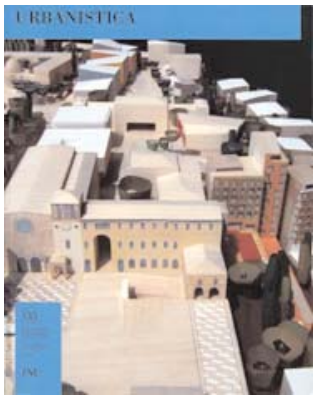

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Preventive ecological compensation for a new planning way
Paolo Pileri

Following the road map driving to the new national planning law, a law of principles, there are several issues related to the protection and care of nature and to the cycle of urban transformations that should be approached as a priority and with rigour. On these issues Italy lags behind and is therefore required to draw up audacious legislation that will dispel a wavering approach to the issue. Bolstered by far-sighted legislation it is feasible to engender a positive cultural process that has an urgency that might not exactly be in line with the protracted time scale of an internal cultural development.
Among the various issues there are two which, being inter-related, I should like to provide a contribution:
- the issue of the reduction of land consumption;
- the issue of ecological regeneration or land renaturalization.
Preventive ecological compensation will provide a concrete and feasible response which might be incorporated within the framework of new government legislation and, even prior to any legal formulation, within the agenda of current planning debate.

The consumption of land and nature: figures pointing out an unsustainable future
Before defining ecological compensation, some figures showing the imbalance between two planning issues: land consumption and nature regeneration. Italy ranks among the first four major consumers of land in Europe. It ranks second only to Germany, if account is taken of the fact that 50% of Italian surface is located in mountainous areas. From 1990 thru 2000 over 85000 hectares of agricultural and partly natural land were transformed into urban areas. According to a survey performed on 25 European cities, Milan emerged as the city of continental Europe, which over a span of 50 years, that has consumed the highest percentage of periurban agricultural land: 37%. Lagging slightly behind are the spread urban area of Padua-Mestre (23%) and the city of Palermo (26%). There are several reasons which account for such a rate of consumption. Some are quite comprehensible and necessary, while others are much less so. However, we could easily imagine that all of these reasons cannot be considered responsible from the ecological standpoint.
The consumption of space and urban expansion in recent years has been carried out despite a situation of stagnant demographic growth. From 1994 to roughly 2006 in Milan alone, taking stock only of the great transformations that have taken place (urban regeneration) or those in progress (excluding therefore the construction of single buildings, construction within small areas and the conversion of housing into residence buildings, etc.) have regenerated over 11 million square meters of urban surface being the equivalent of roughly 5 million square meters of pavement surface (32% of which are residential and 42% offices and commercial units). The average regional growth rate of rooms (rooms is an indicator showing the dimension of housing) between 1991 and 2001 in Italy was 7.7 times greater than the growth rate of the population. In Lombardy the rooms increased at a rate of 7% and the population at a rate of 2%. The rates in Tuscany were for the population -0.9% and rooms 4.5%. In Lazio: population -0.5 and rooms 6-8%. In Sicily: population: 0.1% and rooms 10.5%. In a similar manner then listing of data relative to building volumes. In Lombardy in 1998, 36.3 million of m3 were built upon (of which 76.5% were new buildings); in 2000 another 45.5 million of m3 (of which 81% were utilized for new buildings); in 2002 60.2 million of m3 (of which 85% for new buildings). The residential rate vacillates between 33% and 44% according to the year surveyed.
The scenario seems quite clear. Over the last few years urban growth has been intense and widespread with considerable consumption of terrain.
What about nature? It has been regenerated with the same speed and the same wish? It is by no means a trivial question in times when sustainable planning is a rather fashionable concept and when environmental issues have assumed even greater urgency. However it is even more complex and uncertain to deal with the question of nature than with urban transformations: nobody, or at least very few, is able to keep track of ecological operations. From recent researches, we are in a position to gather some valid information that indicates in what (bad) direction certain things are moving and, therefore, where we can focus to propose new planning policies.
Let us begin to see the evolution of agricultural land surface, a typical 'free' land that rapidly changes. Over recent ten years (1990-2000) in Lombardy alone over 65,000 hectares of utilized agricultural land has been transformed to non utilized agricultural land or has been abandoned or partially passed away to other uses. In the province of Milan: 4,000 hectares; in the area of Brescia 10,000 hectares; in the Bergamo area 12,000 hectares and so forth. The 'loss' of agricultural land does not only foreshadow a drift towards more impacts and irreversible uses, but also a loss in the possibility to improve the natural features in our landscapes. Other examples. Along the Po river (taking into account only the river belt A and B close to the water shape as defined by the river authority for a total of 97,300 hectares) more than 8,000 hectares of green land covers has been lost (forests, wood spots, vegetative buffers, etc.). On the other hand, a new 9,600 hectares of agricultural terrain have been added together with 1,250 hectares of urban areas.
Another example. Within the Southern Milan Agricultural Park (46,000 hectares of protected area) the hedgerows density has passed, between 1955 to 2000, from 50 m/ha to 17 m/ha reaching a minimum in the 80's of 14 m/ha. Even in one of the most intensively cultivated agricultural areas of the Lombard plain (Lodi region), where the weakness of nature seems to be an historical fact, the hedgerows density has passed from 83 m/ha (in 1955) to 20 m/ha (in 2000). On the Swiss plains, the ecological alarm signal sounds when the bio-indicator hedgerows density drops below 40 m/ha.
The figures mentioned above might appear somewhat arid, as for that matter figures usually are, yet they suffice to underscore how nature is not featured as one of the priorities on the agenda in the last few years.
Modifications and corrections may, of course, be made, however, yet again, the scenario appears quite clear and requires that equally unambiguous decisions be made, but totally different from those which have 'slowly' generated these scenarios.

