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Agriculture in a degrowth society: helpful indicator for the transition. Transitory indicator for paradigm shift

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Abstract

Current environmental degradation and resource depletion challenge our societies in their fundamentals. Scientific evidence shows that the negative impacts of our economies are growing, while wellbeing doesn't seem to follow this trend. Degrowth theories - i.e. a transitional period to reach global sustainability - tries to solve the ecological and social crisis through a shift in our socio-economic paradigm. To support political and societal decision-making processes, some indicators could be helpful. In all societies, the agricultural world can be seen as the most important sector of production. We are not completely reinstituting Physiocrats' view, but agriculture is well presented as the foundation of the activities, due to many implications in others sectors. Our way to be farmer can determine the quality of soils, water and food. Health is strongly related to what we eat. More, here we can find precious indications about our relation with Nature and the way we consider it: fight or collaboration. The global crisis occurring in the farmer world - plenty of farms disappear every year around the world - is not a detail. Optimistically, many considerations are dedicated on tomorrow agriculture: it should be free from petrol use (as inputs and energy), extensive, local and environmentally sound. Farmers have to live directly from what they produce but this sector should be away from global profit focus. We can see it as a public service, providing many implications in other sectors and pushing them into the transitional period. Another application of the precautionary principle is the upholding of GMO on laboratories. This kind of seeds is directly linked with an intensive, centralized and profit-oriented agriculture. In this article, we propose a set of indicators focused on the agricultural world in a degrowth transition period. These indicators could next be aggregated in one index, able to launch the debate and its appropriation by the Civil Society. We propose to construct such an index with a kind of pyramidal approach, highlighting a gradation inside the different levels. The current paper represents the beginning of a work in progress. The indicators are submitted to the debate, in a way to underline his abilities to engage the paradigm shift.

Keywords

degrowth; farming; agriculture; indicator

1 Introduction

The current situation appears as a strategic crossroads for the future of human civilization. Fortunately, a rising number of academics, politician, or citizen perceive what we can call a civilization crisis, emerging in the society under various ways.

First, we are facing global modifications in many environmental areas leading to a situation never seen before. Climate changes, collapse of biodiversity or chemical contamination are some examples of this global degradation. Scientific evidence show that the common origin to the vast majority of these troubles is in very large part due to the human activity. But many questions still remain about interactions, retroactions and reinforcements among these perturbations, leading to an unprecedented situation out of control at a worldwide level.

Second, the global Economy is more and more separated from the *art of conducting the house*, deriving to chrematistic as only focus. Moreover current model ignore two main decisive factors: a) the outcome of the model is a strong rising of various pollution (seen before), and b) the main input - abundant and cheap fossil fuel - will become scarce in a very close period [see Hubbert peak, and ASPO]. These factors can be summarized by the fact that *an infinite growth in a finite world is impossible*. These two arguments suggest the unsustainability of our way of living in a global level. Even this situation treats the entire world, huge differences appear at local levels, between non- and 'developed' countries, whose impact of human activities is far much higher due to their way of producing, consuming, and living.

Finally, a third range of crisis is related to the humanity: a) in developed societies, wellbeing is not increasing in the same proportion as the impacts. Even more, some studies show a clear disconnection between the growth of the Economy and the fall of wellbeing. The inequalities in these societies is also rising to important levels, but the most impressive is that b) inequalities are also strongly rising at a global scale and leading to starving parts of the world. Societies today are neither equitable nor sustainable and the reduction of their global impact is now a necessity.

