiment. Compassion and empathy, for instance, are largely absent from capitalism. Humans are inherently rational but also emotional beings. Val Plumwood and Karen Warren have taught me how to appreciate and welcome compassion and empathy into our academic life. This same influence could, and should, be applied to our social, political, and economic lives as well. A less competitive (and a less 'amoral') capitalism, and a more cooperative one would, I believe, benefit human society and the environment.

5.4 Lutzenberger and the Soft Technologies

> *The soft path proposed by ecology is, precisely, the path of social justice. Social justice and environmental justice are two faces of the same coin.*
>
> José Lutzenberger

The constant drive to expand the global market based on the tenets of neoliberal economics, which demands more and more natural resources to be consumed, cannot be the norm and it is not sustainable in the long run. Would it be possible, Lutzenberger used to ask, for Earth's biosphere to exist if the animals were the only form of life available? Thus, there would be no plant life whatsoever. The answer would be no. Why

[169] I must disagree with Lutzenberger here. Complementarity has a specific ecological meaning, and organisms have different degrees of complementarity that depends on the process or function of interest. Thus, statements such as "everything acts in a complementary way" are not exactly correct.
[170] Lutzenberger, José. *Fim do futuro? Manifesto Ecológico Brasileiro*. Porto Alegre: Editora Movimento, 1999, p. 81.

not? Because there are two processes that perfectly interact with each other on this planet. On the one hand, there is photosynthesis ($CO_2 + H_2O$ + solar energy = $CH_2O + O_2$). This shows how plants use CO_2 as a source of energy. On the other hand, there is cellular respiration ($CH_2O + O_2$ – energy = $CO_2 + H_2O$), which is something animal life does. It is a fine and delicate interplay. What one creates or produces, the other consumes – and vice-versa. According to Lutzenberger, "Plants are here for us, but we are here for them as well."[171] It is a matter of playing our part as humans in the symphony of life. Even something most people would consider to be 'bad' (a weed, for instance), has its function in the 'Great Context,' as he used to call life on Earth. Modern agriculture would not be heavily using pesticides (and other biocides), at least not in the same amount as it employs today, if it took into account that weeds and other 'pests' (some insects, for instance) will tend to attack a weak host rather than a healthy one. Both weak and healthy hosts are susceptible of being attacked, though. However, a weak host is at a greater risk of being the target of such attacks. Weeds and pests, for Lutzenberger, are an important sieve in the biological evolution of any organism. This 'sifter' creates diversity, which means more doors would be open for life to develop and to adapt – meaning, in general, more resistance, adaptability, and resilience. Pesticides tend to reduce biodiversity. However, the chemical industrial complex depends on the selling of pesticides and biocides, for they are its main source of profit.

Lutzenberger also criticized the way in which GMOs (genetically modified organisms) were being used, not because they would be inherently pernicious or bad – but because they have become tools that are used to control something that should be affordable and available to everybody. Currently, they are not. For the first time ever,

[171] Lutzenberger, José. *Gaia, O Planeta Vivo (por um caminho suave).* Porto Alegre: L&PM, p. 90.

humans are now able to patent living beings, parts of living beings, and even natural processes. Monsanto is perhaps the standard-bearer for this centralization of control. Many people think that GMOs will solve the problem of hunger in the world and that is the reason why they were created. Well, it seems that there is not a problem with the production of food *per se*. The problem is one of food distribution and food waste – in the same way that there is a problem with the distribution (and not the creation) of wealth. Lutzenberger did not have anything against biotechnology, but he always stressed that it should not be used solely for commercial purposes.

> This [the commercialization of biotechnology] has to do, only, with the creation of power structures and dependence. If in India hundreds of thousands of farmers are protesting against the introduction of GMOs – personally, in Bangalore, in 1993, I witnessed a demonstration of about half a million farmers – that is the case because they know this kind of technology will play against them and can only favor the agribusiness (the agro-industrial complex). The so-called Green Revolution, which introduced the massive use of synthetic fertilizers and pesticides, has marginalized hundreds of millions of farmers around the world – a social cost that is never accounted for when we talk about the "advantages" of modern agriculture.[172]

The Portuguese colonizers, Lutzenberger thought, brought with them a terrible 'mental disease.' This disease was the anthropocentric worldview, something Lutzenberger compared to the desacralization of nature. In Brazil, the consequences were particularly pernicious since Portugal was only interested in plundering its natural resources. It was an exploitative system with no concern about the sustainability of the land or the well-being of the native people who were living there for thousands and thousands of years. One of the main reasons why the Brazilian Northeast is now a semi-arid region (called *caatinga*) is because the Portuguese colonizers exploited that

[172] Lutzenberger, José. *Manual de Ecologia: do Jardim ao Poder, vol. 1*. Porto Alegre: L&PM, p. 69.

area to such an extent that the native forest, mostly formed by a species called *pau-brasil*, could not bounce back. To the Portuguese (and to all the other colonizers), the function of nature was not to produce food or to sustain the native populations but to produce money and to keep expanding their power on a global scale. This is the reason why, since the beginning, the norm was monoculture (sugar cane, coffee, cacao, etc.) aimed at the external market.

Another interesting fact, and apparently unrelated (but related nonetheless) to this discussion, is how Lutzenberger perceived the consequences of the military coup that took place in Brazil in 1964. At that time, Brazil had a small but mostly independent national industry. It all started with manufacture and grew up from there. Even though said industry was still incipient at the time, it developed itself in and around the Brazilian reality, taking into account national but also more local interests. After the military coup, that kind of industrial activity was relegated to the background in favor of the multinational industrial complex, a follower of neoliberal economics. This new industrial scheme came from the outside; it was foreign, without compatibility to the country's needs – an echo of the modern agricultural business model. The same thing tended to happen all around the globe. Power became concentrated in the hands of a few groups and countries – and social and economic inequality tends to lead to the exploitation of humans, non-humans, and the environment. *In cybernetic terms, power is a process that has positive feedback, that is, the more power one has, the easier its expansion will be. Moreover, power has the detrimental characteristic of attracting people who want to abuse it in order to favor themselves.*

> I leave here a suggestion that seems to be, at least to me, very important: I wish that political scientists and sociologists with vision could deepen their study of Ecology and could also examine in great detail how natural systems work, at least until they are around. I suspect that they would discover extremely important models for the human condition.[173]

That being said, there is a prevalent mindset nowadays that advocates that, in the name of the eradication of poverty, the environment can be exploited and plundered. However, for Lutzenberger, *poverty will not be eradicated by our actual model of progress. Poverty is caused by this very model of progress, which has the current configuration of capitalism as its main foundations.*

> If today the damage is already immense and the dead are hundreds, it will not take long for the dead to reach millions. We are incapable of learning from our mistakes. The increasingly dramatic warnings issued by Nature are always ignored. We keep insisting on the consumption of our future.[174]

Lutzenberger was well-aware of the relationship between money and power and the way technology has been usually employed. He proposed an alternative way, a 'soft path,' pragmatic, ecologically acceptable and socially desirable, in which people would starting using more and more soft (or 'tender') technologies[175]. Soft technologies are conceived in function of, exclusively, the problems and real necessities of humanity in an ecological harmony, in stark contrast to hard technologies, which today are the norm and that are conceived having in mind the interests of a selected few. What makes a technology softer or harder is the degree to which the orchestration of phenomena is

[173] Lutzenberger, José. *Manual de Ecologia: do Jardim ao Poder, vol. 1*. Porto Alegre: L&PM, p. 116.
[174] Ibid., p. 39.
[175] It represents the path to the decentralization of capital and the power to decide, the path to soft and adequate technologies, adjusted to the local scale, inserted into the social, physical, and biological and socio-cultural context. On the other hand, hard technologies favor the concentration of power and the creation of dependency.

