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Small Lexicon on Ecology (for Those Interested in Cities)

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Some notions about ecology show that if there is not a corpus there is an interesting and pertinent debate. We quote: on the environment itself, negative commons, mistake of the isolated system, dealing with the symptoms and not the causes (the tragedy of the horizons), and on the Opinion, Great Reversal, laws of opinion, greenwashing, and the return of enclave economy. The cities are concerned by the two different stakes, adaptation and mitigation. Also, the question is posed of the places where ecological awareness can appear.

Keywords: ecology, urban planning, adaptation, mitigation

Introduction

The ecological and climatic crisis has burst out in a society which was already a consumer society where Opinion is all powerful. Opinion is also elusive and arbitrary, according to the French philosopher Castoriadis. He compares it to a "magma" (Castoriadis, 1975). In some aspects, it is … reassuring, since Opinion cannot be programmed, at least in democratic countries. Also, it is risky. If we distinguish, like the German sociologist Tonnies, two opinions, one "gaseous", volatile, sentimental, the other stable, educated (in progress like a Parliament learning during years, thanks to accumulated experience) we fear a too slow "learning" of the stable opinion. The pace of learning cannot be too slow, since the global warming worsens threatening to go out of control… Tonnies uses also the words "essential will" and "arbitrary will". The essential will is in conformity with the identity of a group, often a tribe. The arbitrary will is able to trigger decisions taking into account some evolution of the society, which is understood (Tonnies, 2012). Therefore, the fear can be described with the words of Tonnies: the disaster is if the pace of climatic change is faster than the pace of appearance of an arbitrary will (which is needed, to trigger the struggle against climatic change). That is why in this "lexicon" we insist on what concerns the Opinion: Laws of Opinion, Great Reversal, Greenwashing.

Also of interest is the mental representation of Nature, and its evolution. Here we refer to the French theorist George Sorel, who distinguished "artificial nature" and "natural nature" (Sorel, 2019). In the industrial society knowledge was accumulated on "machinic systems". Nature was considered as a provider of energy and the goal was to avoid the waste of this energy (degradation of energy because of frictions). "Will" was needed to struggle against the machines' wear. Nature itself was forgotten. It is "natural nature". It is not only that artificiality of the city won around 1900. The famous urban planner Patrick Geddes wanted that the pupils of the schools in the cities take trips in the countryside, to learn what Nature is (otherwise, they never saw it). It is also that the relationship Man/Nature was not an interesting topic (only the "will", justifying productivism and extractivism). Before the industrial era, the relationship Man/Nature was taken into account, but on the religious mode (before

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the Newtonism in the 18th century). The historian Wittfogel has described how in Old China, the Emperor was a half god responsible for the weather. He was guaranteeing the good working of the Universe. If there were disastrous floods, the dams being broken, he was at least removed. Recently a procession was seen in a city of the South of France, to get … rain. To put an end to irony, we need to pay attention to Nature, and, of course, take into account Science (climatology, scientific ecology, biology …).

What is of interest in the notion of "artificial nature"/"natural nature" is that the two knowledges, knowledge of causes (Science) and knowledge of reasons (sentiments, beliefs) are considered. Speaking of sentiment at the time of productivism/extractivism, it was "will". That there are debates in Science and on beliefs, both, has been theorized by the French sociologist Tarde, commenting on the works of the French philosopher Cournot (Tarde, 2012). It is interesting to understand the shift of the two knowledges when the era of productivism/extractivism ends, while the era of Sustainable Nature begins. Concerning the knowledge of causes, the sciences which matter are no more thermodynamics, mechanics, the science of motors (fluid dynamics …) but climatology, scientific ecology, biology, studies on health etc. And concerning the sentiment, one passes from "will" to "prudence". Indeed, the precautionary principle is the pilar at the time of sustainable nature. It matters because we have understood that the impact of human activities on Nature is disastrous and cannot be neglected like in the past. And the indispensable science allowing understanding this impact does not (yet) exist. We are obliged to suppose the worse, when the impact of an activity on the environment is unknown. And, of course, we have to give up any project if its consequences on environment, that current science does not understand, or understands not enough, are possibly disastrous.