In all honesty, it cannot be said that Italy has been entirely destitute of positive examples. Even restricting our inquiry to Lombardy alone, new municipal and regional parks have been created, 10 new forests on the Lombard plain (roughly 400 new acres of forest-covered land, the creation of another 10,000 hectares within a decade has become a legal commitment (Lr 27/04); a new legislative proposal on protected areas confers dignity of legal protection to the ecological network, etc.
The time appears ripe for the enactment of urban legislation which might encompass such issues as the limitation of land consumption and ecological regeneration. The legislative proposal sustained by Inu is the most thorough (the Mariani law). The new law would have to incorporate and fix new ecological principles (for a such Italian planning act) already consolidated in various European planning contexts.

New natural principles for a positive planning
It is undeniable that planning should ostensibly deal with ecological regeneration and the limitation of terrain consumption. Let us take Germany as an example. Following through a process that began in the late 1970's, with a modification of its federal and urban construction code, it was decided to slow down the consumption of terrain with a view to terminating it completely in 2050. In Italy there have also been some rather low-key attempts to have the authorities adopt such a program. In some recent regional legislation on planning and/or on Strategic environmental assessment, one can find some 'trace-references' to the minimization of land consumption. However the issue needs to be treated with greater incisiveness and with a clear-cut approach. And above all treated with the dignity it deserves.
Now let we see a group of these principles able to strengthen the ecological identity and the sustainability.
Land consumption is a damage which cannot be mitigated but is only reducible and compensatory. Even if a construction (a road or a building) is small in size, it nevertheless occupies land space and/or seals soil. This gives rise to a degree of damage that might be environmental (contributing to the alteration of certain physical and environmental parameters), ecological (contributing to the reduction of habitats and ecosystems) and social (contributing to the removal of potential public space or country-side areas designed for public uses). Such removal of land for construction purposes may be reduced in quantity by selecting less engulfing planning schemes thus leaving aside part of the building. It may be mitigated only in a minimal part by adopting solutions such as, for instance, deeper permeability in a part of a lot. For every part of land consumption or for every sealed area, a residual impact remains and cannot be eliminated at all: thus it must be compensated.
There might be two options: the first would consist of 'restoring' elsewhere the area consumed. It could be done by following a compensation index able to convert residual impacts in new areas to re-naturalize. The second would consist of generating new ecological values to those areas granted elsewhere. Back to nature what was taken away: 'no unless' and 'no net loss of ecological values'. The compensatory mechanisms applied in central European countries (i.e., Germany, Switzerland, Holland) base their legitimacy on such fundamental principles as the respect of nature in all its forms and that every transformation must restore to nature what has been removed from it. These principles are in turn legitimized on account of another two key principles related to planning: *no unless*: nothing must be transformed without giving something in exchange (environmental compensation); *no net loss of ecological values*: It is necessary to avoid the ecological balance of a territory caused by transformations.
These two principles cannot be excluded from planning legislation looking at sustainability and at ecological regeneration as major objectives. Such legislation must be bolstered by these principles that clearly impede undesirable and averse effects. Such attention cannot be reduced to the theoretical planning of urban green areas, but rather it must transcend the meeting out of community green belts and provide a means to create a new and increasingly more incisive ecological 'value', well structured and permanent, even if located in area at a distance from the transformation (not too far).
The conservation of nature passes through the formation of nature providing society wishes to cultivate its future. With Immler nature becomes yet again a social issue and not only environmental. Nor sectorial. For Immler a society is far-sighted if it looks towards its future with operative concern for the preservation of nature through its formation.
Nature cannot only be an object of preservation, but rather must be the center-piece of a project of neoecoformation. In concrete terms this involves the provision of vegetation, in the re-construction of natural forms and resources, in terms of planning and the creation of ecological networks, in new wet areas, in the practice of ecological agriculture, in river re-naturalization, in eco-regulations for the use of agricultural areas, etc.
The turning-point and the challenge to achieve credibility: being preventive. Overturn priorities, legitimize first-rate ecological programs, underscore collective and individual responsibility and so forth such an approach would also involve the promotion of a new planning movement which guarantees ecological compensatory operations could be anticipate rather than designed at the end of the planning cycle. In a word, firstly one gives over the area and creates an afforestation or re-naturalize a part of a waterway and then, only then, begins to put into effect the urban plan building.
An ecological re-generation must necessarily be preventive in relation to city-planning transformation and also coherent with the principle 'no net loss of ecological values'.
Otherwise there will be no credibility. Prevention does not only mean anticipation. It also means avoiding the upsurge of more serious consequences that might occur and spread. In effect, above all in a system like ours which gives short shrift to the promotion of whatever might serve public wellbeing such as nature, to overturn priorities takes on double responsibility. On the one hand, in producing nature as it were, the public policies are made more credible and, on the other, every new consumption of land may be carried through only if an effective area is available for new nature purposes. In theory, if areas marked out for re-naturalization are not able then the urban developer cannot proceed with the urban transformation.