actively performed by a human or humans. ‘Hard technologies’ involve fewer human mediated processes because they embody them in tools and toolsets. Such technologies tend to be more constraining and authoritarian while ‘soft technologies’ tend towards creativity and flexibility. Thus, softness and hardness, technology-wise, pertain to the effects of technologies and to their constitution. An example of this is the use of internal versus external controls in agriculture. Francis Chaboussou, a French researcher at the INRA (*Institut National de la Recherche Agronomique*), has put forth a theory he called *trophobiosis*[176]. This theory advocates that any parasite or plague will have a hard time surviving if the plant is healthy. They tend to thrive if the plant is weak or ill. Pesticides and biocides (which represent external control and would thus be a hard technology) are a worse option than internal control (which uses natural mechanisms and processes that have been naturally evolving since the inception of life on Earth – and would thus be a soft technology). The more the use of pesticides and biocides increases (particularly in monocultures), the greater the incidence of plagues will tend to be. A heavy pesticide use would make the plants weaker and more susceptible to being attacked because the biodiversity of a particular ecosystem would be reduced. So, for instance, if I spray my GMO soybean crop with a particular pesticide, which was created to kill everything but said crop (since my GMO crop is resistant to this particular pesticide), the crop itself will remain unharmed. However, everything else other than my crop will perish. This is why an indiscriminate use of pesticides results in a reduction in biodiversity. It is a dangerous disruption of processes

[176] He introduced the term trophobiosis to describe the symbiotic association between organisms where food is to be obtained or provided. The provider of the food is referred to as a *trophobiont*. The term is also used for a theory of pest resurgence on crops to which pesticides have been applied causing an increasing dependence upon pesticides.

that do not need external control in the first place. External control (a hard technology) is not something necessary – at least not most of the time. It is a choice, though. A choice based on the values held by the ones responsible for such decisions. Nowadays, conventional agriculture heavily relies on agrochemical methods, which are the result of a reductionist worldview. Every aspect is seen as an individual and isolated 'drawer.' However, ecology represents the complete opposite of this mindset. Ecology represents a global and comprehensive view. Lutzenberger was always creating metaphors and analogies to describe the way human beings tend to behave towards nature. One of his most famous analogies involves a ruler and a very small human being, who is irresponsibly pushing the ruler on a table, very close to its edge. Since said human is incredibly small, he/she cannot see where the table ends. He/she will keep pushing the ruler until it is too late and the ruler will invariably fall to the ground. After this 'event horizon,' there is nothing that could be done. Both ruler and the tiny human will be lost.

> I recently attended a conference in Hamburg in which a British climatologist was talking about how global agriculture will have to adapt itself to the upcoming climate change. Instead of focusing on changing our current destructive agricultural methods so that they can no longer damage the Earth even more, he was focusing on conforming agriculture to climate change. He even said that these changes would be welcomed, showing a map of Finland with two horizontal stripes crossing the country. One, limiting the zone in which it is possible to grow wheat today. The other, located 300 km to the North showing, according to him, where it will be possible to grow wheat when the planet becomes warmer. I cannot, by any means, accept such linear extrapolation.[177]

One could say that there is not a need to find a new way to revere nature or to make it 'sacred' again. Humans could simply be more pragmatic. Even if they do not have to think about nature as something sacred, they should bear in mind that once the

[177] Lutzenberger, José. *Gaia, O Planeta Vivo (por um caminho suave)*. Porto Alegre: L&PM, p. 75.

environment is gone, humanity will inescapably follow the same path. Humans depend upon it for their survival. It is as simple as that. For Lutzenberger, changing the current economic system would not be enough – even though this would be a necessary first step. There would have to be a change in the notion of progress. A reevaluation of what it means to be 'better' would have to take place as well.

> Technocracy, always eager to increase the concentration of power […] put a price tag on everything, but does not know the value of anything. It presupposes that everything is buyable or substitutable – with only one exception, maybe, of humans (when it cannot substitute them with machines). Technocracy is not worried about producing good and durable goods; it wants to produce disposable things. For those to whom everything is disposable, nothing is precious.[178]

The current technological structures are schemes in the exercise of power – and this paradigm creates a new form of slavery. It fixates humanity in this power structure and exploits the environment. The great bureaucracies, in the government or in the private sector, have slowly 'enslaved' a great number of people. These bureaucracies build up their power on the increasing technological sophistication, on the progressive concentration of capital, and on the accelerated concentration of the power economy has over political decisions. It does not matter if this structure belongs to entrepreneurs, to multinationals, or to the government. Lutzenberger always advocated for a different thing, something he called 'the soft way.' In this scenario, the dogma of growth is replaced by the doctrine of sustainable balance and quality of life. Progress would not be measured solely by the use of an index like the GDP[179]. Progress would become, thus, something much more complex. It would also include factors that have little or

[178] Lutzenberger, José. *Pesadelo Atômico*. São Paulo: CHED Editorial, 1980, p. 16.
[179] The problem, after all, at least in my opinion, is not quantifiable indexes *per se* – but the focus on simplistic and insensitive ones.

nothing to do with the flux of money and the mere handling of materials. Such factors include the increase in the general happiness, a better integration between humans and their environment, a more beautiful, healthier, and richer ambient for life to thrive, with a more diversified social life. Also, more social harmony, more culture, more art, more recreation, social interaction and more joy in living. What mattered for Lutzenberger was the maintenance of our material and spiritual heritage, not simply the increase in our physical and monetary capital. *Money is simply an anonymous contract, a medium of exchange (as Simmel said), separate and divisible, and it loses its meaning when the resources disappear.*

The more centralized a particular scheme becomes; the more power will become concentrated in the hands of a few groups as well. Centralization often provides a fertile ground for inequality and exploitation – social and ecological. Solar power, for instance, should be garnered using decentralized systems. The sun offers us its energy in a diffuse way, widely distributed. Furthermore, it is important to notice that decentralization also increases the thermodynamic efficient of energy usage. Besides ending the loss of energy during transmission, the necessity of having to store special reserves of energy to compensate for partially paralyzed centrals because they have been damaged or because they are going through repairs would be greatly reduced. On top of that, there would be an increase in the flexibility of the system, which goes through daily fluctuations in demand. Decentralization could also be applied to hydraulic energy. The focus should not be on building mega-dams. “For the big construction companies, and for corrupt politicians, there will never be enough dams in the world.”[180] The focus should be on the construction of small turbines, which would be spread

[180] Lutzenberger, José. *Crítica Ecológica do Pensamento Econômico*. Porto Alegre: L&PM, 2012, p. 110.

throughout a river. It is a less invasive technology and it would cause less disruption to the ecosystem. However, things are never that simple. Every river has its own particularities. Thus, the installation of these small turbines would depend on the river, on the species occurring in it and their natural histories, the energy production requirements, other impacts to the system, and so on and so forth. I believe this would still be a better alternative over the concept of mega-dams.

> The true function of a government is to take care of the common good and the quality of life for present and future generations. Its function should not be solely corroborating what the big corporations present as the only and inescapable solution, without social reference, to then adjust the social and political targets to the desires of those who currently wield the economic power.[181]

Ernst Schumacher, in *Small is Beautiful*, came up with the idea of the necessity of a production by the masses as opposed to mass production. Along similar lines, Lutzenberger believed that Brazil would find itself in an interesting position and it would have a bigger chance than the so-called developed countries of creating a real change in the current paradigm. For him, Brazil still possesses a considerable amount of natural and energy resources and it is less advanced in this 'suicidal race' for growth. "The immensity of our territory allows us to still conserve nature in forms and quantities that for most countries would be impossible nowadays. We cannot waste this chance."[182] The reorientation would be easier and socially more acceptable. For a large part of Brazil's population, the soft path would be their best chance to truly participate in a genuine development. *Soft technologies, thanks to their malleability, can be inserted into any culture, adapting themselves to its values and goals.* Said technologies can be

[181] Lutzenberger, José. *Pesadelo Atômico*. São Paulo: CHED Editorial, 1980, p. 65.
[182] Lutzenberger, José. *Fim do futuro? Manifesto Ecológico Brasileiro*. Porto Alegre: Editora Movimento, 1999, p. 64.

a way to preserve indigenous cultures, which are currently facing the threat of extinction. On the other hand, hard technologies (or mega-technologies) tend to hurt traditional cultures, force people to change their values, destroy stable social structures, and alienate individuals.

