Degrowth and Sustainable Human Development: in search of a path toward integration

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Introduction

Most of the criticism to the "growth" dominant paradigm is based on two main pillars. The first one is: *we can not* go on with the present consumption, we are using more resources than the planet is able to provide without causing some changes that are surely negative (and maybe disastrous) *for human beings* and for some vegetable and animal species. The second one is: it is better no to go on with the present consumption because *it does not suit us*, that is we are not pursuing the *human well-being*. The two issues seem – apparently – to strengthen each other, even on the level of the consequent political proposal, but in fact their mix can create confusion and make more difficult the analysis and the comprehension of main problems, and the pursuit of solutions. We can demonstrate "easily" that a certain level of atmospheric pollution is dangerous for the human organism, but it seems more difficult to demonstrate that, leaving out the negative consequences on the environment, more consumption does not imply more wellness, or it may be not relevant for the increase of human well-being or it may even cause directly a reduction of the well-being. Really, it is not more "difficult" to "demonstrate" the complex relation between consumption and well-being, but it is necessary to make explicit the idea of "human being" that we are assuming.

For this reason we think that most of the current research concerning "degrowth" shares a common theoretical trait that we consider a weakness: it lacks an underlying theory of justice that should – or, at least, could – orient the public action in the wished "degrowth society". Indeed, this may be the outcome of an intentional choice or of an unintentional omission, depending on the different approaches of several theorists. In the first case, the choice is often justified as an "optimum" solution in order to avoid the illiberal and paternalistic outcomes that many theorists consider congenital to any theoretical and political perspective claiming a universalistic approach. In the second case, the theorists focusing on the ecological limits to the human action (including Georgescu-Roegen) do not make explicit the justice principles and the well-being evaluation criteria that they are implicitly embracing (for instance, the supposed advantages of "sobriety" for human well-being). Actually, in the last few years, some authors started to worry about the issue, but still without trying to face the problem of a complete integration with a theory of justice (see, for example, T. Jackson, *Prosperity without Growth: Economics for a Finite Planet*, 2009).

We think that we have to choose and to make explicit a theory of justice because we believe that any theory concerning human action, even those that claim to be purely descriptive, they subtend a specific idea of human being and they have a normative component (besides a prescriptive one). Looking for a possible solution, we try to trace an integration path between a specific theory of justice (the capability approach of Martha Nussbaum) and the Bioeconomics theory of Nicolas Georgescu-Roegen in its more recent formulation. We outline the two theories, pointing out their foundations and showing their complementary aspects. The capability approach, besides being the fundamental theoretical basis of "human development", may become the conceptual framework needed to explicate the ultimate aim of degrowth, a "human well-being" which is otherwise too vague and undefined in order to justify and to promote any cultural and political change. On the other hand, the theory of Nussbaum, with its "thick, vague conception of the good" (Nussbaum, 2003) and the consequent draft of a provisional list of ten central capabilities, needs a definition of the bio-ecologic limits to the pursuit of a good and "really human" life by the human beings. Finally, we do not want to create a "simple" costs-benefits scheme, but to stress the connections to show the possibility of an optimal integration of the two theories.

1. Capability approach: human development is compatible with degrowth

The capability approach is an ethical-normative theory with an interdisciplinary base, that tries to define some criteria able to guide the policies and to evaluate the judiciousness of the actions endowed with public relevance (Magni, 2006). It has been initially develop by the Indian economist Amartya Sen, but we will adopt also some fundamental aspects of the partially different approach elaborated by the philosopher Martha Nussbaum. The central concept is the same, "capability", that is freedom meant as a mix of (external) "opportunity" and (internal) "ability".

Even though the approach is a theory of justice, whose aim is to guide the public choice, capabilities that the approach want to promote are strictly individual. They can be defined as *all that an individual is able to be or to do*, both his/her positive and negative freedoms. Capabilities are, for example, to use the bicycle and to write, to be healthy and well nourished, but also to be able to express oneself with an intelligible language.

Capabilities must be distinguished from functionings: the second ones are the realization of the first ones, that is the actual actions made by individuals and the states they experience ("doings and beings"). This distinction is very important for Sen, while in the theory of Nussbaum the two concepts tend to overlap. Anyway, capabilities can be really "realized" only if we have both internal abilities and external opportunities: a person can be able to use a mobile phone but if there is no line in the place in which he/she normally live, this ability is quite useless. In most of the liberal and libertarian literature, only negative freedoms (absence of constraints, freedom *from*) are considered deserving of public protection, while in the capability approach also positive freedoms (freedom *of*) can/must be granted by public authorities: it is the only way to promote complete self-fulfilment of the individuals, even though we run an higher risk to get into a paternalistic outcome (and, with this consciousness, we can mind the problem with more accuracy).

