

ECOLOGICAL EQUILIBRIUM AND
TERRITORIAL PLANNING:
THE ITALIAN CASE

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The purpose of this report is to illustrate briefly (a) the scientific premises of territorial planning, which are also the foundations of an ecological equilibrium between human activities and the territory or natural environment; (b) the lines of direction of an urban policy inspired by the above-mentioned foundations of ecological equilibrium; and then subsequently (c) the guide-lines for the application of the principles of ecological-territorial equilibrium for the real Italian territory; with the subsequent configuration of (d) an urban eco-systems network for the Italian territory itself (as designed by the Ten-Year Plan for the Environment, elaborated last year by the Italian Government).

1. The Foundations of Ecological Equilibrium between Human Activities and Territory

It is common place today to affirm that a serious policy of environmental safeguards must aim to prevent environmental damage *ex ante* rather than intervening when the damage has already taken place. In order to pass from a strategy of cure to one of prevention it is necessary to make sure that the pressures and impacts on the territory and the environment occur according to modalities, positions and conditions that are "preventive", ie planned *ex ante* so as to control their effects and hoped-for absorption. This "environmental" planning of interventions (of any type of intervention) on the territory must permit the simulation of the overall territorial and environmental impacts and keep the possible effects under control.

This type of planning in order to serve its purpose must have in the first place an appropriate time frame; ie it must be *long term* (in the majority of cases)¹.

In the second place, rather than seeking, case by case, the conformity and environmental impact of each type of intervention, it should establish "a priori" a series of guidelines and territorial and environmental constraints for all types of intervention, in such a way that, from its very conception, we know how and where an intervention can take place without environmental damage (or with the minimum of damage); and, at any rate, in such conditions that it is assured that the pressure is rationally managed or absorbed ("metabolised") - without taking into consideration the methods used to achieve such an evaluation.

The land-use destination of the territory, understood not as an abstract system of constraints, but as implemented by the plans, in consideration of real emerging land-use needs, is the most efficient way of exercising environmental control over a territory. All this on condition that "appropriate" territorial ambits are identified and defined in order to manage the equilibrium (inevitably quantitative) between territory *demand* (usage needs), and *supply* (geophysical characteristics, pre-existences etc.).

If the container (the territory or the environment) is overloaded with contents (activities), the resulting *disequilibrium* can be compensated for by a spill-over of the surplus. But in order that this spill-over happens in a non-chaotic way, it is necessary to predetermine the ways in which it can and must be channelled; and we must also predetermine the ways in which this chaos can be avoided, directing the activities within ambits (containers) that have sufficient capacity to sustain the activities *in equilibrium*: and taking account of the obvious complexity of the environmental system.

This is the true essence of feasible, rational territorial planning: the maintenance of equilibrium in the best possible way between the supply and demand of the territory in the medium and long term².

It is not the case that the overloading of activities occurs throughout the territory: there are some parts that are largely unused and others that are in

1 ¹This obviously does not mean that "preventive action" may not have a short-term horizon, or that single short-term policies may not have a preventive effect, as well as a "curative" one. What one wishes to emphasise is that a large part of the damaging effects and risks for the environment come from a certain distance in time, and cannot be managed in a way that is compatible with other needs or objectives unless sufficiently extended time scales are employed. Short term policies serve only to resolve emergencies, and sometimes involve very high lateral costs that approach the costs avoided. Whilst it is only with long-term policies that one can bring about a convergence of actions that minimise costs and maximise benefits from all the points of view and objectives concerned.

2 ²See other works on this subject by the Author (Archibugi, 1988 and 1991a)

danger of degradation out of neglect. What is lacking is an opportune and rational "territory organization", which represents the essential condition for the prior avoidance of overloading, and thus of environmental harm.

But what is the "appropriate" optimal ambit for the evaluation of the anthropic/ecosystemic relationship: activity/environment, or demand/ supply of territory? In what ambit can one manage this relationship entirely from the inside, without unloading externally possible disequilibria and without throwing out of balance other equilibria.

It is common knowledge that there is not one single appropriate ambit in which one can rationally manage an ecological equilibrium. Any activity and any pressure on the territory has its particular impact area, and thus its particular appropriate ambit for evaluation and management.

For example, many activities that are linked to the production and consumption of energy or chemical products (atmospheric emissions) or of wood products (deforestation), wherever they take place on the earth have an impact on a *planetary* scale; they produce effects such as the earth's warming or the reduction or breaking up of the ozone layer. In these cases the decisions necessary in order to evaluate, measure, and manage the equilibrium between the causes and the effects of the phenomenon have their appropriate ambit on a world scale and management is inconceivable without a certain degree of cooperation and authority on this scale.