> Our current society favors a minority over the majority. We can see this in the international context, where the developed countries take advantage of the natural resources that the undeveloped countries have, and the same system exists within each one of these countries. The dominant class, both in the developed and undeveloped countries, concentrate privileges and advantages for themselves, pushing the inconvenient social and ecological costs to the have nots. […] Slavery's old ways were at least more honest. Slavers did not deny their condition. What we see today is the dominated accepting the ideology of the dominator.[183]

While this centralizing mega-technological system continues in its place, inequality will not be eradicated, since this exploitation that knows no limits destroys habitats, cultures, ecosystems, and ways of life. Nevertheless, the so-called developed countries profess that their paradigm should be brought to every corner of our planet. There is a serious flaw with this proposition, though. If everybody would follow the precepts, practices, and the levels of production and consumption of those countries, Earth would not be able to sustain human civilization. Sometimes people seem to forget that natural resources are finite and cannot cope with an indefinite increase in production and consumption. This idea is very naïve and flawed, to say the least. Modern agriculture is a good example of this worldview. It works with open cycles and with non-renewable resources. The fertilizers come from mines that will end up being depleted; such is the case with phosphates. Those mines are usually located in peripheral countries, creating the problem of long distance transportation. Nitrogenous fertilizers are produced via

[183] Lutzenberger, José. *Pesadelo Atômico*. São Paulo: CHED Editorial, 1980, p. 76-77.

enormous consumption in energy: oil, natural gas, coal, electric energy. Pesticides, in the same vein, are derived from petroleum or coal and presuppose a heavy dependency upon the chemical industry[184]. During the early Eighties, Lutzenberger started to follow with great concern the increase in the concentration of power related to the control of genetic banks by seed production companies. In the Nineties, such control was in the hand of a dozen companies. These same companies also control the pesticide industry and the pharmaceutical industry. An example of this paradigm was the insertion of a gene called 'terminator' into commercial seeds. Said gene, when present, makes impossible for the farmer to obtain his/her seeds from the previous harvest[185]. Thus, the farmer becomes totally dependent upon that industry. He/she will need to keep buying new seeds from those companies.

> The modern farmer is a tiny cog in an immense technical, bureaucratic, financial, administrative, and legislative structure, which starts in the oil fields, goes through the chemical industry, the banks, the industrial manipulation of food, reaches the supermarkets and commercial centers, universities and agricultural research, promotes a gigantic transportation shift, social and ecological pernicious, and also an unrestrained packaging industry that produces an ever increasing quantity of waste.[186]

One of the main problems pointed out by Lutzenberger is the fact that our technocratic and neoliberal society tends to perceive nature as a source of profit. Such mindset would raise questions such as: "What can we do with this? Beyond the touristic potential, is there, in this mountain, some important mineral we can explore? How much can we gain from this? Perhaps if we cover this part of the ocean with some new land

[184] Bearing in mind that pesticides and chemical fertilizers were not born out of an agricultural necessity. They are the result of the surplus of chemicals from the First and the Second World Wars.
[185] The reasons behind this are not solely monetary, though. They are also related to artificial selection and pest resistance.
[186] Lutzenberger, José. *Crítica Ecológica do Pensamento Econômico*. Porto Alegre: L&PM, 2012, p. 23.

we can obtain large profits from the real estate speculation?" After all, who really profits from the current economic and political system we live in? A great example of how deep this paradigm goes is told by Lutzenberger in one of his books. In a Brazilian city, he says, fruit preserve companies started to apply a new technique to peel fruits. In the past, these fruits were peeled by hand. Not anymore, though. Now the fruits are chemically peeled. They receive a bath of caustic soda and they come out completely clean and peeled. 'Technically,' a sound decision: more efficiency, reduction of costs, automatization, uniformity, less manpower, and a few other small advantages. There is a tendency to think that this 'technical' decision is politically neutral, so there would be no need for discussing such things. They would be accepted as being 'common' and 'normal.' However, this decision has social and ecological consequences. Thousands of workers lost their jobs and the river located next to the factory, where these workers and the local community used to fish, became an open sewer because it started to receive all the chemical residues resulting from this new peeling technique. And there is one more loss to be accounted for. All those fruit peels were employed to feed the pigs in the nearby area. No more food for the pigs, though. In this case, the only one really profiting from this situation seems to be the factory owner (and perhaps a handful of other people). *These costs, inflicted unilaterally by one party, and which are externalized, are thus socialized between humans, non-humans, and the environment.* That is how our economic system tends to work. *The issue here is that technical decisions are always political, and therefore moral, decisions.* They should be politically discussed before being put forth. When a particular technique is chosen, engaging in a

political act takes place at the same time, and it does not matter how big or small said act is.

> With the instrument, humans expand the reach of their spiritual capacity because the instrument obeys the will of those who wield it. On the other hand, the machine imposes its own rhythm and its own limitations. Since the machine is inflexible and humans are not, we end up adapting ourselves to it. The instrument brings democracy, the machine creates despotism.[187]

5.5 Conclusion

If economics is the study of human transactions, that is, of the exchanges between humans – creation and distribution of wealth and resources in communities and societies – *only some sort of blindness would allow us to forget that economics is but a chapter of ecology*. For Lutzenberger, economics is a social discipline. The current model of economic growth seems to be detached from the way ecological systems work. The dogma of constant growth in throughput and in GDP is neither achievable nor desirable and an indefinite economic growth could be compared to a tumor. The only difference is in the way the tumor is perceived. The constant proliferation of cancer cells is something deleterious that needs to be fought against at all costs. Nevertheless, constant and ever-expanding economic growth, in a finite environment, with a limited pool of resources, is still largely perceived as being something good, desired, and even welcomed. If someone shares the belief system attached to neoliberal economics, that is. In a sense, it seems that the overall sentiment is to cheer for the cancer to get bigger and bigger and to spread through the organism. The only problem is that cancer kills people. The current economic system is doing the same thing to the planet's ecosystems – and once its support system is gone, because its host is no more, the

[187] Lutzenberger, José. *Pesadelo Atômico*. São Paulo: CHED Editorial, 1980, p. 68-69.

cancer dies with it. Without the Earth, there can be no economic system (or any other system, for that matter). Carl Sagan once said: “Anything else you are interested in is not going to happen if you cannot breathe the air and drink the water. Do not sit this one out. Do something. You are by accident of fate alive at an absolutely critical moment in the history of our planet.”

Echoing Alan Watts, Lutzenberger used to say that we are not a materialistic society *per se*. We should be considered abstractionists. *We are more interested in numbers (GDP) than in anything else. If one is dealing with numbers, there is no limit.* Objects that should be as solid and durable as possible are designed following the philosophy of ‘planned obsolescence,’ so that they cannot last for long and cannot be easily repaired. The sooner these objects reach the trash can, the better. Then, there is the necessity to buy new ones. The manufacturer is not interested in making the best, the most efficient and most durable product. What it matters the most is the profit that is being made – a number and an abstraction, representing the distance between subject and object in the chain of values Simmel talked about. This is the value we have assigned to money, the ultimate medium of exchange. We create gigantic and sophisticated advertising and marketing machines to induce artificial needs. Today, some farmers, not necessarily by their choice, are no longer producing the cleanest, healthiest, and most diversified food possible. They have to think about cash crops – because they must do that in order to survive. After all, they need a more diversified, healthy and consistent food supply – and only a few people are able to produce all of their food these days. Farmers are generally very knowledgeable about producing a few crops (not all of them) and do that efficiently due to economies of scale and acquired

expertise. They would be less efficient producing many different kinds of crops. Besides all these facts, they are also thinking about getting the maximum amount of profit possible because that is how our economic system currently works – and their choices are, unfortunately, limited. Small farmers are especially affected by this. They have almost no voice in their contracts with big corporations (Tyson, Bunge, Monsanto, etc.) and are often obligated to follow rules they not necessarily agree with.