The *human well-being* become the ultimate aim of any public policy: it can be defined as a multidimensional variable that can be considerably different in different cultures and/or can be specified in several ways in the contingent situations (Nussbaum, 2003); in this paper we adopt the idea that well-being to be pursued by public policies can be identified with the achievement of some fundamental capabilities above a certain minimum level and that human development is a process that allows to reach and – eventually – to overcome that level. The availability of goods (and its increase) is eventually – and not necessarily – a mean and, for sure, not a purpose of human beings in the pursuit of well-being. Consequently, at the political level, it means that level of per capita GDP and its growth on one hand, and increase of consumption on the other hand (the two things do not coincide), are not objectives in themselves.[1]

Moreover, the capability approach confer big value on the distributive justice, not only in terms of resources distribution (as it was for example in Rawls), but also in terms of distribution of capabilities and of opportunities to realize them. If the ultimate aim of this public ethics is a human well-being as high as possible (maximization criterion), fairly distributed (distributive criterion), its promotion can not be pursued simply through the satisfaction of the desires of policies "beneficiaries", but we have to agree on a list of capabilities that we consider fundamental and to promote the development of them. Indeed, if we base our choices only on individuals desires, we would face some insurmountable difficulties in the realization of an effective distributive justice, because on average richer persons are driven to desire more, both quantitatively and qualitatively, than poor people (it is the problem of the so-called "adaptive expectations", stressed for the first time by Elster).

Capabilities meet the requirements of distributive justice better than human rights. The last ones are possibilities (normally guaranteed by laws or by agreements) of the individuals to make specific

1 Unfortunately the use of simplified indicators and of the famous Human Development Index, that is calculated using also the per capita GDP as a base of evaluation, has driven several theorists to criticize the capability approach saying that its idea of development is not noticeably different from the neoclassic one.

actions, to experience specific states of being or to make explicit own thought. The existence of opportunities, nevertheless, does not assure that people are able to take advantage of them. Even if, for example, the right of thought has been recognized, it does not mean that anyone could really exercise it. Sometimes it is not even sufficient to provide the resources and the opportunities in order to make communication possible: we could furnish somebody a computer with an internet connection and give him/her the "right" to use it, but if he/she is illiterate or does not know how the computer works, the right would be "empty", because not really exercisable. To the right to something of an individual it corresponds the duty of somebody else to "provide" it: in a case like the one we presented, even this assumption is sterile.

Moreover, the capability approach proposes that individuals have to become fit to develop abilities that make them autonomous. Those abilities become an own "property" forever and can be exercise apart from external conditions, while rights can be abolished by force by an oppressive regime.

As we said before, we consider useful to accept – at least temporarily – a list of fundamental capabilities and we adopt the one elaborated by Nussbaum. This is based on a conception of the good that is "thick", because it defines some specific characteristic aspects of the human nature, and vague, because it is open to contingent specifications. Nussbaum presumes that her list of ten capabilities can be shared by all the people in any culture, for the same reason that they are based on the "human nature" and defined in a very abstract way; of course, it is a proposal open to discussion.[2]

First of all, Nussbaum describe, with an Aristotelian approach, which are the basic constituent elements of each human being; it is an intuitive approximation whose objective is not to constrain, but to direct the attention towards some areas particularly important. It includes the idea that the human beings are creatures endowed with abilities but also with limits. Then she creates the list of ten fundamental capabilities that she argues should be supported by all democracies (the following list is entirely a quotation from Nussbaum):

1. Life. Being able to live to the end of a human life of normal length; not dying prematurely, or before one's life is so reduced as to be not worth living.
2. Bodily Health. Being able to have good health, including reproductive health; to be adequately nourished; to have adequate shelter.
3. Bodily Integrity. Being able to move freely from place to place; to be secure against violent assault, including sexual assault and domestic violence; having opportunities for sexual satisfaction and for choice in matters of reproduction.
4. Senses, Imagination, and Thought. Being able to use the senses, to imagine, think, and reason, and to do these things in a "truly human" way, a way informed and cultivated by an adequate education, including, but by no means limited to, literacy and basic mathematical and scientific training. Being able to use imagination and thought in connection with experiencing and producing works and events of one's own choice, religious, literary, musical, and so forth. Being able to use one's mind in ways protected by guarantees of freedom of expression with respect to both political and artistic speech, and freedom of religious exercise. Being able to have pleasurable experiences and to avoid non-beneficial pain.
5. Emotions. Being able to have attachments to things and people outside ourselves; to love those who love and care for us, to grieve at their absence; in general, to love, to grieve, to experience longing, gratitude, and justified anger. Not having one's emotional development blighted by fear and anxiety. (Supporting this capability means supporting forms of human association that can be shown to be crucial in their development.)
6. Practical Reason. Being able to form a conception of the good and to engage in critical

2 The list is "universal" by nature, considering the axioms on which it has been built, but it is still open, because it is possible to discuss and modify it.

reflection about the planning of one's life. (This entails protection for the liberty of conscience and religious observance.)

7. Affiliation.
   - 7.1. Being able to live with and toward others, to recognize and show concern for other humans, to engage in various forms of social interaction; to be able to imagine the situation of another. (Protecting this capability means protecting institutions that constitute and nourish such forms of affiliation, and also protecting the freedom of assembly and political speech.)
   - 7.2. Having the social bases of self-respect and non-humiliation; being able to be treated as a dignified being whose worth is equal to that of others. This entails provisions of non-discrimination on the basis of race, sex, sexual orientation, ethnicity, caste, religion, national origin and species.
8. Other Species. Being able to live with concern for and in relation to animals, plants, and the world of nature.
9. Play. Being able to laugh, to play, to enjoy recreational activities.
10. Control over one's Environment.
    - 10.1. Political. Being able to participate effectively in political choices that govern one's life; having the right of political participation, protections of free speech and association.
    - 10.2. Material. Being able to hold property (both land and movable goods), and having property rights on an equal basis with others; having the right to seek employment on an equal basis with others; having the freedom from unwarranted search and seizure. In work, being able to work as a human, exercising practical reason and entering into meaningful relationships of mutual recognition with other workers (Nussbaum, 2000).