Likewise, other world-scale phenomena of pressure and pollution have reduced impact areas, only *continental* (the case, for example, of acid rain), or only for *water basins* (in the case of the release of urban effluents into rivers and streams). In such cases cooperation and/or authority have the continent or three water basins as their "appropriate" ambit.

But the majority of human activities that produce pressure on the territory and environment, are linked to *urban* settlements, are of an "urban" nature, and have the city as their exclusive ambit of ecological impact (we could call it the "urban basin").

Apart from some energy-producing and industrial activities and apart from those activities connected to touristic land consumption, almost all human activities are connected to the urban life of the citizens which is "daily" and functionally limited to the daytime. They take place in the "urban basin".

In such a case, the "appropriate ambit" for the measurement, evaluation, and management of the impact phenomena is the same as that of the urban activities: it is the *urban basin*³.

3 ³This is the basin in which the environment is under most stress because of atmospheric pollution (the emission of toxic substances, smells, as well as noise).

Obviously, by city impact area or urban basin and by "urban" activities, we mean that which is connected not to the simple physical delimitation of the urban fabric (even if the occupation of such a space has a very important role in determining the ecological disequilibrium of the sort mentioned above) but rather to the *city functions*, ie to the functions that the citizens carry out in the city. The space occupied by these functions is much more vast than that of the continuous fabric (consider the development of commuting between the place of residence and the place of access for many urban services and jobs). But such a space has however a theoretical limit: that given by the daily acceptability of the commuter activity, which is expressed in a given temporal (or isochronic) access distance⁴.

This "system of urban functions" - or more simply *urban system* - which is a system of relations, constitutes the "appropriate" sought-for space for the measurement, evaluation, and management of the demand for (or the pressures on) the territory and environment deriving from urban activities. The search for equilibrium in urban functions is identified with that for the equilibrium between territory supply and demand. The urban system is identified in an "ecological" urban system - an "urban ecosystem". Consequently the best organization of the urban systems on the territorial scale constitutes the best way of preventing ecological disequilibria.

Thus, so-called territorial planning is identified in so-called environmental planning and viceversa. If one is different from the other, it means that the other one is lacking; and is therefore bad planning. The first without the second does not grasp one of the most important "effects" of bad management of the territory; the second without the first does not grasp one of the most important "causes" of environmental disequilibrium (pollution and degradation).

2. *The Urban System as a More Appropriate Place of Ecosystemic Measurement, Evaluation and Management*

The urban environment crisis due to ecological disequilibrium, ie to the disequilibrium between territory supply and demand, is of the utmost seriousness both for the fact that today the vast majority of the population lives and works - at least in the West - in cities, and for the fact that it is presumable (and indeed to be hoped for, in a political conception of equality

⁴ In "*Progetto 80*" - a pioneering attempt to design an equilibrated urban framework in Italy at the end of the 'sixties (see Centro di studi e piani economici, 1971a) - this isochronic value-objective was fixed at 60 minutes a day.

of social and economic conditions for citizens⁵) that soon the *entire* population (again at least in Western countries) will live in towns or cities, ie in an "urban" living condition.

It is true, however, that, as the urban living condition becomes hegemonic, the dualism of urban/non-urban life will be changed; the concept of the city will be transferred to include use of the non-urbanised territory (on the part of the urban users). In other words the geographic and conceptual "confines" of the city⁶ will change and the conception of the urban system or (the same but more precisely) the "urban ecosystem" will be put forward.

If this happens, clearly the concept of urban environment will have the opportunity for a new and more functional natural-anthropoc integration; with only the distinction remaining to characterise the various effects of the obviously anthropic action on the elements of nature and on the socio-economic conditions.

With the concept of the "urban ecosystem" I prefer to mean a system that in general incorporates the effects and conditions of the anthropic action on the environment; and this concept has been used as a reference scheme for the measurement, evaluation, and management of the anthropic impacts on the natural environment as well but originating from urban activities.

We have assumed as the definition of the urban ecosystem (as already proposed elsewhere⁷) that of a complex of functional relationships of a determined community that develop in the territory in relation to the daily residence of the citizens. Since it is with regard to such residence that people today manifest the greater part of their consumption and activity needs, it is in relation to this residence that the parameters of the requisites of urban living and of the well-being or malaise that may derive from urban living are established.

5 ⁵In fact "total" urbanization may become an aim of public policy.

6 ⁶On this subject it is symptomatic to observe that some considerations made on the concept of the city earlier in the century by Wirth (1938) are still valid. These were updated by me some time ago in a paper on the "city idea" (Archibugi, 1966) .