2 Degrowth as a transition

One key factor of our socio-economic organization is the pursuit of economic growth as a fundamental objective, leading to a *growth society* [Latouche 2006]. Because of the crisis seen above, a soft landing of our Economy should be taken as a first step to reduce our damageable impact, notably in order to avoid future partial societal collapse. More fundamentally a shift in the socio-economic paradigm itself is necessary. The goal of human societies should be to reach a sustainable state, in which activities are dedicated to Human wellbeing while respecting physical's boundaries. In fact, it appears impossible to describe this sustainable state, because a state is never static but arrested disequilibrium [Morin]. The degrowth-strategy appears as the transitional phase between the current unsustainable paradigm and the future sustainable one. But degrowth cannot be an objective in itself, the goal is not to start a negative growth period, nor to obliterate all kind of Economy. As Latouche [2010] says "*let us immediately specify that degrowth is not a concept, and in any case, not one that is symmetrical to growth. It is a political slogan with theoretical implications. The watchword of degrowth especially has an aim to strongly signal the abandonment of the target of growth for the sake of growth, a foolish objective whose engine is precisely the unrestrained search for profit by the holders of capital, and whose consequences are disastrous for the environment.*" Degrowth partisans highlight the fact that the alternative is not between growth and degrowth, but between degrowth and Barbary [Aries]. Even if the transition is a necessity, the 'objectors to growth' wants to make this transition a volunteer processes, allowing a rise of wellbeing. As Ariès

[2007] claims " nous ne sommes pas objecteurs de croissance faute de mieux¹".

Provisionally, this transitional period could be a mix of two processes comprising a series of elements:

- Enhancement of human values and wellbeing within Nature's boundaries, comprising issues such as conviviality, cooperative sharing and redistribution in wealth, efficiency in resources use and production, cooperative work, etc.
- Degrowth of the impacts on Nature and on Humanity via the reduction of the Ecological Footprint (E.F.) for example, decrease in production, reduction in damaging industries, frugality via voluntary decrease of consumption, reduction of working hours, etc.

We propose a kind of pyramidal approach (figure 1) to represent the general philosophy behind our proposals. This wants to show the necessity to respect strong sustainability and achieve good conditions through incremental, successive levels.

The pyramid is first composed by three steps that are - from bottom to top - dealing with:

- a) Nature: the objective is to reach strong sustainability. It is fundamental in our approach to respect the geo-bio-chemical cycles and maintain or even improve the biodiversity level, seen as the main resilience factor.
- b) Humanity focused on basic needs: our focal point is the satisfaction of basic human needs (food, water, air...). The decline of inequalities is here fundamental, and takes the standpoint of a bad repartition among populations rather than a need for technical solutions.
- c) Humanity focused on social and spiritual: we consider that this level is the main one, the goal of our human condition. Meanwhile the last position inside the pyramid makes sense if we consider that we are first animals with basic needs, and only able to be fulfilled on a friendly planet. More, welfare for a minority standing next to starving people is not conceivable, urging us on satisfying basic needs as prerequisite.
- d) The last level, out of the pyramid and focused on Activity, enables to represent the dynamics links between the others. In this way, our activities need to employ resources from Nature (link1) without damaging impacts to permit strong sustainability (link2). The goal of activities is first to fulfill basic needs for everyone (link3) and equally to permit social/spiritual achievement (link4). What we call Economy is a part of this level because other dimensions are important. We integrate into our consideration the analyses of Arendt [1992] that makes a clear distinction between the work (*oikos*) (linked with Economy and oriented to basic satisfactions, the works - *ergon*) artistic and intellectual creation, and the last one: the political action (*praxis*) - the citizen's activity. In other words, the purpose is to re-institute the instrumental vocation of the Economy.

The proposal we make in this paper is to limit the scope to a focus on the agricultural system and set a framework for the construction of an indicator. We are not reinstituting Physiocrats' view, but agriculture is well presented as the foundation of the activities, due to many implications in others sectors. Our way to be farmer can determine the quality of soils, water and food. Health is strongly related to what we eat. More, here we can find precious indications about our relation with Nature and the way we consider it: fight or collaboration. For all these reasons, agriculture can be considered as a major actor to succeed in degrowth transition, providing a shift in our practices. The International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD) insists on the fact that "*The global agricultural system faces great challenges today, as it has to confront climate change, loss of biological and agro biological diversity, loss of soil fertility, water shortage and loss of water quality, and population*

¹ We are not objectors of growth for lack of anything better.

growth".