Ecological compensation: clear definitions

To avoid misunderstandings and contradictions (it is a legitimate suspicion that might well arise when reading certain articles of l. 308/04), it would be appropriate to recall the definition of environmental/ecological compensation. For Cowell (2000) environmental compensation may be defined as: the provision of positive environmental measures to correct balance or otherwise atone for the loss of environmental resources.

For Kuiper (1997) it is the creation of new values, which are equal to the lost values. If the lost values are irreplaceable, compensation concerns the creation of values which are as similar as possible.

For Petterson (2004) environmental compensation is equating the loss or increasing the environmental values in the proximity of an area that has experienced losxs of environmental capital due to development.

In the British outlines for the assessment of ecological impact, ecological compensation consists of measures taken to make up for the loss of, or permanent damage to, biological resources through the provision of replacement areas. Any replacement area should be similar to or, with appropriate management, have the ability to reproduce the ecological functions and conditions of those biological resources that have been lost or damaged.

Even the EU has introduced a similar concept of environmental-ecological compensation with the Dir 2004/35/CE. Refering to environmental damage in protected areas and to the principle 'who pollutes pays', the concept of 'compensatory remediation' is introduced.

"Compensatory remediation is any action taken to compensate for interim losses of natural resources and/or services that occur from the date of damage occurring until primary remediation has achieved its full effect …

Compensatory remediation shall be undertaken to compensate for the interim loss of natural resources and services pending recovery. The compensation consists of additional improvements to protected natural habitats and species or water at either the damaged site or at an alternative site. It does not consist of financial compensation to members of the public".

It is of interest to note that in the EU directive there is insistence upon the rejection of every form of economic compensation for damage and preference is given to assignment of areas for re-naturalization so as to concretely counterbalance damage done.

"Compensation yes, but only respecting the following development sequence: eliminate? reduce? mitigate? compensate?".

There are some logical steps which leads to the transformation of land following impact assessment guidelines. First, ecological compensation intervenes only at the end of the above sequence and to counterbalance only residual impact (specifically land consumption); it cannot intervene either singly or at an initial stage. Before all, the effective need for any transformation must be assessed. Compensation must in no way be a shield behind which land consumption continues. It must be a tool which generates a sense of responsibility and, at the same time, curtails consumption. This certainly touches upon the domain of acquired building 'rights' without eliminating them, but only making them accountable with a request for more assignable areas rather than a process of intervention (and not only green intervention). All this requires the application of the strategic environmental assessment (Vas). In effect the Vas is at the present time the most natural 'place' where compensation can begin to develop.

Compensation elsewhere, but not too far away. Among reference criteria to put ecological compensation into effect as a component of legislation, we need also to consider 'where' compensation can be effectuated. If we refer to environmental damage on one hand and local ecological balance on the other, the answer is easily forth-coming. Compensation could be effectuated where nature has been eliminated. It is hardly acceptable to acquire areas in order to have compensations in other nations and even continents to counterbalance residual impacts generated in a specific local system involving the local population. The transfer of ecological compensation opportunity outside a local milieu is culturally counterproductive and by no means dissuades the practice of land consumption.

Nature formation and the progressive elimination of land consumption

In the preceding paragraphs we have dealt with the themes of land consumption and the regeneration of nature from the standpoint of preventive ecological compensation and highlighting the situations with examples drawn from Germany (Bavaria).

Evidently all this should be incorporated into our system with relevant adjustments and appropriate interpretations. Principles and human will must be given priority and rigorously adhered to. Basically it is a question of adopting, among the objectives of local planning, ecological regeneration and the containment (until its elimination) of land consumption as a priority.

Development and nature. Economy and nature. The cycle of nature combines with that of transformations: this remains a responsibility for our future in our landscapes.