7 ⁷On the concept of the "urban system", a wide treatment may be found in my work on "urban systems policy" (Archibugi, 1986); for its adaptation to the concept of the "ecosystem", see a more recent contribution to the preparation of the Green Book of the European Community (Archibugi, 1989). My conception is not far from that often expressed by Doxiadis (1966-70, 1968), albeit within the setting of a different cultural approach. Close to the idea of the "urban system" that I developed a while ago, is the "functional economic area" (FEA) developed by Fox (1973, 1974), although with a much more modest "functionality" of services than I believe to be necessary and constraining.

On the other hand - as for any system - the "urban system" as well is a complex of relations that are in fact or potentially in equilibrium; like an organism that is, or tends to be, in equilibrium. Where such an equilibrium is not achieved or cannot be achieved, the urban system not only enters into crisis (as in the cases when it existed but is overloaded), but also is not produced (as in the cases when desired urbanization processes are not activated).

If we identify in the *equilibrium*, the optimal relationship of the conditions of urban life, we can say that the achievement of the equilibrium, ie the structuring of the urban system is a condition for the creation of a satisfactory system of urban conditions.

Without the realisation of a "prescriptive" urban system, or the insertion of whatever condition of human settlement in an urban system, the postulated conditions of urban well-being is not achieved; the essential equilibrium between the complex of relations mentioned is not produced.

There are many factors that may determine urban well-being: social relations, physical accessibility (transport) and economic accessibility (levels of income) to determined urban services and satisfactory working conditions, the variety of work opportunities, recreation, culture etc., physical-environmental conditions (quality of the air, of the landscape, etc.). It is therefore the correct *mix* of these factors that produces urban well-being, which is to a large extent environmental well-being, since humanity for the most part aspires to live in urban conditions.

In fact it is in the city that the various imaginable objective factors of personal and social well-being are thrown into the melting pot; since ways of living different from the urban type are inexistent or undesirable, or simply marginal.

By "correct mix" is meant therefore an optimal synthesis of such factors, in such a way that the presence of one does not damage that of another; in brief the various factors of well-being should co-exist and be compatible.

The reciprocal "incompatibility" between the various well-being factors manifests itself in various ways. Amongst the most evident and most felt today there is that (above mentioned) of the relationship between *demand* for space or territory, that is essential for user accessibility to certain services and uses, and the *scarcity* of such territory. For example, making access easy to urban services implies the maximum diffusion of the individual car; but this well-being factor is incompatible with the scarcity of spaces and territory (streets, car-parks, etc.) available to accommodate the necessary number of cars. Obviously some superior urban services can only be concentrated in the territory and this makes the availability of space par-

ticularly scarce. Nevertheless, still by way of example, the location of services can be adapted to respect the efficiency constraints of these services with the needs of accessibility that demands as well that certain constraints are respected (for example, not exceeding certain access times or certain thresholds of atmospheric or traffic pollution etc.). The task of planning (in this case of territorial planning) is to find a technically possible *trade-off* between the two constrained objectives.

But in order to establish the optimal requisites for the urban system it is necessary above all to identify its dimensions: of surface, users (population), activities.

For example, at a particular level of the development of habits, consumption, available income, a certain "critical mass" of users, a certain "catchment area" (limited by access constraints), and a certain urban scale are indispensable for the existence of the services that produce the so-called "urban effect".

Below such a user critical mass, every effort to produce an urban effect is destined to fail. Probably in such cases (below the urban effect) the best conditions from the environmental point of view are produced. According to a survey carried out by CENSIS it seems that in Italy the most "liveable" city from the ecological and social viewpoint is Macerata⁸: but without the urban effect - which may bring with it some environmental imbalance but is nevertheless sought for by the citizens (perhaps the youngest or most demanding) in their habitation - the level of "liveability" in Macerata is completely irrelevant; the town will lose its "brains" and opportunities in favour of the agglomerations that are more attractive from the point of view of the urban services offered. In Italy, if one casts a glance at the conditions of urban values and their hierarchies - despite the proclaimed "crisis" of the metropolitan areas; despite the would-be "de-urbanisation" (based on the loss of inhabitants on the part of the largest municipalities in favour of the smaller ones which are in any case close to the large metropolitan centres); despite the marvels of "diffuse" development and the information technology that sustains it; despite the undoubted positive effect of regional administrative decentralisation which should have developed the urban effect in many regional capitals etc. (phenomena about which many learned territory analysts have held forth) - there is still the impression that "urban values" are even more concentrated than they were in the past, and that the image of many cities that were once the centres of important urban activities (culture, theatre, publishing, finance, entrepreneurship,

⁸ A medium-sized city and provincial capital of central Italy of around 50,000 inhabitants. CENSIS is a well known Italian centre for statistical surveying and interpretation of social phenomena.

international relations, etc.) is fading because of the loss of functionality and dimension.