Now one can give the plan of this paper:

- First, some articles concern more the environment itself: negative commons, mistake of the isolated system, dealing with the symptoms and not the causes.
- Other articles concern Opinion, and economic or political topics: Laws of Opinion, Great Reversal, Greenwashing, and return of the enclave economy.
- In the conclusion, we shall examine how the stakes of the ecological transition concern the cities.

Articles Concerning the Environment Itself

Negative Commons

They are places where waste is illegally put: ocean floors, underground dumps, illegal burials, etc. At the time of Soviet Union, the floor of the White Sea was used as a dump by the military nuclear industry. On the floor of the Tyrrhenian Sea, in Italy, is put waste from industry (this is under the control of an Ecomafia), etc. If a user has waste to evacuate, he can make a gain by choosing the illegal way. There are rules concerning waste: they have to be burnt, or stored in some conditions, or recycled, etc. If one avoids these rules, the cost is less and there is a profit. Think of an owner who destroys a building and wants to evacuate the waste. Until today, the waste in the building industry was not a problem. But this changes. The dumps are full. In some regions, where there is much wind, the wind carries dust from the dump far away. The materials used to build houses are complex and need recycling, etc.

A negative common works thanks to a "group of actors":

- The user makes a gain because the price for the evacuation of the waste is less.
- Some civil servants are bribed.
- To find the people who carry out the illegal task itself is easy. According to the American economists Akerlof and Schiller (2016), fraud works like the capitalism: if there is an opportunity of fraud, there are always

the people who will launch this fraud, and benefit from it. It is like in the capitalism, if there is an opportunity to invest in some way, and win money, this investment occurs (Akerlof & Schiller, 2016). The "group of actors" appears, and acts in coherence. Of course, it is because the rules are not enforced, and are not tough enough (only fines …). The society could "capitulate". That is to say, one tolerates the negative commons. In this case, the opportunity to make a gain thanks to a negative common, is open to anybody. It is the characteristic of a common. This common is negative because the pollution of waters, air, soils … is aggravated.

Mistake of the Isolated System

We simplify when we pose the problem of struggling against pollution. One considers one pollution, separately, and the goal is to eliminate it. Often, the struggle against a pollution creates another pollution, or hampers the struggle against some other pollution. There are many examples:

- Aerosol. These airborne particles often reflect the solar light and mitigate the warming of the atmosphere. But they are toxic pollutants. One has to remove them, even if they have a favorable impact on the warming of the atmosphere.
- Chlorofluorocarbons. After the Montréal Protocol (1987) one has ceased to produce chlorofluorocarbons, which destroy the ozone in the stratosphere (useful to protect against UVs). They have been replaced by the HFCs, hydrofluorocarbons … but these products strengthen the greenhouse effect… Finally, currently one removes the HFCs also.
- Methane. This gas in the atmosphere contributes to the greenhouse effect. Curiously, when one removes the gases NO_x from the air in the cities because they are toxic for people, it hampers the struggle against methane … because the presence of NO_x in the air triggers chemical reactions which make methane molecules break.
- Etc.

All is interdependent in the environment. This makes the methodology, when one studies the impact of chemical products on environment, very complex. For instance, it is not enough to study impact of some product. It would be necessary to study the impact of cocktails of products or their metabolites (the products into which a product breaks down in the water).

Awkward problems arise. For instance, conflicts are possible between experts in public agencies (who give advices on the danger of some products being diffused in the environment) and scientists (who make the scientific studies on the danger of some products). The experts could simplify while the scientists reckon that the methodology has to take into account the complexity of the problem. All this advocates for the precautionary principle.

Dealing With the Symptoms and Not the Causes

We have to distinguish "adaptation" and "mitigation". "Adaptation" means measures taken and infrastructures created or upgraded to cope with the negative consequences of global warming in cities. The goal is to maintain livable the cities. The short term is considered. The following are concerned: networks of refrigerated water (to refresh buildings during hot summers), measures to deliver potable water even when there are droughts, measures against the disastrous effects of floods (which will be more frequent), raised dams etc. "Mitigation" of global warming concerns the long term. It is to deal with the causes themselves (too many emissions of CO_2 in the atmosphere).