We can consider that even if the theoretical considerations are important and represent a necessity, developing this approach in more operational terms can be helpful at this time of History. To start and monitor the process of transition, it will be decisive for analysts, political leaders and the civil society to handle with some indicators dedicated to the transitional period, enhancing their ability to read a different reality and propose alternative orientations for policies.

As Gómez-Limón and Sanchez-Fernandez [2010] say "*there is wide consensus that an operational definition (quantitatively measured) of agricultural sustainability through indicators and indices is a prerequisite for the adequate design, implementation and monitoring of agricultural policies aiming at a more sustainable farming sector.*"

3 Focus on agricultural system

3.1 Farming, the same Titanic

If we consider agriculture, we first have to make a methodological distinction to clarify various situations. It would be impossible to directly embrace all these practices because agriculture represents a very large bunch of practices among the world, making impossible to speak about one single model. The spatial scale of the analysis and proposals for this paper will be limited to the agricultural model (AM) of developed countries - especially Europe - because of three main reasons:

1. At the current state of this work, the knowledge about agricultural practices in developed countries is better for the author and easily handled due to some homogeneity.
2. Even if the vast majority of farmers in the world is located in developing countries, the impact of our AM is still very high, because of the large amount of chemicals and mechanization we need to maintain current orientations.
3. Our AM is still the example we consider as the good way to do, and which is distilled into developing countries as a way to 'modernize' their practices and develop. So, changing this model can be a good start to give another example and provide some advises to succeed the shift in developed countries practices and representations.

Even if different practices can also be represented in developed countries, we can highlight the main characteristics of the AM in this part of the world. The current situation is rooted into the industrial revolution, and an Historical shift appears after the second World War when the orientation has to be modernized to gain in productivity and provide enough food for Europe. This run to productivity has led to several characteristics of the AM:

1. Agriculture is a 'sector' of activities like another. We are not anymore in farming societies where farming was the basement of society. The impact of this situation is an economicisation of the vision and practices, focusing on the economic side of production above all, ignoring the multifunctionality of this sector (food, fiber, fuel, social role, etc.).
2. The employment rate in agriculture has sharply decreased (e.g. less than 3% in France, against 27% in 1954). This decline of farmers leads to very high concentration levels and extended area by farms.
3. To be able to reach such productivity, a high level of mechanization is requested, with powerful and expensive tractors, machines. Associated with this mechanization, chemical inputs (fertilizers and biocides) are abundantly spread. In fact, like the global Economy, agriculture makes no exception and is currently based on abundant and cheap fossil fuel to provide the huge amount of

required inputs to grow high selected crops. Chemical fertilizers, biocides and moreover the high level of mechanization are derived from petrochemical industry.

4. Farms are more and more specialized in one single activity e.g. corn crops or cattle rearing. This kind of monoculture leads to a loss of biodiversity and resilience, and increase environmental risks.
5. Farms are more and more in situation of dependence on agro food system (Food Processing, Distribution) to sell their products because of consumers' purchase compartments.

3.2 Framework

To create an indicator dedicated to agriculture in degrowth period, we propose to deal with the program of "8Rs" proposed by Latouche [2006], and presented as a cyclic path for degrowth. These steps are: to revalue, to reconceptualize, to restructure, to relocate, to redistribute, to reduce, to re use, and to recycle. We have adapted this path to the AM in a way to reach a kind of sustainable agriculture. The eight "Rs" provide us an interesting framework to present the different steps and translate them into some proxy. It is also a good mean to communicate with the civil society and launch the debate related to this topic. For each step we present a first description in a farming focus, followed by a proposal of proxy trying to measure it, but without pretention of Exhaustiveness. The greater part of proxy is expressed by variation rates (Δ) because what matters is the evolution, the tendency of the variables above its situation in absolute terms.