The unilateral flux of natural resources is perhaps the main reason why the peripheral countries will never be able catch up to the central ones. Colonialism and imperialism are still very much alive, and ecological devastation usually antecedes poverty. This goes to show how interconnected the social and the ecological are. For Lutzenberger, ecological methods and procedures, by definition, contribute to social and economic equity. *He was one of the pioneers in saying that an action can be considered ecological based on its contribution, or not, to social justice*. This can be seen in the way he reacted to a governmental operation to curb the devastation of the Amazon Forest. By then he was still serving as the Special Secretary for the Environment in the Brazilian government. He insisted that it was useless to ask poor farmers to stop cutting down trees or even punish them through tickets and fines. It would be like giving a rope for them to hang themselves. These people are victims of the system. They are marginalized and exploited. They are not the cause of our crisis. They are the symptom. Developed countries have historically received, at incredibly low prices, the natural resources from developing countries. This situation has reached a point in which the peripheral countries have payed far more than what they have received back. These countries are poorer now, in natural, human, and financial resources. The exported

minerals are gone and will never come back; the land affected by erosion and poisoned by pesticides, when able to be revitalized, will require huge efforts and huge costs to be recuperated. Besides being now poorer, these peripheral countries also have lost part of their nature.

> In a nutshell, the so-called developed countries invested in a system that guarantees them and easy and cheap access to the natural and human resources of countries still under development and the people living in these struggling countries are paying the majority (if not the entirety) of the costs – social, environmental, and financial.[188]

Lutzenberger used to ask: "Who, in these developing countries, the ones being exploited, has made the decisions that led to this collective process of impoverishment, at the same time favoring the enrichment of a few?" Well, his answer was: "Who, besides the people in power, who, thinking only about themselves, were willing to be agents of neocolonialism?" A moral evolution is required in order for a change in the economic system to take place. Lutzenberger's vision of ecology was always a philosophical one. He wondered if the intensive use of technology is really bringing us happiness. For him, a real solution is directly linked to a change in our life style. We need to be stimulated – somehow – to start thinking about who we are and what we are doing with the environment around us. We must think about the choices we make, have made, and will make. Individual action is very important, collective initiatives are indispensable, but always over the background of a reorientation in human values. "We have an unshakeable faith in what we call progress – with progress meaning endless

[188] Lutzenberger, José. *Pesadelo Atômico*. São Paulo: CHED Editorial, 1980, p. 99.

growth. We hope that everything becomes bigger, more abundant, faster, more efficient, and more different. We always want the maximum and, thus, lose sight of the best."[189]

Indefinite economic growth, based on neoliberal and strictly quantitative precepts, simply does not make sense given the fact that our planet is finite. That is precisely why human interference and human action should respect the ensemble of natural processes. It is because the ability nature has for self-regulation and its ability to keep the system working both have a limit.

> For the vast majority of [neoclassical] economists, Economics exists in a vacuum, as if human affairs and nature never touched each other, as if they existed in different universes. Economists still were not able to realize that Economics is but a chapter of Ecology.[190]

In an interesting turning of the table, the GDP index could be used, if anything, to indicate what countries are more likely to face ecological and social shortcomings in the future. The highest GDP growing rates can be found in countries like China and India, for example – which are now facing a myriad of undesirable environmental effects due to this unrestricted growth (air pollution, smog, etc.). A simple look at the news would tell us that. On the other hand, Scandinavian countries historically do not present the same growing rates. They traditionally operate within a small (albeit sometimes steady) growth scenario – even presenting, in rare occasions, a negative GDP (meaning that the economy has shrunk from one year to another). Can it just be a mere coincidence the fact that those countries are always on the top of every list for the most egalitarian (socially and economic) places to live? I believe that a strong argument linking an

[189] Dreyer, Lilian. *Sinfonia Inacabada: a vida de José Lutzenberger*. Porto Alegre: Vidicom Audiovisuais Produções, 2004, p. 137.
[190] Ibid., p. 175.

unchecked GDP growth to social, ecological, and even political issues can be made here.

> The worldview which puts human beings at the center of the universe allows us to perceive mere resources when we should perceive an ensemble in harmony. […] The predominant culture today has amassed a tremendous knowledge, but separated from wisdom. That is why we became so destructive. We have lost all prudence. In contemporary society it is considered that technology does not have anything to do with philosophy, with ideology, with politics. Technology is considered morally neutral […] When a population protests, let us say, against a nuclear power plant, the defenders of this technology will say "But these people are being too emotional. We cannot go back to the Stone Age. What do these people know about Nuclear Physics or the increasing need for energy? The issue must be discussed with a clear and objective mind, by specialists who know what they are talking about. Technical criteria must always prevail." Many protesters are silenced this way. […] The possible technical paths will always be many, but people in power choose and try to impose those who better suit their needs and desires. All technology means power, even if only in the form of control over a defenseless non-human animal or a plant. Every artefact serves to some will, which always has to do with power. And since when power is no longer a moral problem, an ethical problem, a political problem.[191]

There seems to be a desperate need of governments that can – and want to – distinguish between the economic interests of multinational corporations from the interests of their countries, their own people, and their own environment. The concentration of technologies and power has largely been used as a domination tool. It is not interested in qualitative efficiency and in an ecological or in a social conscience. Mega-technology has become today a political player, a political fact. Lutzenberger pointed out a staggering commentary made by a Brazilian delegate at a UN session. Said delegate said that Brazil needed to increase its population and its population density to expand the market for consumer goods. Lutzenberger was shocked. Instead of using technology to satisfy our human needs, we are now using humanity to satisfy

[191] Dreyer, Lilian. *Sinfonia Inacabada: a vida de José Lutzenberger*. Porto Alegre: Vidicom Audiovisuais Produções, 2004, p. 384-385.

the needs technology, and the economic system, might have. “What we need now is to brake, not abruptly, but softly and decisively.”[192] Asked if it was possible to conciliate economic and ecological interests, Lutzenberger responded:

> But of course it would be possible to conciliate economic and ecological interests, provided that the definition of “economic interests” was different. The predominant economic thinking, the one that guides all governments, with almost no exceptions, believes that everything must subordinated to it, that ecology is an economic externality. However, human affairs are just a part of Nature’s affairs and, therefore, should be seen as part of ecology. While this does not take place, there can be no conditions for conciliation.[193]

One of my goals was to demonstrate that capitalism is not bad *per se,* simply because it is not. However, the kind of capitalism that was put forth is (or has become) clearly detrimental to humans, non-humans, and the environment alike. One could almost say that profit (or at least huge, unequal, and unnecessary amounts of profit) and exploitation go mostly hand in hand. Yes, there is a constant need to create more jobs and this still would involve some sort of economic growth (at least as long as the world’s population keeps increasing its numbers). Nevertheless, jobs could be created and the economy could still “grow” (not indefinitely, though) while, at the same time, changing the rules of capitalism as they currently stand. I know that profit (which is closely related to economic growth and to GDP) is important, but is there truly a need for so much profit? Is it absolutely necessary? And what is being sacrificed in order to achieve this profit? Economic externalities are just one example of this mindset. And after all, who is mostly earning this profit? Is it everybody? Probably not. In a sense, most of such inequalities are related to power or the balance of it. Thanks to how the

[192] Dreyer, Lilian. *Sinfonia Inacabada: a vida de José Lutzenberger*. Porto Alegre: Vidicom Audiovisuais Produções, 2004, p. 471.
[193] Ibid., p. 499.

system was set (politically and economically), abuses of power will take place if said power goes unchecked – which tends to happen in neoliberal economies, especially due to the fact regulations are few and far between and that any attempt at creating more regulations is faced with extreme resistance from powerful lobby groups for the industries involved. More jobs could be created while, at the same time, tilting the situation towards a greener economy: more and more jobs coming from wind and solar energy; fewer jobs for the oil and gas industry; tax breaks and subsidies being given to the renewable energy industry, etc. There are some already, but when comparing the tax breaks and subsidies received by the renewable energy industry and the ones received by the big oil and the big meat (and even the big corn) industries, such tax breaks and subsidies pale in comparison. Most global economies (and ideally, all) should be focusing on that shift to a greener economy now. However, that is not the case yet – and one of the main reasons for such resistance is the fact that power still remains largely concentrated in a few pockets.