One has coined the term "tragedy of the horizons" to describe the possible mistake. To deal with the symptoms, forgetting the causes, would be a mistake. As the worse is besides the horizon (an unbearable increase

of the mean temperature of the atmosphere), and there are preoccupations in the present, one is tempted to give the priority to adaptation forgetting mitigation.

Since in this paper we explore the hypothesis of an Opinion all powerful, elusive, and arbitrary, we cannot avoid to discuss this possible evolution: "adaptation" is taken in charge efficiently, the Opinion is reassured and this leads to the stake of "mitigation" neglected. This, because the consequences of adaptation are visible, while the consequences of mitigation are invisible (but matter very much). Obviously, if we lose time to carry out mitigation, it becomes more and more costly. The Stern[1] report (2006) has stated that mitigation of climatic change, carried out more lately, will be costlier. During the lost time, the expenses for adaptation would increase. Finally, the Humanity would cope with a double investment wall: for adaptation and for mitigation (this, without speaking of a possible no return point).

Take the example of water in Paris. The works to master the problems of water in Paris started a century ago. One has created several water reservoirs (lakes) upstream of Paris, to master the flow of the river Seine (to retain water in winter, to deliver water in summer). After, the works have reached a pharaonic size. One has promised the Parisians to allow swimming in the river Seine in 2024, year of the Olympic Games in Paris. For that, the water treatment plants upstream of Paris have been upgraded. The cleanness of the water in the river is threatened when there are storms, because the rainwater and the wastewater overflow the sewage system. One builds two huge reservoirs connected by a tunnel to collect these waters, which will be released in the river lately, after a treatment cleaning them. Notice that the promise (to Parisians that swimming in the river Seine will be possible) has already been made for the year 2000 … without effect. Now suppose that the promise is kept. Concerning another recreational activity, fishing in the river Seine, it is definitively lost, because of chemical pollution in the river Seine. One corrective action (swimming) is possible and costly, while another one (fishing) is impossible. Again, this shows that the precautionary principle should be applied.

Articles Concerning Opinion

Great Reversal

Again, given our hypothesis on the Opinion which is all powerful, elusive, and arbitrary, one has to consider the possibility of a turning back in environmental matters. Already some European leaders claim a "pause" in environmental legislation. In the Nederland, a political party claiming to maintain the productivist agriculture has made significant electoral gains. In the European Parliament a law poised at restoring the totally or partially destroyed ecosystems in the EU, has been voted by a narrow majority, after many articles have been cancelled. However, it is absurd. One cannot limit the ambitions of the struggle against global warming to a decarbonated economy at a certain date (2050). We have also to maintain the carbon sinks. To limit the emissions of CO_2 in the atmosphere while destroying carbon sinks (forests, wetlands, meadows …) is absurd. In an impossible rational approach, we should choose at each time the less costly means: either to reduce emissions of CO_2, either to strengthen, or to restore a carbon sink. Again, it is the precautionary principle: we should reduce the emissions and restore the carbon sinks.

Even, one can imagine that in case of success, the opponents to environmental legislation get that one gives up on decarbonated economy.

[1] Nicholas Stern is a British economist.

One knows, at the time of the social networks, that there are techniques to manipulate the Opinion. One displaces the "Overtone window"[2] alongside an axis marked from "unthinkable" to "policy" via "radical" and "acceptable". It is done step by step. Of course, it is purely empirical. To use the words of the American author Cass Sunstein, there is an "entrepreneur in availability". One cannot know in advance if he will succeed or fail, but if he succeeds one cannot know if he has worked on the "gaseous" opinion (the triggered change is temporary) or on the "stable" opinion (the triggered change is definitive). In the same vein, the famous "nudging" should concern only a change of the gaseous opinion or a change explained by the evolution of the stable opinion in some field.

Let us comment on the examples of "battlegrounds" where proponents of comprehensive environmental rules and opponents, struggle: oil and gas, vehicles electrification, industry.

Oil and gas. The NOCs (National Oil Companies) are concerned. They want to benefit from the resources they have in their reserves, oil, and they say it. Notice that the production of oil increased every year except during the pandemic. And the emissions of CO_2 have not started to decrease! However, the NOCs are in an awkward dilemma. If they choose as a strategy to produce very much oil, the price will decrease and their proceeds will diminish. And if they choose to shrink the production, the high price will favor the renewable energies, which substitute to fossil energies.