1. To revalue: a global shift in the perception of what is agriculture should be the first step. Values are fundamental to help us through the entire process of paradigm transition. Considering the current situation of agriculture, it doesn't seem excessive to speak about 'war' agriculture. Therefore the perception has to evolve from war to cooperative agriculture. This cooperation should concerns two levels, the first is about a) cooperation between Humanity and Nature. The objective is to reach a high level of sustainability with a better knowledge and use of natural capacities. Many sweet practices already exists as organic farming for example. Some agro-environmental measures can help to preserve habitat biodiversity in a way to improve or keep places dedicated to auxiliaries (birds, bees, ladybirds etc.). This biological pest control requires no energy inputs and helps the lowering of chemical inputs. Permaculture (permanent agriculture) could also be a beneficial for cooperation between Humanity and Nature. Finally, the use of transgenic plants appears as in total opposition with degrowth transition. This kind of seeds is directly linked with an intensive, centralized and profit-oriented agriculture (war against nature).

Proxy: Δ ['organic' farming areas] ≥ 0 ; Δ ['habitat diversity' areas] ≥ 0 ; Δ [GMO's areas] ≤ 0

The second level is about b) cooperation between people. The significance is to improve the links between people around farming practices and get away from social competition. Many initiatives provides this kind of links, as for example the associations for the maintenance of rural agriculture (AMAP in French) in which people pay in advance for the future production of their local farmer and help him during work intensive periods. We can also mention the collective purchase groups (GAC in French). All these practices help to create link between people around farming and could provide better knowledge of farming for city dwellers.

Proxy: Δ [AMAP, GAC, ...] ≥ 0 ; Δ [areas dedicated to vegetable garden] ≥ 0

2. To reconceptualize: the orientation here is to question the objective of farming and its first major goal: to feed people. Alimentation practices are directly connected with farming practices and are so essential to be questioned. But the central question is : what means to feed ? In a degrowth transition, the food is not only an amount of calories a day, but represents something more important because of the consequences on health, environment and social concerns. Rearing of

livestock and the meat industry can create large environmental and social degradations when it is intensive-oriented. The high level of current meat consumption should decrease and shift to a balanced proportion between vegetable and animal proteins. The quality is also a part of the problem and initiatives like Slow Food Movement are directly connected with degrowth philosophy, aiming to build some alliances between farmers and 'eaters'. Advertising for junk food has to sharply decrease to stop the demand for such food.

Proxy: Δ [% of animal protein consumption] ≤ 0 ; Δ [Slow Food Adepts] ≥ 0 ; Δ [junk food advertising] ≤ 0 ; Δ [obesity] ≤ 0

3. To restructure: a global modification of the production structure is the objective. Due to a lower fuel intensity, more human work could be requested in the agriculture. It would lead to an increase in the farmers into the population, with a reduction of the average size of farms (crop areas). This land restructuration needs to be coupled with a shift from monoculture areas to multi-species and extensive agriculture. To ensure a cyclic process, each farm could keep mixed activities (crops and breeding).

Proxy: Δ [% farmers in population] ≥ 0 ; Δ [small-scale farming] ≥ 0 ; Δ [mixed farming areas] ≥ 0

4. To relocate: key concept for the objectors to growth, relocalization appears as a solution to the future peak oil, and offers the possibility to create links and social relations where people live. Current high level of transportation for delivering goods appears unsustainable and is based on cheap oil. The reduction of "food miles" will be a beneficial to local farming and distribution. We propose three domains where relocalization could occur: a) to relocate the choice of crops through local and adapted seeds. This choice gives the opportunity to be more adapted to environmental specificities at the local level and provides biodiversity. b) To relocate the transformation/distribution of the products with direct-selling. Finally, c) to relocate the financing with models like co-operative.