Each capability is individual and all of them have the same importance, even though it is possible to establish some temporary priorities depending on the context and of the circumstances. The ability of choice, practical reason, is one of the ten fundamental capabilities, besides being a necessary requirement for the development of all the others: so, if we want to define a priority, we would have to support first of all those policies that promote the development and the spread of that capability. Finally, we have to stress that the interventions to promote different capabilities could be temporarily in conflict among themselves, so it could become necessary to define provisional priorities. The aim of the policies is not to drive individuals to fulfil themselves in a specific way, but to promote “human flourishing”, that is to provide people with abilities, opportunities and resources to have the possibility to fulfil in a variety of different ways (or to choose consciously not to do it).

For Nussbaum, distributive justice is very important only under a certain minimum threshold of ability for each fundamental capability. Above this threshold, further individual “flourishing” is up to the willingness of the individuals. In order to guarantee to any individual (within the limits of its natural possibilities) to reach this threshold, it is necessary to provide aids and incentives that can be very different for each individual, both quantitatively and qualitatively: for example, a poor person will need more economic incentives in comparison with a rich one in order to develop a specific capability (i.e. to be educated), but not necessarily for all of them. Another “axiom” is that in the pursuit of human development, any capability can not be reduced nor violated.

2. The ecologic limits in the capability approach: the integration with bioeconomics principles

The capability theory (both in Sen and in Nussbaum approach) is focused on human capabilities

and up to now has not defined precisely what is the role of the ecologic limits to human development, in the short, medium and long run[3]; nevertheless, we think that, going deeper into the analysis of the principles of the theory, we can find many answers within the boundaries of the theory itself or, at least, we can find some directions to integrate the theory without distorting it.

Let's start with a simple observation regarding the ecologic limits in the short run. As we saw, one of the ten fundamental capabilities is "being able to live with concern for and in relation to animals, plants, and the world of nature": this capability can be interpreted like an opportunity for the human being more than a limit to its action; using its freedom of choice, he could decide to not take care of animals, plants and own environment generally speaking. But, if that capability is a possibility that we have to provide to *each and all* the human beings, it becomes also a limit to their actions[4]: maybe its not a strong limit, but it is a starting point.

In order to analyse better the issue in the medium and in the long run, we use also the fifth capability ("emotions") and the seventh one ("affiliation") and we imagine the following situation:

Somebody designs a machine that is able to produce all that human beings need, without any effort: let's call it "Aladdin's lamp". The lamp could give anybody all the things necessary to reach an optimum level in the first three capabilities, but also it could free practical reason, emotions, imagination, etc., and, of course, it could provide a lot of free time to enjoy life doing pleasant activities alone or together with other persons. Each and all the human beings would have the right and the possibility to use the lamp, but it is still a project: we have to decide to build it or not, considering that it is not a magic lamp; indeed, it is a human tool and it would consume a lot of resources. Let's see four different cases (assuming a fixed population):

1. The lamp consumes all the natural resources of the planet, with non-reversibility, in one year if it is used by 99,99% of the population. If we accept the capability approach and the Nussbaum list, we must renounce the lamp, because we can not exclude the 0,01% of the population: indeed, this group of individuals would not be able to reach a decent level for some fundamental capabilities, because the lamp consumes all the resources.
2. The lamp consumes all the natural resources of the planet, with non-reversibility, in one year if it is used by 100% of the population. Once more, we must renounce the lamp, because in the capability approach the evaluation have to be made in relation with the whole human life that, in this case would be interrupted prematurely.
3. The lamp consumes all the natural resources of the planet, with non-reversibility, in one hundred years if it is used by 100% of the population. Assuming the hypothesis that one hundred years is the maximum life expectancy of all the persons who are born at the moment of the production of the lamp or before,[5] basic principles of capability approach apparently are not sufficient to decide if we must renounce the lamp or not. Indeed, at this step of the analysis, we are not able to take up a definite position regarding what to do with future generations: people who will pay the negative consequences are those who will born after the construction of the lamp and we can not assume that a person who is not born yet it is already endowed with human capabilities.
4. The lamp consumes a "sustainable" quantity of natural resources of the planet (without consuming the natural "capital"), if it is used by 100% of the population, but population have not to remain constant. Even in this case, that seems to be simpler, we can have some problems with the capability approach: simplifying, what can we do if anybody want to have

3 We will show why we think that the most important fault in the human development theory concerns the ecologic limits in the long run.

4 It would not be a limit at all only in the extreme case in which no human beings would be consciously interested in taking care of other species.

5 In the famous movie "Piccolo Buddha" of Bernardo Bertolucci, there is a fascinating dialogue between the monk and the father of the boy, in which the first say: "Do you know what is non-permanence? In one hundred years, all the persons in the whole world will not be here: this is non-permanence".

one child more than the natural "replacement" rate (two children each couple)? What can we do if a couple conceives a "third" child by error? For example, we could decide some temporary limitations to the use of the lamp, but this is a valid option until we are able to remain above the minimum threshold for the fundamental capabilities.