Electrification of vehicles. We live in a "society of the supermarket" (Fourquet, 2022). So, the logistics has become a huge activity (Fourquet, 2020). The goods sold to consumers have to be carried as far as the supermarkets, or, in case of electronic commerce, the door of the customer' home. Only trucks are useful for this task, and are used. Trains are used mainly to carry heavy products. As it has been said by Jean Marc Jancovici[3], there is this negative consequence, from an environmental point of view, of the consumers society: the cars (and mainly the heavy cars) being fashionable, one is committed to electrification of cars, and electrification of trucks, which would be of great benefit for the environment, is forgotten.

Industry. Manufacturers, in recent years, have made many efforts to save energy. So, their emissions of CO_2 were reduced (industry is not the main source of emissions, it is transport). It is the notion of "good cost": a good cost is when one euro spent generates a revenue of more than one euro. The industry, by saving energy, increased its profits. But the reduction of emissions of CO_2 from industry is not enough. One has decided to levy a carbon tax. The "good cost" becomes: one euro spent generates more than one euro in carbon tax which is not paid.

Laws of Opinion

One has to be cautious when Laws of Opinion are concerned. At best, these laws allow identifying an evolution of Opinion when it has started a long time ago. The French specialist of Opinion Jérôme Fourquet gives the example of sexual minorities in France. One has seen a sequence of reforms, changes in laws and in the society itself: homosexual rights (1981), civil solidarity pact (for homosexual couples also, allowing a usual fiscal status, but not adoption of a kid), same sex marriage (allowing adoption of a kid), and assisted procreation technology (for married women also). At every stage, there was an opposition sometimes ferocious. To explain the sequence, Fourquet (2020) proposes ratchet effect, domino effect, and catalyst:

- Ratchet effect. When some law is passed, the reform is decided and finally the change is accepted.

[2] The overtone window is the list of the positions currently accepted in the society.
[3] He is a "voice" on ecology in France.

- Domino effect. Every law passed, reform made, creates the conditions for the following step. The evolutions of Opinion come one after another.
- Catalyst. The catalyst is the legal environment, that is to say all the laws already passed. It is an encouragement for the Opinion to evolve in some direction, to accept many changes of the same kind, in the same field.

But there is no absolute certainty when Opinion is concerned. Take this example: in France the law on free abortion (1976) is sacrosanct. But in the USA, one has seen an offensive against free abortion. It could fail but, in any way, it is a kind of alert.

The hope is that the laws passed in the European Parliament in the context of the European Green Deal will create a shock setting out a model imitated in the entire world. This sequence of laws should be helped by the ratchet effect, the domino effect, and the catalyst. It remains to be confirmed that the change concerns the "stable" opinion in Europe (see the article "Great reversal").

Greenwashing

Decades ago, the French author Jacques Ellul, a proponent of political ecology, noticed that advertisers have taken the side of technology. Since this time greenwashing has appeared. The risk is an invisibilisation of environmental stakes. To explain that, we have recourse to the theories of the French sociologist Jean Baudrillard. There are two stages, naturalization and greenwashing:

- Naturalization. The consumer feels in fusion with nature, thanks to the signs which fix the sense of consumption (advertising). And he forgets that nature is destroyed by the production (Baudrillard, 1986). After Baudrillard, the consumers buy signs, mainly, the use value of the consumed objects being secondary. "Naturalization" means that the consumers buy the signs of restored Nature (when they buy care articles, food, trips, etc.).
- Greenwashing. Now the signs are that of the saved Planet. Advertising creates this consumer's belief: buying a good, he contributes to save the Planet. A simulacrum is seductive (Baudrillard, 1988). And a simulacrum is to simulate that one has that one has not. Greenwashing is the simulacrum of having a safe environment thanks to consumption.