Proxy: Δ [use of local seeds] ≥ 0 ; Δ [food miles] ≤ 0 ; Δ [% of income from local sales] ≥ 0 ; Δ [% of co-operatives] ≥ 0 ;

5. To redistribute: millions of people suffer from hunger around the world and even in developed countries, even if the global production of food calories appears sufficient to feed the entire population. Degrowth is first a decrease in inequalities at every scales, then a redistribution of food production. The redistribution is also related to the power redistribution. The abilities to decide food orientations (alimentary sovereignty) can preserve from misorientations of production.

Proxy: Δ [people suffering from malnutrition] ≤ 0 ; Δ [% of areas with alimentary sovereignty] ≥ 0 ; Δ [food waste] ≤ 0

6. To reduce: the goal of agriculture in a degrowth society is not about a reduction in the production but more about a strong cut in the impacts and in the dependence. We propose a reduction in chemical products and in fossil fuel use to reach a sustainable agriculture. No more damage should be done on nature and humanity. To measure it, we can use some proxy like the cancers or allergies.

Proxy: Δ [living organisms per gram in soil] ≥ 0 ; Δ ≤ 0 ; Δ [spermatozoids concentration] ≥ 0 ; Δ [tracked down cancers] ≤ 0 ; Δ [% people suffering from allergies] ≤ 0 ; Δ [doses of chemicals inputs] ≤ 0 ; Δ [fossil energy requirements] ≤ 0

7. & 8. To re use, to recycle: these last two steps in the "8Rs" scenario are supported by many former practices to achieve the process. For example, the use of fertile seeds allows not to depend anymore on big seed groups and to obtain adapted local varieties. About the recycling process, we should reach a full recycling of the nourishing elements via local composting areas for example.

Proxy: $\Delta[\% \text{ of fertile seeds}] \geq 0$; $\Delta[\text{composted waste}] \geq 0$

3.3 Data treatment

The method to construct an indicator from data depends on the objective: do we want to compare countries or areas at a given point of time; or is it more useful to follow a temporal change? The first option can be useful to classify countries and give to the bad performers a type of model to follow. The second option can lead to indicators employed as target for societies.

This question is still open and the next step of this research would determine the most relevant objective. We have to keep in mind that the method should be easy to be understood, allowing the Civil Society to discuss and improve it.

We believe that methods translating disparate variables into monetary ones are not a judicious option for these indicators because of some reasons:

- a) Degrowth theories propose to avoid and end up with what is called economicisation of the world (i.e. seeing everything through economic glasses of profit and loss). Trying to convert every dimension into money appears unthinkable.
- b) Many proxies will probably never be convertible into money, and trying this will create lots of methodological issues.

An interesting methodology we can employ is the methodology used in the Index of Social Health (ISH) from Miringoff. For every proxy, when we have the variation rates between two periods, we allow 0 to the worst value and 100 to the best. A linear regression gives us the intermediate values. This prevents the need to fix a priori best or worst performance. Next we give a weight to each proxy (arbitrary the same at the beginning) and combine them into the indicator.

4 Discussion & conclusion

Degrowth theories just begin to be studied and deepened even if we find very old roots that nourish this thinking. Review of the literature suffers from a lack of available studies, making sometimes difficult to highlight relevant proxy. As presented at the beginning, this paper shows the first level of a work in process. Many interrogations remain about the appropriate methodology we should use. A key success factor for such an index will be its acceptance by the Civil Society and even more by the farmers. The strong willingness to integrate citizen participatory to elaborate the index is a guideline. However the best strategy we could probably choose is to work with a method as simple as possible to facilitate people understanding.

Envisioning degrowth, as a transitional period from unsustainable societies to a variety of sustainable ones seems to be pertinent. Nevertheless, to be able to take off and go on with this paradigm shift, some measurements need to be able to support political decisions about society's orientations for farming. At the current time, no existing indicator seems appropriate to support this decision-making process. To construct this new indicator, we have to focus on the values we want to highlight and on the objective: to succeed in the transition period of degrowth by democratic ways.

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