Even if the scenarios are very simplified and they seem to be unreal, the present situation of the world is obviously more complex but it can be set between the second and the third scenario, with the aggravating circumstance that most of the people are not enjoying at all the advantages of the very imperfect Aladdin's lamp we are using, that is contemporary capitalism. So we can say that, in the real world, capability approach is sufficient to consider unacceptable the present situation, but it has some problems in judging some possible scenario, leaving open some ethical dilemma.

The most interesting problematic situation is of course the third, because in the fourth one most of the problems (and of the solutions) would concern practical reason and we can suppose that there would be very few (or marginal) serious ethical problems. Let's try to go on analysing the third scenario considering another issue: as Georgescu-Roegen stressed (reminding the results of some psychology researches), we can assume that on average people feel a strong connection with the descendants belonging to the three following generations, that is they are worried for the future of the sons of their grandchildren; we can temporary consider it as an "anthropological" condition of any human being. Assume that all the human beings, endowed with the opportune capabilities, would participate to a referendum in order to decide to produce or not the lamp: the affirmative option would win (or better, it could win) only if the consumption of all the resources of the planet, with non-reversibility, would happen in a period of time that allow the children of the grandchildren of the voters to live a life of a "normal length". But what about following generations?

Georgescu-Roegen said that we must follow the commandment "love your species as yourself": but this seems to be a "religious" solution. We think that in Nussbaum theory we can find the premises for a rational solution consistent with the theory itself, that is based on some elements of the human nature that she believes valid (of course, if we accept them). Assume that we consider valuable the possibility to take care of our children, and that it includes the possibility to leave them a world in a condition – at least – as good as we found it, or even better; we can accept it as an obvious consequence of the list of Nussbaum. So, if we assume that this specification of our desire to take care is not a consequence of a particular feeling, but a specific characteristic of the human nature and a fundamental capability necessary to live a "truly human" life, we have to assume that this is true also for our children towards their children (our grandchildren). So, if our children will not be able to take care of their children, that is to leave them a "stable" or better world, they will not live a truly human life: let's say that they will be "unhappy" or "unsatisfied". Finally, we will not have obtained a fundamental capability and we will be "unhappy" too, because if our children will be unhappy we would have failed in taking care of them. If we iterate the operation in an infinite process, it is sufficient that anybody of the generation x_n would find an extremely degraded and uninhabitable world (or even only noticeably worse than the one found by the previous generation) to influence negatively the well-being not only of the generation x_{n-1}, but also of all the other generations up to the x_1.

This argument shows us that the capability approach (in particular if we accept a list like the Nussbaum's one) can provide some strong theoretical principle concerning the ecological limits. But it is not sufficient to conclude that the list can guide the public action toward a human development that would be ecologically sustainable; otherwise we are not considering the limits of human rationality, that is we are adopting the classic, erroneous, assumption of "perfect rationality".[6]

At this step, we understand why it is possible, and necessary, to integrate the capability approach

6 Our argument is simplified; it would be necessary also to consider the expectations of each person about the behaviour of other individuals and to solve a problem of "cooperative games", but we will not go deeper with these issues.

with a deeper analysis of ecological limits. We have to make explicit some bio-physic issues not to create a classical costs-benefits scheme, but to delineate a path toward integration of different approaches in a complete theory. Nevertheless, as we will see in the next paragraph, in the practical application it will be useful to distinguish some variable that is our objective (mix of capabilities), and others that are constraints (resources and environment "costs"): we can see it as a process of optimization under constraints.

Two are the main pillars of the analysis of Georgescu-Roegen that we can remind here:

1. In order to promote "development" (in the "classic" meaning) and economic growth, human beings use the limited stock of resources of the planet, that furnishes the matter and the energy necessary for the production of many objects, from the basic food up the very useless gadgets. What is sure is that soon or later this stock will exhaust: when it will happen and how it will be used up to that moment it depends on humans choices.
2. Continuing with the present level of growth in the consumption, the limited resources of the planet will exhaust as soon as bigger is the world population. It is necessary to mind that a constant demographic growth could cause some problem, and to look for possible solutions, considering also the well-being of the future generations.

According to the second law of thermodynamics, in a closed system the entropy (the quantity of energy unusable by human beings) continually increases: we can consider the Earth, with some peculiarity[7], as a closed system. For example, any time we burn gas or we consume fuel to move with our car, we are dissipating some energy in the environment: this energy becomes unusable, even though it does not decrease, in virtue of the first law of thermodynamics.

If we consider seriously this matter of fact, together with the conclusions that we reached adopting the capability approach, we have a theoretical framework able to define the limits of human action, preserving the possibility to guarantee "human development"; moreover we can conclude that the present situation is not acceptable not only for the negative consequences for other species in themselves, but also because is not optimal for human beings. It is clear that the western way of life, especially if it would be extended to the rest of the world, will not be able to last very much with the limited resources present on the planet: nevertheless, some criticism to degrowth theories wonders if we would prefer a short life in an "affluent" society or a longer one in conditions of "unhappy sobriety". The answer is that the question is not the right one: indeed in the contemporary affluent society many people do not reach a basic level in fundamental capabilities, and the abundance is just for few. Moreover, even those individuals that are "rich" have not necessarily reached an higher level of well-being; as it has been already demonstrated many years ago, the exponential increase of consumption of the last century has not implied a proportional increase of the perceived well-being[8].