Take just an example: the car. The democratization of the car is explained by its popularity. Someday, the consequence of this democratization of the car, the traffic congestion in metropolises, threatened the car with unpopularity. The reaction of advertising was the denial. Advertisers and designers in the car industry refused the obvious solution, the small car. At the opposite, they promoted the large and heavy car. And this, notwithstanding the alerts on global warming. Around 2010, it was obvious that there was the victory of the model of the large car, the small cars being bought by only a few customers. Even when the cars are electrical, large cars are not the good choice: the carbon footprint of a large car is more than that of a small car, not because of the use (provided that green electricity is used) but because of the manufacturing[4]. Add to this the fact that electrical trucks are neglected (see the article Great Reversal).

Greenwashing has created in the mind of the public, such reactions, that one can fear an invisibilisation of the environmental stakes. And this could contribute to a possible Great Reversal. In other words: greenwashing has persuaded the consumers that there is nothing to worry about environment, since the issue has been addressed, thanks to the purchase of goods.

[4] Today the metals industry uses fossil energies. In the future, when it uses electricity, the large and heavy car will trigger a waste of energy.

The Return of the Enclave Economy

Enclave economy was theorized by the Brazilian sociologist Cardoso. It was due to a powerful country investing in a poor country getting a grip on the government of this country. Later, it was due to multinational firms. And today, two new causes have appeared: "Liquid Nature" and "militarism".

- Liquid Nature. It has been theorized by Naomi Klein. In some project (1) Nature is a resource, monetized, of course (2) Nature is presented as kept safe, preserved (3) Nature is at the core of the project, and is a justification (Klein, 2016). For instance, a village in Italy losing its population, is "saved" by a single vocation, three-star tourism. An example of enclave is when a foreign country buys the land in an entire region, in a poor country, to cultivate it on a large scale.
- Militarism. Militia control mines and get a revenue from them. The militia can be from the country itself (Libya, Sudan). Or in African countries the militia are from foreign countries. They trade military services for the revenues from the controlled mines. Also, this occurs when the countries importing raw materials want to control the conditions in which they are extracted, the environmental conditions and how the workforce is treated.

Conclusion

In conclusion, we shall insist on two points: adaptation and mitigation, and the places favorable to some ecological awareness.

The cities are concerned by two stakes, adaptation and mitigation, which are very different. Either adaptation strengthens mitigation, either they are not linked, and possibly they are in conflict. Let us comment on a few examples:

(1) Adaptation strengthens mitigation. Energy efficient refurbishment is adaptation and mitigation, both. Renovated buildings are fresher in summer (one makes economies of energy, avoiding air conditioning) and hotter in winter (economies of heating). Therefore, the buildings will emit less CO_2 in the atmosphere. Another example is low emissions zones. It is adaptation (upgrading quality of air in metropolises) and struggle against global warming (there are less emissions of CO_2 from thermic motors, people walking or using the public transport).

(2) Adaptation and mitigation are not linked. Huge works on infrastructures in cities (to raise dams to avoid the consequences of floods, to dig large reservoirs for rainwater like in Paris and London …) are poised to make cities livable and safer. But nothing is made for mitigation. Soon or later, if global warming continues, the new infrastructures will become insufficient … Opinion in cities could be reassured (since the cities remain livable) and forget the necessity of long-term objectives like struggle against the global warming … It would be to treat the symptoms and not the causes.

(3) Adaptation and mitigation are in conflict. District cooling is an example. Of course, it makes the cities livable in summer, but it requires huge amounts of energy, hence emissions of CO_2 (as far as the electricity is not decarbonated). Desalinization is another example. One can solve the problem of bringing potable water to cities, but it is costly, requires very much energy, and degrades environment, since large quantities of brine are rejected.

The metropolises are the places where labs and universities are located. Here, the knowledge on environment develops. But again, knowledge of causes and knowledge of reasons matter, both. The places for knowledge of beliefs, sensitivity to threatened environment and degraded Nature, are small cities and countryside. They are near Nature. Beside the "right to the city" there is a "right to the village" (Fourquet, 2021). Take an example in France, the lower part of the Dr ôme valley. The place is called Biovall ée (Bio valley). There live many newcomers

having left cities, bio farmers or growers of aromatic plants. They are proponents of ecology and biopharming. They are networked. Among them some work at the University of Lyons, which is near, as teachers or researchers. Ecology requires knowledge of causes, science (in cities) and experience, sensitivity to Nature (in small cities and countryside).

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