Finally, it is time to conclude this analysis of an unecological economics from a peripheral point of view. The first step in the attempt to address issues related to climate change and other environmental and social problems should be finding a solution to economic drawbacks such as: rampant inequality, extreme concentration of power, the dependency that the global economy has on oil, the reluctance to move towards a renewable energy global system, a better way to deal with economic externalities, and the reliance on the GDP as the main and most influential index to measure the well-being of a country. A shift from fossil fuels towards renewable energies, if done right, would help to distribute power more evenly and, hopefully, also create more social,

economic, and environmental justice. Hard technologies, whenever possible, should be abandoned, and more and more soft technologies should be embraced. Transnational corporations should also be prevented from meddling in the government. Private interests cannot become more important than the public good and lobbying should be at the very least heavily regulated. I believe everybody deserves a tool to defend themselves against the power and the influence money can have over so many aspects of our lives. When lawmakers pass or defend laws that benefit such industries, they are clearly exposing where their values are.

> Durkheim and Mauss in *Primitive Classification* write as if categories are never negotiated but always come ready tailored to fit the institutions. Their argument at that point was not about change. They did in fact have a theory of change, that is, *that changes in the organization of production radically transform the system of categories and beliefs* (emphasis added).[194]

More accountability mechanisms need to be created to control governments and big transnational corporations in order to curb their power. Wealth must be (re)distributed. Most of the burden should be put where it belongs, that is, on the shoulders of the developed countries. I am not saying that those countries should be the only ones making sacrifices, but they have to give back more now since they historically have taken so much more than anybody else. After all, the central countries were the ones that have profited the most from imperialism and colonialism and were the ones that have set the system and created the current economic paradigm in which most of humanity lives in now. Concentration of power tends to create injustice, exploitation, and unfairness.

[194] Mauss, Marcel. *The Gift: the form and reason for exchange in archaic societies*. Foreword by Mary Douglas. London: Routledge, 2002, xvii.

Hence the importance of having a contribution to the field of environmental philosophy that comes from the periphery of the world. I am also from the periphery (I am Brazilian as Lutzenberger was) and I am also able to see details that cannot be seen by those at the center of the system. The obsession that our economic system has with constantly increasing the GDP should finally be put to rest. When the highest of values stop being attributed to something as abstract as money, when there is no more 'center versus periphery,' when exploitation and inequality become a thing of the past, only then the environment would stand a better chance at not being constantly exploited, plundered, and exchanged for something that possesses (or at least should possess) a much lesser value. Be that as it may, the solution will have to begin with a change in the economic system. Even if Leopold and Lutzenberger thought that an improved ethic is necessary and there is a need to educate people more than ever before (which I agree with), *it is my belief that a better and more equal education and an improved ethic can only be achieved if the essence of the current global economic system goes through a transformation first.* If we are able to change the way we think about our economy, if it becomes an instrument for equality and justice, instead of a tool for exploitation, domination, and unfairness, people will start to realize that money alone, as Simmel said, does not bring you happiness.

Peripheral countries are in a privileged position now. They can build an economic system that respects the environment and that cares about the people. They are the ones that can best integrate social and ecological justice. They can pave the way for a new economic, social, and ecological paradigm. However, the constant flux of resources going from the periphery to the center must stop. Thus, our economic system

should be rebuilt as a green and more just system, based on a clean energy infrastructure, clear limits to growth and consumerism, localization of production (whenever possible), and a strong economic democracy. Also, energy companies should belong to the public. Defining the public good in terms of private property will guarantee the tragedy of the commons. The environment should be entrusted to an institution responsible for society as a whole, not to one responsible for individual interests. I believe that genuinely ‘green economies’ are more prone to appear on the periphery – but only, and only if, global economic justice is achieved first.

BIBLIOGRAPHY

Adorno, Theodor W.; Horkheimer, Max. *Dialética do Esclarecimento: fragmentos filosóficos.* 2ª Ed. Rio de Janeiro: Jorge Zahar Editor, 1986.

Arendt, Hannah. *A Condição Humana*. 10ª Ed. Rio de Janeiro: Forense Universitária, 2007.

Bacon, Francis. *Nova Atlântida.* In: Os Pensadores. São Paulo: Abril Cultural, 1973.

Barbour, Ian, Brooks, Harvey, Lakoff, Sanford, & Opie, John. *Energy and the American Values.* New York: Praeger Publishers, 1982.

Bartelmus, Peter. Box 3G: "Greening the National Accounts", in Bedrich Moldan, Suzanne Billharz & Robyn Matravers (Eds.), *Sustainability Indicators: a Report on the Project on Indicators of Sustainable Development* (pp. 198-206). New York: John Wiley & Sons, 1997.

Bauman, Zygmunt. *Modernidade e Holocausto*. Rio de Janeiro: Jorge Zahar, 1998.

Becker, Joanna. "Making Sustainable Development Evaluations Work", *Sustainable Development* 12, 2004, pp. 200-211.

Bell, Simon. *Sustainability Indicators: Measuring the Immesurable?* London: EarthScan Publications, 1999.

Bookchin, Murray. *The Ecology of Freedom: The Emergence and Dissolution of Hierarchy*. New York: AK Press, 2005.

Bosivert, Valerie, Holec, Nathalie, & Vivien, Franck-Dominique. "Economic and Environmental Information for Sustainability", in Sylvie Faucheux & Martin O'Connor (Eds.), *Valuation for Sustainable Development: Methods and Policy Indicators* (pp. 99-119). New York: John Wiley & Sons, 1998.

Botkin, Daniel. *Discordant Harmonies*: A *New Ecology for the Twenty-First Century*. New York: Oxford University Press, 1992.

Brown, James H.; REAL, Leslie A. *Foundations of Ecology: Classic Papers with Commentaries*. Chicago: The University of Chicago Press, 1991.

Buarque de Hollanda, Sérgio. *Raízes do Brasil*. São Paulo: Companhia das Letras, 2008.

Burke, Edmund. *A Philosophical Enquiry into the Origin of Our Ideas of the Sublime and Beautiful*. Oxford: Oxford University Press, 2008.

Cahen, Harley. “Against the Moral Considerability of Ecosystems”, *Environmental Ethics* Vol.10 (Fall 1988): 195-216.

Callicott, J. Baird. *Beyond The Land Ethic: More Essays in Environmental Philosophy.* New York: State University of New York Press, 1999.

Callicott, J. Baird. *Companion to A Sand County Almanac*: *Interpretative and Critical Essays.* Madison: The University of Wisconsin Press, 1987.

Callicott, J. Baird; Mumford, Karen. “Ecological Sustainability as a Conservation Concept.” *Conservation Biology*. Volume 11, No. 1, February 1997.

Callicott, J. Baird. *Earth’s Insights*. Berkeley: University of California Press, 1994.

Callicott, J. Baird. *In Defense of Land Ethic: Essays in Environmental Philosophy*. New York: State University of New York Press, 1989.

Callicott, J. Baird. The Metaphysical Implications of Ecology. *Environmental Ethics* 8 (Winter 1986): 306.

Callicott, J. Baird; Rocha. Fernando J. Rodrigues da (Ed.). *Earth Summit Ethics: toward a reconstructive postmodern philosophy of environmental education.* Albany: State University of New York, 1996.