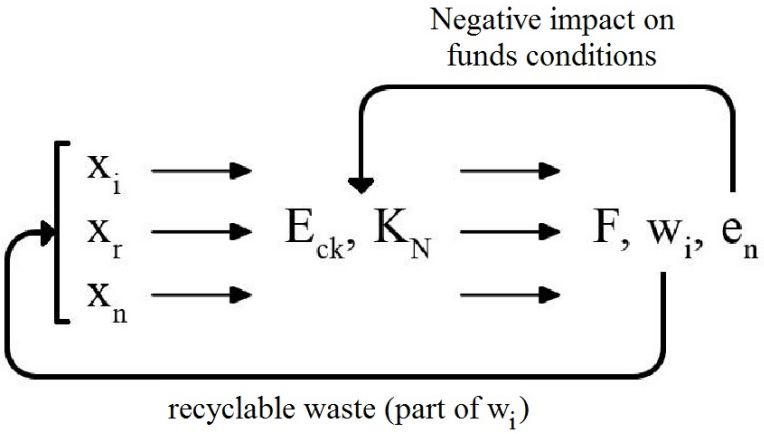
3. The capability development and its biophysical limits in the long run

The purpose of the flows-funds diagram (Fig. 1) is to illustrate the positive outputs and the negative externalities of the implementation of any public policy inspired by the capability approach.

7 Solar energy is one of these: coming from "outside" and it has virtually no limits, its use has no consequences in terms of entropy for the system, except for the "costs" in term of infrastructures for the exploitation and eventually for the stock, in particular the solar panels.

8 We have to remind obviously the precursore research of Easterlin and the so-called "happyness paradox": with the increase of the income, happyness increases up to a certain point, than it starts to decrease, following a reversed U curve (Easterlin, 1974). Many other researches have demonstrated that high levels of disequality cause a decrease of perceived well-being, even in conditions of higher level of richness on average.

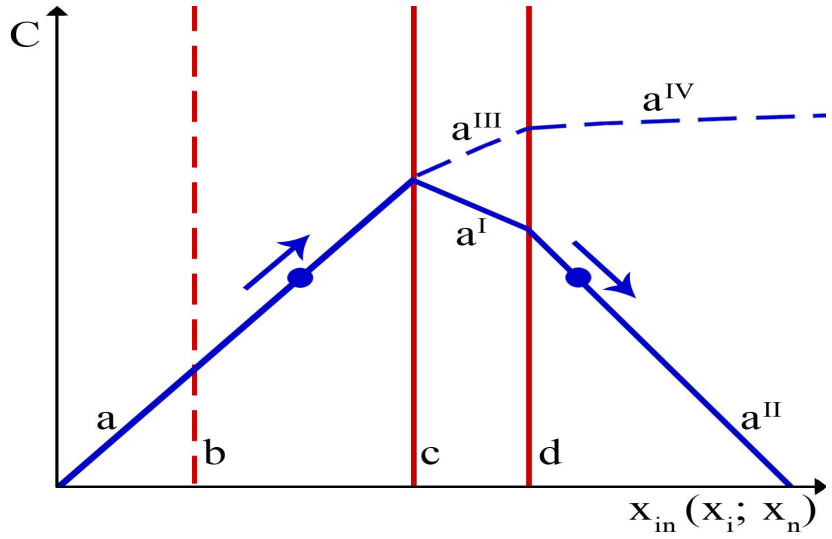
Fig. 1 - The flows-funds diagram



The final goal is "human wellness" (*F*), as we stated previously, while the presence of individuals provided with some basic capabilities (E_{ck}) and of healthy environments (K_n) are two essential requirements. These are called – using Georgescu-Roegen terminology – "funds" because, unlike any form of capital, they are means that make the wellness possible not just through their exploitation, but also with their own existence. Nevertheless, in order to obtain the human wellness through the development of individuals capabilities, the contribution of three different kinds of resources is necessary: these are relational goods (x_r), instrumental/consumption goods (x_i) and natural resources (x_n). The utilization of these three inputs produces, as unavoidable effect, some negative outputs in the form of energetic and material waste and pollution (in the diagram, respectively, w_i and e_n). The policy makers have to keep in mind these negative outputs during all the elaboration and implementation phases of the policy, utilizing proper estimations of the effects that the policy could have on the funds integrity; indeed, pollution and waste can seriously damage the possibility of development and execution of individuals capabilities, in particular because they represent a threat to the preservation of healthy environments and ecosystems in which people live.

On this base, we can now imagine the consequences in term of wellness in different states of the world, in relation with the increase of resource consumption. The first graphic (graph. 1) delineates the outcomes, in the long run, of the implementation of policies oriented toward the development and the spread of human capabilities. Moreover, it shows the not eliminable entropic and environmental limits of that process. It could be said that it constitutes the temporal and spatial extension of the flows-funds diagram previously presented, and an aggregate representation of the outcomes of the implementation of several policies in the long run.

Graph. 1 – Consumption of resources and human capabilities



a --> progression of the general capability level in a scenario characterized by wise policies and input resources (x_i, x_n, x_r) in good condition.

b --> minimum threshold of capability development. Under this threshold the policies should mainly focus on distributive justice criteria. Beyond it, the efficiency criteria become more important.

c --> pollution/waste limit (or limit of environmental unhealthiness): K_n begins to degrade, making more difficult for individuals to exercise and develop their capabilities.

d --> resources exhaustion limit (or entropic limit): it becomes difficult to get enough inputs x_i and x_n, making more difficult for individuals to exercise and develop their capabilities.

a I/a II --> decreasing in general capability level after the first limit (unhealthy environment), and a further decrease after the second limit (lack/end of resources).

a III --> it represents the possibility, for a limited number of individuals, to continue developing and exercising their capabilities even after the first limit (unhealthy environment), thanks of K_n funds still in good condition.

a IV --> it represents the possibility, for an even smaller group of individuals, owners of both K_n funds in good condition and enough input resources x_i and x_n, to continue developing and exercising their capabilities.

As previously stated, the increase of individual capabilities (segment *a*) needs an input in material resources (x_i and x_n)[9] which have to be taken from the limited stocks of the planet. At the

9 This is true, generally speaking, for the capabilities concerning achievements, but it is not true for the freedom of choice: an increase of capabilities consisting in an enlargement of the opportunities range does not cause any further consumption of resources, or better, not always). Moreover we did not include x_r because it has a less precise relation with the development of capabilities and it is not independent by the consumption of x_i and x_n: relational resources in "good conditions" could support the development of many human capabilities and could even reduce or optimize the use of x_i and x_n but there can be many scenarios very much different from each other. The line a^{III} is less inclined than the line before the first limit (and it happens the same after the second limit) mainly for two reasons: individuals who are still increasing their capabilities will lose something in terms of relational resources (x_r) and they will have more difficulties in the development of those capabilities that need those resources. This is true if we

same time, in most cases the utilization of these resources generate pollution in the form of material waste and emissions. It does not mean that to obtain an increase of the well-being it is necessary an increase in the resource consumption, but that, tendentially and up to a certain point (for sure up to the capabilities "minimum threshold"), an increase in the consumption implies an increase of the well-being, under the same conditions (i.e. stable population)

When the lack of resources and/or the creation of unhealthy environments start to make the policies goals difficult to achieve, it becomes difficult for people to develop new capabilities or to "realize" the capabilities they already own. Nevertheless, when it happens, it may be possible for small groups of people to be able to continue to develop and use their capabilities, even though more difficultly than before. These persons are the owners of the remaining, limited, stocks of resources and/or the dwellers of the remaining healthy environments, or better, persons who are entitled with the right to access to the resources.[10]

Part of the difficulties are surely connected to the social component of many of the fundamental human capabilities (relational goods), whose effectiveness in terms of wellness is enhanced in presence of wide and heterogeneous human contexts.

In addition to that, there is the necessity, strictly related to the previous point, to defend one's privileges from the majority who cannot have access to them: this necessity has material and psychological costs.[11] Furthermore, the privileged individuals should limit their actions inside the few healthy areas left, with an evident damage to their capabilities in terms of possible choices. Finally, we have to assume that there is a level of consumption that implies no capabilities for nobody.

Overall, the low entropic and environmental costs of relational goods, along with the essential contribution they give to the purpose of developing and using most of the human capabilities, make their optimization a central element of every policy that is oriented toward human wellness.

If we zoom in the area next to the points in which the line "a" meets the two limits, we would see some "perturbation" that creates states of the world more difficult to compare each other. Indeed, when we are near some ecological limit, the increase of some opportunity for everybody can have negative consequences for all the individuals (or for some of them) regarding other capabilities. Let's see just an example of one possible "disturbance" effect, comparing the following scenarios:

1. Ten children have a ball. They reach the same level for the capability of "game".
2. Ten children have a ball but one of them has a playstation. The privileged child has more entertainment possibilities and the freedom of choice: assume that he is "happier" than the others.
3. All the children convince their parents to buy them a playstation: all of them could be happier, but for the construction of the videogames it was necessary to consume more soil, and now the football field does not exist anymore...

The point is that we are not able to say which playstation was determinant to cause the destruction of the football field (the second? The fitfh? Why not the first one, that started the mechanism?); another issue is that it is very difficult to make comparisons among intermediate scenarios.

From the integration between the theoretical approaches of Martha Nussbaum and Nicolas

accept the theoretical assumption that is simpler to develop good relationships with people who share the same social environment and hold a similar "basket" of capabilities (Tajfel, 1999).

10 For example, companies that has the right to extract minerals from a mine are not owners of the resource, but they are licensee paying royalties to the state. For an individual, as Sen underlined many times, much more important than property in a specific moment is to have the power to control the access to a resource; when this power is juridically based, we can call it "right" (even though, of course, it is not automatically a "fair" right).

11 It is obviously possible - and quite common - to think that individuals have also some advantages in terms of wellness deriving from the comparison between the own "privileged" condition and the other people's ones, that is for the simple fact to be and to feel part of a privileged group. Without analysing in detail this issue, we can consider this positive effect generally lower than the negative ones, reminding the idea of human being that we are using as a base.

Georgescu-Roegen, and with reference to the two graphic representations we have just presented, we have developed two grids whose goal is to help policy makers to project and analyze their policies. These two grids are a starting proposal to put some tools in the hands of "wise" policy makers, to help them to maximize the effects of the policies in terms of human capabilities, minimizing at the same time their negative externalities on the environment and the stocks of resources, or to decide not to realize a policy/program/project whose impact on environment and/or resources consumption are too high.