Camus, Albert. *The Myth of Sisyphus: And Other Essays.* New York: Vintage Books, 1991.

Capra, Fritjof. *O Ponto de Mutação*. São Paulo: Círculo do Livro, 1982.

Capra, Fritjof. *The Tao of Physics*. Boulder: Shambala Publications, 1975.

Carson, Rachel. *Silent Spring* (40th Anniversary ed.). New York: Houghton Mifflin Company, 2002.

Costanza, Robert. “Embodied energy and economic valuation.” *Science* 210: 1219–1224, 1980.

Costanza, Robert; Daly, Herman. “Natural capital and sustainable development.” *Conservation Biology* 6: 37–46, 1992.

Costanza, Robert; et al. “The value of the world’s ecosystem services and natural capital.” *Nature* 387: 253–260, 1997.

Costanza, Robert; et al. “The value of ecosystem services: putting the issues in perspective.” *Ecological Economics* 25: 67–72, 1998.

Commoner, Barry. *The Closing Circle*: Nature*, Man, and Technology*. New York: Knopf, 1971.

Cronkleton, P., Bray, D. B., & Medina, G. “Community forest management and the emergence of multi-scale governance institutions: lessons for REDD development from Mexico, Brazil and Bolivia.” *Forests* 2(2), 451-473, 2011.

Daly, Herman. *Beyond Growth*. Boston: Beacon Press, 1996.

Daly, Herman. “Forum: Georgescu-Roegen versus Solow/Stiglitz.” *Ecological Economics* 22, 1997, pp. 261-266.

Daly, Herman. “Forum: Reply to Solow/Stiglitz.” *Ecological Economics* 22, 1997, pp. 271-273.

Daly, Herman E., Cobb, John B., & Cobb, Clifford W. *For the Common Good: Redirecting the Economy toward Community, the Environment, and a Sustainable Future.* Boston: Beacon Press, 1987.

Daly, Herman. “Economics in a Full World.” *Scientific American*, September 2005.

Daly, Herman. “A Steady-state Economy.” *Sustainable Development Commission*, UK (April 24, 2008).

Darwin, Charles. *A Origem das Espécies*. São Paulo: Hemus, 1991.

Darwin, Charles. *The Descent of Man*. London: Penguin Books, 2004.

Davis, Margaret Bryan. *Climatic Instability, Time Lags, and Community Disequilibrium. Community Ecology.* New York: Harper and Row, 1986.

Denevan, W. M. "The pristine myth: the landscape of the Americas in 1492.” *Annals of the Association of American Geographers*, 82(3), 369-385, 1992.

Descartes, René. *Discurso do Método*. São Paulo: Martins Fontes, 2003.

Descartes, René. *Meditações.* In: *Os Pensadores*. São Paulo: Abril Cultural, 1979.

Descola, P.; Palsson, G. (eds.). *Nature and Society: Anthropological Perspectives.* London: Routledge, 1996.

Dreyer, Lilian. *Sinfonia Inacabada: A Vida de José Lutzenberger*. Porto Alegre: Vidicom Audiovisuais Edições, 2004.

Du Pisani, J.A. “Sustainable Development – Historical Roots of the Concept”, *Environmental Sciences*, 3(2), 2006, pp. 86-96.

Ehrlich, Paul, & Ehrlich, Anne. *The Population Bomb*. New York: Ballantine Books, 1968.

Einstein, Albert. *Como vejo o mundo*. Rio de Janeiro: Editora Nova Fronteira, 1981.

Elling, Bo. *Rationality and the Environment*. London: Earthscan, 2008.

Elton, Charles. *Animal Ecology*. New York: Macmillan, 1927.

Engel, J. Ronald, & Engel, Joan Gibb. *Ethics of Environment and Development: Global Challenge, International Response.* Tucson: University of Arizona Press, 1990.

Engels, Friedrich. *Outlines of a Critique of Political Economy* (1843).

England, Richard W. "Alternatives to Gross Domestic Product: A Critical Survey", in Cutler J. Cleveland, David I. Stern & Robert Costanza (Eds.), *The Economics of Nature and the Nature of Economics* (pp. 218-237). Northampton, MA: Edward Elgar, 2001.

European Environment Agency (EEA). "Halting the loss of biodiversity by 2010: proposal for a first set of indicators to monitor progress in Europe." *EEA Technical Report no. 11/2007, European Environment Agency, Copenhagen.*

Faoro, Raymundo. *Os Donos do Poder*. Rio de Janeiro: Editora Globo, 2000.

Feyerabend, Paul Karl. *Contra o Método*. Rio de Janeiro: UNESP, 2007.

Flader, Susan L. *Thinking like a Mountain: Aldo Leopold and the Evolution of an Ecological Attitude toward Deer, Wolves, and Forests*. Columbia: University of Missouri Press, 1974.

Fernandes, Florestan. *A Revolução Burguesa no Brasil.* São Paulo: Zahar, 1975.

Foucault, Michel. *Aesthetics, Method, and Epistemology* (Essential Works of Foucault, 1954-1984, Vol. 2). New York: The New Press, 1999.

Foucault, Michel. *The Archaeology of Knowledge*. New York: Vintage, 1982.

Foucault, Michel. *The Order of Things: An Archaeology of the Human Sciences*. New York: Vintage, 1994.

Fredericks, Sarah E. Challenges to Measurement. In Daniel Fogel, Sarah E. Fredericks, Lisa Harrington, Maria Pronto, Ian Spellerberg & Patricia Wouters (Eds.), *Berkshire Encyclopedia of Sustainability* (Vol. 6: Measurements, Indicators, and

Research Methods of Sustainability). Great Barrington, MA: Berkshire Publishing Group.

Furtado, Celso. *Formação Econômica do Brasil*. São Paulo: Companhia das Letras, 2007.

Furtado, Celso. *O Mito do Desenvolvimento Econômico*. Rio de Janeiro: Paz e Terra, 1974.

Galilei, Galileu. *O Ensaiador*. In: *Os Pensadores*. São Paulo: Nova Cultural, 1991.

Gallego Carrera, Diana, & Mack, Alexander. "Sustainability assessment of energy technologies via social indicators: Results of a survey among European energy experts", *Energy Policy*, 38(2), 2001, pp. 1030-1039.

Gallopin, Gilberto Carlos. "Indicators and their Use: Information for Decision-making Part One – Introduction", in Bedrich Moldan, Suzanne Billharz & Robyn Matravers (Eds.), *Sustainability Indicators: a Report on the Project on Indicators of Sustainable Development* (pp. 13-27). New York: John Wiley & Sons, 2007.

Geczi, Emilian. *Sustainability and Public Participation: Toward an Inclusive Model of Democracy Administrative Theory & Praxis* (Administrative Theory & Praxis), 29(3), 2007, pp. 375-393.

Gibbs, Lois Marie, & Nader, foreword by Ralph. *Love Canal: The Story Continues.* Boston: South End Press, 1997.

Golley, Frank B. *A History of the Ecosystem Concept in Ecology: More Than the Sum of the Parts*. New Haven: Yale University Press, 1993.

Gould, Stephen J. The Golden Rule: a proper scale for our environmental crisis. *Natural History* 99. New York, 1990.

Gray, John. *Cachorros de palha:* reflexões sobre humanos e outros animais. 6ª Ed. Rio de Janeiro: Record, 2009.

Hardin, Garrett. "The Tragedy of the Commons," *Science*, 162:1243-1248, 1968.

Harlow, V. T. *A History of Barbados.* Oxford: Clarendon Press, 1926.

Hargrove, Eugene C. "The Role of Rules in Ethical Decision Making", *Inquiry*, 28, 3-42, 1985.

Hargrove, Eugene. *Foundations of Environmental Ethics*. New Jersey: Prentice-Hall, 1989.