4. Two grids for policies analysis

The first grid is related to individuals' capabilities and it shows in columns the ten fundamental capabilities elaborated by Martha Nussbaum, or some of them, or declinations and specifications of them, depending on the policy makers' decisions (see the last part of the paper about the role of the policy makers). In the lines we put the dimensions for the evaluation of different consequences for each capability: outcomes in absolute terms, outcomes in relative terms (referring to the population or the group with whom the policy is connected), distributive inequalities and latent potentials. In each cell there are the indicators and their value. Each indicator can be used for a preliminary analysis, if a policy has not been implemented yet, or a subsequent analyses, if it has been already implemented: of course, in the first case the estimations are less precise. Further indicators or sub-indicators may be added (we will be back on this issue later). In addition to that, it is possible to add further grids for comparisons between two or more policies, in order to comparatively analyze their outcomes or to decide "wisely" which one would be better to implement.

The second grid is related to the costs-limits to capabilities development, which are mainly (but not only) costs-limits in terms of available stocks of resources and healthiness of the environments (including the integrity of the ecosystems).

Reported in columns are the potential and/or observed damages and costs (direct and indirect) of the policy which is being analyzed: destruction of resources (resources that are not needed for the implementation of the policy but whose existence obstructs its realization: for instance a forest where we wish to build a motorway), damages to the fauna and flora biodiversity, damages in terms of relational goods, damages in terms of pollution, costs in terms of instrumental goods, costs in terms of consumption goods and costs in terms of raw materials.

In the cells there are indicators whose function is to estimate the extent of damages and costs, considering the following dimensions: costs-damages in absolute terms, iniquity in the distribution of damages and costs and costs/damages in relation with the existing situation or in comparison with a possible alternative policy.

Further indicators may be added, for the contingent necessities related to the policy, or for particular interest of all the stakeholders.

5. The example of "Bicimia"

We have tried to apply these instruments to some real cases. In this paper we are going to present one of them, probably the most familiar to the majority of Italian and European citizens. The case is about a bike-sharing service (called "Bicimia") provided by the city of Brescia and similar to many other services in the main cities of Italy and Europe.

The service is completely free for students and it costs 30 Euros for everyone else, which is only a onetime fee to be paid at the moment of the subscription.

The users, with the provided personal card, can take any bicycle in any "Bicimia" bike-point around the city and, after using it, return it in any (or in the same) "Bicimia" bike-point.

The service is free for the first 45 minutes of every single activation – therefore, by putting the bicycle down in a bike-point, it is possible to use the service for even more than 45 minutes, every day. When the time limit is exceeded, in order to continue to use the service it becomes necessary to pay a supplement of 1 Euro for the first two hours, 2 Euros for three hours and 5 Euros after the first three hours.

Keeping in mind all the theoretical and practical instruments previously illustrated in this paper, we have then applied the analysis grids to the "Bicimia" case (see grids n.3 and n.4). It is important to underline that we did it in order to show a paradigmatic case of the application of the grids and therefore without collecting all the data which it would have been necessary to collect for a real and effective analysis (the two grids will be described, explained and discussed during the conference).

Conclusions

The main aim of the paper was to discuss about the opportunity to integrate a specific theory of justice with some fundamental aspects of degrowth theory; finally we tried to make a starting proposal to elaborate some tools to evaluate public policies considering the purpose to increase and to spread human capabilities within the ecological limits. In these conclusions we want to discuss briefly a critical issue concerning the public decision process related to our analysis.

We think that we have to answer to the following questions:

1. Who are the legitimate stakeholders that must be considered in the decision process?
2. Who are the legitimate stakeholders that must have the possibility to participate directly to the decision process?
3. Which is the best participatory method (delegation, negotiation, deliberation)?
4. Which is the best decision method (majority, unanimity, ...)? Must/can anybody be endowed with a veto power?

All these issues deserve a long discussion; in this occasion we want just to stress some fundamental elements:

1. The legitimate stakeholders to be considered seem to be all the individuals whose capabilities are affected by the decision.
2. The legitimate stakeholders that must have the possibility to participate directly to the decision process are the most difficult to define: for sure they have to participate all the individuals whose level of capabilities can be affected and at the moment their achievements are under the minimum threshold, plus the individuals that are above the threshold but the decision can reduce their level under the threshold (but it does not mean that they must be the only two "categories").
3. Generally speaking, deliberative democracy must be the reference method; delegation must be used when deliberation is too difficult or complicated (it means in many cases), while negotiation can be used when the decision concern a well defined group of stakeholders and we are "far" from any ecological limit.
4. Unanimity must be used if we are running the risk to overcome some ecological limit and in those cases in which a public decision could reduce someone capabilities under the minimum threshold; it is very probable that it is the appropriate method also in other cases but we will not discuss them here. Veto power follow approximately the same criteria.

Grid 1

	1° capability		2° capability	3° capability	4° capability	...
Outcomes in absolute terms	Number of individuals who obtain the capability.		…	…	…	…
Outcomes in relative terms	Percentage of individuals who obtain the capability.		…	…	…	…
Distributional inequalities (1)	Inequality in the distribution of the capability.		…	…	…	…
Distributional inequalities (2)	Number/percentage of individuals under the minimum threshold value					
Latent potentials	A … B … C …	Yes No Yes	…	…	…	…

Grid 2

	Destruction of resources	Damages to the faunistic and floral biodiversity	Damages in terms of relational goods	Damages in terms of pollution	Costs in terms of instrumental goods	Costs in terms of consumption goods	Costs in terms of raw materials
Costs-damages in absolute terms	What resources? What quantity?	What species? Type and extent of the damage.	Type and extent of the damage .	Pollution (including waste) produced by the policy.	Quantity and type of the instrumental goods utilized.	Quantity and type of the consumption goods utilized.	Quantity and type of the raw materials utilized.
Iniquity in the distribution of damages and costs	Who is most damaged?	Who is most damaged?	Who is most damaged? A precise estimate might be difficult to achieve .	Who is most damaged?	Who has to pay the costs?	Who has to pay the costs?	Who has to pay the costs?
Costs/damages in relation with previous situation	+/- %	+/- %	+/- %. A precise estimate might be difficult to achieve	+/- %	+/- %	+/- %	+/- %
Costs/damages in relation with a possible alternative policy	+/- %	+/- %	+/- %. A precise estimate might be difficult to achieve	+/- %	+/- %	+/- %	+/- %

Grid 3

	Health	Practical Reason	Sense of Belonging	Other Species	Game	Control of one's environment
Outcomes in absolute terms	Free physical activity. Decreased in CO_2 emissions. Increased exposition to pollution. Improvements to the overall population health.	It allows people to contribute to the preservation of their environment.	Utilization of a common good.	It allows people to freely (or with a modest contribution) utilize means which do not damage the environment and the animals (more animals knocked down by cars than by bicycles).	The utilization of a bicycle allows people to better enjoy their environment and even travel through dirt roads, sourrounded by nature. Access toi parks.Possibility to choose among a wider range of ways.	Another (and cheaper) way to move around in the city. Increased mobility for those who do not have a personal transport mean.
Outcomes in relative terms	Users health in relation to the overall population health.	Users' practical reason in relation to the overall population's.	Users' sense of belonging in relation to the overall population's.	Users' relation with the plants and the animals of the city in relation to the overall population'sUsers' possibilities to enjoy their travels throughout the city in relation to the overall population's.	Users' possibilities to enjoy their travels throughout the city in relation to the overall population's.	Users' mobility possibilities in relation to the overall population's.
Distributive inequalities	Potentially available for everyone over 14 years. It could be difficult and dangerous to utilize for the eldest part of	Potentially available for everyone over 14 years. Free for students.	Potentially available for everyone over 14 years. Free for students.	Potentially available for everyone over 14 years. Free for students.	Potentially available for everyone over 14 years. Free for students.	Potentially available for everyone over 14 years. Free for students.

	the population. Free for students.											
Latent potentials[12]	Is the service in expansion? Are there any uninterrupted cycle track for the paths usually taken by the users?	Yes. New bike-points are being added Many bicycles lanes available but often in bad conditions.	Is the service in expansion? Are there any uninterrupted bicycle lanes for the paths usually taken by the users?	Yes. New bike-points are being added Many bicycles lanes available but often in bad conditions.	Is the service in expansion? Are there any uninterrupted bicycle lanes for the paths usually taken by the users?	Yes. New bike-points are being added Many bicycles lanes available but often in bad conditions.	Is the service in expansion? Are there any uninterrupted bicycle lanes for the paths usually taken by the users?	Yes. New bike-points are being added Many bicycles lanes available but often in bad conditions.	Is the service in expansion? Are there any uninterrupted bicycle lanes for the paths usually taken by the users?	Yes. New bike-points are being added Many bicycles lanes available but often in bad conditions.	Is the service in expansion? Are there any uninterrupted bicycle lanes for the paths usually taken by the users?	Yes. New bike-points are being added Many bicycles lanes available but often in bad conditions.

12 A more precise description of the latent potentials of the policy (in relation with each particular capability) might be needed for a real analysis. It can also be said for the other indicators. Obviously it requires to collect datas about the contest in which the policy takes place, the actors involved, and an amount of other cultural, economic and social datas.

Grid 4

	Destruction of resources	Damages to the faunistic and floral biodiversity	Damages in terms of relational goods	Damages in terms of pollution	Costs in terms of instrumental goods	Costs in terms of consumption goods	Costs in terms of raw materials
Costs-damages in absolute terms	Minimal or nonexistent.	Minimal or nonexistent.	Minimal or nonexistent.	CO_2 generated by the process of bicycle production.	Construction and maintenance costs in terms of instrumental goods. For both bicycles and bike-points.	Construction and maintenance costs in terms of consumption goods. For both bicycles and bike-points.	Construction and maintenance costs in terms of raw materials. For both bicycles and bike-points.
Iniquity in the distribution of damages and costs	Minimal or nonexistent.	Minimal or nonexistent.	Minimal or nonexistent.	Minimal or nonexistent.	The majority of the costs are paid by the city administration.	The majority of the costs are paid by the city administration.	The majority of the costs are paid by the city administration.
Costs/damages in relation with the subway project	The subway project has a far deeper effect on the territory.	Slight impact of the subway project on the city's floral ecosystem. Minimal in both cases.	Minimal or nonexistent in both cases.	The subway project implementation has higher costs in terms of generated pollution.	Higher for the subway project.	Higher for the subway project.	Higher fot the subway project.