Hecq, Walter J. “Box 2I: From Static to Dynamic Indicators of Sustainable Development: Example of the Economy-Energy-Environment Link”, in Bedrich Moldan, Suzanne Billharz & Robyn Matravers (Eds.), *Sustainability Indicators: a Report on the Project on Indicators of Sustainable Development* (pp. 128-132). New York: John Wiley & Sons, 1997.

Heidegger, Martin. *Caminos de bosque (Holzwege)*. Madrid: Alianza Editorial S.A., 1995.

Heidegger, Martin. *The Question Concerning Technology.* New York: Harper, 1977.

Heisenberg, Werner. *A ordenação da realidade*. Rio de Janeiro: Forense Universitária, 2009.

Heisenberg, Werner. *Physics and philosophy*. New York: Harper and Row, 1962.

Hezri, A. A., & Dovers, S. R. “Sustainability indicators, policy and governance: Issues for ecological economics”, *Ecological Economics* 60(1), 2006, pp. 86-99.

Hubbell, Stephen P. Neutral Theory and the Evolution of Ecological Equivalence. *Ecology*, 87(6), 2006, pp. 1387-1398.

Huxley, Thomas H. *Man’s Place in Nature*. New York: Dover Publications, Inc., 2003.

Ingold, Tim. “Culture, nature, environment: steps to an ecology of life”, in: Cartledge, B., ed. 1998. *Mind, Brain and the Environment.* Oxford: Oxford University Press, 1998.

International Institute for Environment and Development,. (2015). The interface between forests, agriculture and climate change: understanding the implications for REDD. Retrieved 22 June 2016, from http://www.iied.org/interface-between-forests-agriculture-climate-change-understanding-implications-for-redd

International Tropical Timber Organization. (2011). Status of Tropical Forest Management 2011. Country report: Brazil. ITTO.

Isaac, Julius. *Economics of Migration*. London: K. Paul, Trench, Trubner & Co, 1947.

Jax, Kurt. “Function and “functioning” in ecology: what does it mean?” *Oikos* 111:3 (2005).

Jones, Clarence Fielden. *Economic Geography*. New York: Macmillan, rev. ed., 1954.

Jones, Clive G., et al. “Organisms as ecosystem engineers”, *Oikos* 69:3 (1994): 373-386.

Kaika, Maria. *City of Flows: Modernity, Nature, and the City*. New York: Routledge, 2005.

Kant, Immanuel. *Observations on the Feeling of the Beautiful and Sublime* (Berkeley: University of California Press, 2003).

Kaposy, Timothy; Szeman, Imre. *Culture Theory: an Anthology*. Oxford: Wiley-Blackwell, 2011.

Kasper, Debbie Van Schyndel. *Redefining Community in the Ecovillage*. In: Human Ecoiogy Review, Voi. 15, No. 1, 2008.

Kauffman, Stuart. *At Home in the Universe*. New York: Oxford University Press, 1995.

Lane, Lillie. "Practical and Religious Meanings of the Navajo Hogan", in: *Ethnoecology: situated knowledge/located lives.* Tucson: University of Arizona Press, 1999.

Latour, Bruno. *A Cautious Prometheus? A Few Steps Toward a Philosophy of Design (With Special Attention to Peter Sloterdijk).* Falmouth, 3-6 September 2009, e-books, Universal Publishers, pp. 2-10.

Latour, Bruno. *Politics of Nature: How to Bring the Sciences into Democracy*. Cambridge: Harvard University Press, 2004.

Latour, Bruno. *Waiting for Gaia. Composing the common world through art and politics*. Lecture at the French Institute for the launching of SPEAP in London, November 2011.

Latour, Bruno. *We Have Never Been Modern*. Cambridge: Harvard University Press, 1993.

Laurance, W. (2015). Will Increased Food Production Devour Tropical Forest Lands? Yale Environment 360. Retrieved 22 June 2016, from http://e360.yale.edu/feature/will_increased_food_production_devour_tropical_forest_lands/2755

Leopold, Aldo. *A Sand County Almanac*. New York: Ballantine Books, 1970.

Leopold, Aldo. *A Sand County Almanac, and Sketches Here and There.* New York: Oxford University Press, 1989.

Leopold, Aldo. *For the Health of the Land: Previously Unpublished Essays And Other Writings*. Island Press, 2001.

Leopold, Aldo. *Game Management*. Madison: University of Wisconsin Press, 1985.

Leopold, Aldo. “Proposed Conservation Economics Study,” 7 November 1938, *Leopold Papers*, 9/25/10-6 Box 12 Folder 7.

Leopold, Aldo. “Some Thoughts on Recreational Planning,” *Parks and Recreation 18*, no. 4, 1934.

Leopold, Aldo. “The Conservation Ethic”, in *The River of the Mother of God and Other Essays*, ed. Susan L. Flader and J. Baird Callicott. Madison: University of Wisconsin Press, 1991.

Leopold, Aldo. *Writings: Unpublished Manuscripts.*

Levinas, Emmanuel. *Humanismo do outro homem.* Petrópolis: Vozes, 1996.

Li, Feng Qi. “Aldo Leopold: Reconciling Ecology and Economics.” *Minding Nature 6.1*. Loucks, Orie L.; Wu, Jianguo. “From Balance of Nature to Hierarchical Patch Dynamics: A Paradigm Shift in Ecology”, *The Quarterly Review of Biology*. Vol. 70, No. 4 (December 1995).

Lutzenberger, José. *A Plea for Agriculture Without Poisons. Strengthening Crops Instead of Fighting Pests* - 12/1995. Retrieved 22 October 2015 from http://www.fgaia.org.br/texts/index.html

Lutzenberger, José. *Alternative Agriculture Concepts to cope with Climate Impacts, Climate and Development World Congress* - Hamburg/Germany - 11/1988. Retrieved 22 October 2015 from http://www.fgaia.org.br/texts/index.html

Lutzenberger, José. *Crops and Pests - are poisons the answer?* - 1984, revised and enlarged - 02/1996. Retrieved 22 October 2015 from http://www.fgaia.org.br/texts/index.html

Lutzenberger, José. *Earth Conference on Biomass for Energy, Development and Environment* - Havana/Cuba - 01/1995. Retrieved 22 October 2015 from http://www.fgaia.org.br/texts/index.html

Lutzenberger, José. *Gaia* - *English version*. Retrieved 22 October 2015 from http://www.fgaia.org.br/texts/index.html

Lutzenberger, José. *NGOs as a driving force* - 10/1994. Retrieved 22 October 2015 from http://www.fgaia.org.br/texts/index.html

Lutzenberger, José. *Our Suicidal Ethics* - written for the World-Ethics Congress, Kühlungborn-Germany, November 2000. Retrieved 22 October 2015 from http://www.fgaia.org.br/texts/index.html

Lutzenberger, José. *Rainforests and World Climate.* Retrieved 22 October 2015 from http://www.fgaia.org.br/texts/index.html

Lutzenberger, José. *So precious yet so frail* - Article dedicated to Mr. Hans Peter Dürr, on his 60th birthday in 1994 - English version. Retrieved 22 October 2015 from http://www.fgaia.org.br/texts/index.html

Lutzenberger, José. *The Absurdity of Modern Agriculture - From Chemical Fertilizers and Agripoisons to Biotechnology* - 1998. Retrieved 22 October 2015 from http://www.fgaia.org.br/texts/index.html

Lutzenberger, José. *Tuscany Spring Conference* - Il Ciocco/Italy - 04/1995. Retrieved 22 October 2015 from http://www.fgaia.org.br/texts/index.html

Lutzenberger, José. *Crítica Ecológica do Pensamento Econômico.* Porto Alegre: L&PM, 2012.

Lutzenberger, José. *Fim do futuro?Manifesto Ecológico Brasileiro*. Porto Alegre: Editora Movimento, 1980.

Lutzenberger, José. *Gaia – O Planeta Vivo*. Porto Alegre: L&PM, 1990.

Lutzenberger, José. *Manual de Ecologia: Do Jardim ao Poder Vol.1*. Porto Alegre: L&PM, 2012.

Lutzenberger, José. *Manual de Ecologia: Do Jardim ao Poder Vol.2*. Porto Alegre: L&PM, 2012.

Lutzenberger, José. *Política e Meio Ambiente*. Porto Alegre: Mercado Aberto, 1986.

Lutzenberger, José. *Pesadelo Atômico*. São Paulo, CHED, 1980.

Luxemburg, Rosa. *A Acumulação do Capital.* Rio de Janeiro: Editora Nova Cultural, 1988.

Marsh, G. P. *Man and Nature.* Cambridge: Harvard University Press, 1967.

Mascarenhas, André, Coelho, Pedro, Subtil, Eduarda, & Ramos, Tomás B. “The Role of Common Local Indicators in Regional Sustainability Assessment”, *Ecological Indicators* 10, 2010, pp. 646-656.

Mather, A. S. (1992). The forest transition. Area, 367-379.

Mauss, Marcel. *The Gift: the form and reason for exchange in archaic societies*. London: Routledge, 2002.

Maxim L. Spangenberg J. and O'Connor, M. (2009) The DPSIR framework for Biodiversity Assessment. *Ecological Economics* 69 (1) 12-23.

McDonnell, Mark J.; Pickett, Steward T. A. *Human as Components of Ecosystems: The Ecology of Subtle Human Effects and Populated Areas*. New York: Springer, 1993.

Mcintosh, Robert P. *The Background of Ecology: Concept and Theory*. New York: Cambridge University Press, 1988, p. 71.

Mcintosh, Robert P. The myth of community as organism. *Perspectives in Biology and Medicine* 41.n3 (Spring 1998): pp.426 (13).

Meine, Curt. *Aldo Leopold: His Life and Work*. Madison: University of Wisconsin Press, 1991.

Mitcham, C. "The Concept of Sustainable Development: Its Origins and Ambivalence" *Technology in Society,* 17(3), 1995, pp. 311-326.

Mooney, Pat Roy. *Seeds of the Earth: A Private or Public Resource?* Inter Pares: Ottawa, 1979.

Moore, G.E. *Principia Ethica* (Cambridge: Cambridge University Press, 2000).

Morin, Edgar. *Ciência com Consciência*. 10ª Ed. Rio de Janeiro: Bertrand Brasil, 2007.

Naess, Arne. "The Shallow and The Deep, Long-Range Ecology Movement: a Summary", *Inquiry* 16, 1995, pp. 95-100.

Naess, Arne. Ecology*, Community and Lifestyle: Outline of an Ecosophy* (David Rothenberg, Trans.). New York: Cambridge University Press, 1985.

Naess, Arne. "The Deep Ecological Movement: Some Philosophical Aspects", in George Sessions (Ed.), *Deep Ecology for the Twenty-First* Century (pp. 64-84). Boston: Shambhala, 1995.

Newton, Isaac. *Princípios Matemáticos*. In: *Os Pensadores*. São Paulo: Nova Cultural, 1991.

Normano, J.F. *Brazil, A Study of Economic Types*. New York: Biblo and Tannen, 1935.

Odum, Eugene P. *The Fundamentals of Ecology*. Stamford: Cengage Learning, 2004.

Odum, Eugene P. The Strategy of Ecosystem Development. *Science*, 164 (April 1969): 266.

Ortiz, Simon J. *Fight back: for the sake of the people, for the sake of the land*. Albuquerque: Institute for Native American Development, Native American Studies, University of New Mexico, 1980.

Parfit, Derek. “Energy Policy and the Further Future: The Identity Problem”, in Stephen M. Gardiner, Simon Caney, Dale Jamieson & Henry Shue (Eds.), *Climate Ethics: Essential Readings* (pp. 112-121). Oxford: Oxford University Press, 1995.

Phillips, John. “Succession, Development, the Climax, and the Complex Organism: An Analysis of Concepts”, *Journal of Ecology* Vol. 23, No. 2 (August 1935), pp. 488-508.

Pollan, Michael. *Second Nature: A Gardener’s Education*. Ney York: Grove Press, 1991.

Prado Jr., Caio. *Formação do Brasil Contemporâneo*. São Paulo: Editora Brasiliense, 1963.

Prigogine, Ilya. *The End of Certainty: Time, Chaos, and the News Laws of Nature*. New York: The Free Press, 1997, p. 158.

Pyne, Stephen J. *How the Canyon Became Grand: A Short History*. New York: Penguin Books, 1998.

Rodriguez-Labajos, B; Binimelis, R; Monterroso, I. 2009. Multi-level driving forces of biological invasions. *Ecological Economics* 69:63-75.

Rolston, Holmes. *Environmental Ethics: Duties to and Values in the Natural World*. Philadelphia: Temple University Press, 1988.

Roszak, Theodore. *Where the Wasteland Ends*. Bantam Doubleday Dell: New York, 1972.

Rüdiger, Francisco. *Martin Heidegger e a questão da técnica*: Prospectos acerca do homem do futuro. Porto Alegre: Editora Sulina, 2006.

Santmire, Paul H. *Historical Dimensions of the American Crisis: Western Man and Environmental Ethics.* Menlo Park: Addison-Wesley Publishing Co, 1973.

Schumacher, Ernest F. *Small is Beautiful*. London: Blond and Briggs, 1974.

Serres, Michel. *O Contrato Natural.* Lisboa: Instituto Piaget, 1990.

Shiva, Vandana. “Recovering the Real Meaning of Sustainability”, in David E. Cooper & Joy A. Palmer (Eds.), *The Environment in Question: Ethics and Global Issues* (pp. 187-193). Routledge: New York, 1992.

Simberloff, Daniel. “A Succession of Paradigms in Ecology: Essentialism to Materialism and Probabilism”, *Synthese* Vol. 43, No. 1, Conceptual Issues in Ecology, Part I (January 1980), p. 30.

Simmel, Georg. *Soziologische Aesthetik* (1896) in G. Simmel, *Aufsätze und Abhandlungen* 1894-1900, H. J. Dahme and D. P. Frisby (*Gesamtausgabe*). Frankfurt: Suhrkamp, 1992.

Simmel, Georg. *The Philosophy of Money*. Third enlarged edition. Edited by David Frisby. Translated by Tom Bottomore and David Frisby. London: Routledge, 2004.

Smolin, Lee. *The Life of the Cosmos*. New York: Oxford University Press, 1997.

Snyder, Gary. *The Practice of the Wild.* Berkeley: Counterpoint, 1990.

Stiglitz, Joseph. *The Great Divide: Unequal Societies and What We Can Do About Them*. New York: W. W. Norton & Company, 2015.

Tansley, Arthur G. The Use and Abuse of Vegetational Concepts and Terms. *Ecology* 16 (1935): 292-303.

Van den Begh, Jeronen C.J.M, & Verbruggen, Harmen. “Spatial Sustainability, Trade and Indicators: An Evaluation of the Ecological Footprint”, *Ecological Economics* 29, 1999, pp. 61-72.

Van Dieren, Wouter (Ed.). *Taking Nature into Account: a Report to the Club of Rome: Toward a Sustainable National Income.* New York: Copernicus, 1995.

Vargas do Amaral Peixoto, Alzira. *Getúlio Vargas, meu pai*. Rio de Janeiro: Editora Globo, 1963.

Viana, Virgilio Mauricio et al. REDD+ and Community Forestry: lessons learned from an exchange between Brazil and Africa. World Bank, 2012.

Vico, Giambattista. *The New Science of Giambattista Vico*. Ithaca: Cornell University Press, 1968.

White, Lynn. 1974. "The historical roots of our ecologic crisis.” *Ecology and Religion in History*. New York: Harper and Row, 1974.

Wilson, Margaret D. *Descartes (The arguments of the philosophers)*. London: Routledge and Kegan Paul, 1982.