An alleviation of the environmental pressure caused by the overloading of the more intensely urbanized areas, includes the possibility of developing alternative areas that reach, nevertheless, the "critical mass" conditions for the development of the urban effect outside the areas that are to be alleviated⁹. If these size constraints are not respected in areas that are losing urban values, these areas will not be able to constitute valid alternatives to the "metropolitan" areas, and any attempt to resist in time (with a suitable programme of land-use orientation) the negative effects of overloading will be wasted.

Any intervention would be curative and to a great extent ephemeral as opposed to being preventive; it would not correspond to the foundations of ecological equilibrium (as argued in the preceding paragraph).

3. A Reorganization by "Urban Ecosystems" of the Italian Territory: the "Quadroter" Research Project

Adopting these foundations for ecological equilibrium, a special research project carried out in Italy and called "Quadroter"¹⁰ proceeds to a reading of the Italian territory and its present disequilibria.

The main object of this reading was the actual distribution of urban settlements and their relative density, that which is called the *urban framework*; this same distribution, as mentioned, constitutes the principal factor in the overloading and degradation of the environment.

The territorial distribution of the "*superior*" *urban services* is then evaluated, those which produce the "*urban effect*"; the services that are in fact the principal factor in the future evolution of urban settlements. The general strategy adopted has been to design a reorganization - for the future - of urban settlements in order to avoid further concentration in the already overloaded urban areas (the "metropolitan" areas); and this in order to reali-

⁹ On this point see the Author's contribution *A Strategy for New Public Spaces and Centralities*, a report given at the EEC Conference on "The Future of the Urban Environment in Europe", Madrid, 29-30 April 1991 (Archibugi, 1991b)

¹⁰ The Quadroter Project is a "strategic" research project sponsored by the CNR in collaboration with the Ministry of the Environment aimed at the construction of a "Territorial Framework of Reference for Environmental Planning", relative to the Italian territory. This research - for which the author is the scientific coordinator - was used in the preparation by the Italian Government (Ministry of the Environment) of a *Ten-Year Plan for the Environment* (DECAMB).

ze a feasible reorganization of the presence in the territory of the superior urban services, that are, as mentioned, the principal factor in the evolution of the urban settlements.

The "feasibility" of such a reorganization consists in the fact that these services cannot be distributed "diffusely" in the territory without any sort of constraints. But rather they need in order to be economically justified (and not create - as is the case of the public services - a serious waste of resources) a certain *critical mass*, and a certain user *threshold*, that is often in inverse relation to another aim constraint that territorial planning must bear in mind: the *temporal access* constraint for the same critical mass or user threshold.

For the overloaded commonly called "metropolitan" areas, the strategy consists of creating alternative polarizations to those of the monocentric historic centre, to the predetermined user critical threshold (the "access" constraint in these cases is in reality more than respected, and certainly improved with the improvement of traffic congestion factors that could diminish travelling times and thus access to the superior urban services). The critical user threshold constraint means that, in order to be really alternative these polarizations must be at least as important as the monocentric one they would oppose; and avoid the risk of dispersion in "decentralizations" that do not have sufficient strength to constitute a real alternative, and would create a further "peripherisation" that would be costly and chaotic.

For the areas of diffuse settlements (in particular for the medium-sized urban centres), the strategy consists of creating polarizations that are able to hold in check - by reaching the necessary user thresholds - the persistent attraction of the metropolitan areas. In this case, the problem is often posed of the best trade-off between the critical user threshold constraint and that of access time.

For some areas (that are in fact very numerous in Italy) of particular environmental and historical-cultural interest, which are affected by metropolitan and urban development marginally but still with devastating results, the strategy consists in designing a "special" development, based on particular ad hoc functions, of a conservational and protective nature, and keeping them away from a generic and destructive development.

On the basis of these strategic criteria, born out of reading of present urban settlements and the territorial distribution of the superior urban services together with the series of "strategic" aims of urban policy (included in the elaboration of the "Ten Year Plan for the Environment" produced by the Ministry of the Environment at the same time - 1992), the following aims have been assumed in common as for an Urban Environment Policy:

the design of alternative centres to the single historic centre, for the metropolitan areas (and this in appropriate size and number to each identified metropolitan system);
 design aimed at the requalification of the metropolitan peripheries (an aim that is a corollary of the preceding one);
 the planning and management of urban transport as regards the depolarization strategy of the historic centres of the metropolitan areas (this too is a corollary of the first aim);
 the recovery and restoration of the "historic" centres in the metropolitan areas;
 the design of new "systems of cities" for areas with diffuse or low urbanization (in order to achieve suitable polarizations for the sought for "urban effect");
 the qualification of non-urban areas, as "territorial units of historical-cultural and environmental recovery" ("UTRAS" in Italian).

On the basis of these aims, the Quadroter project has proceeded to design a reorganization of the urban framework for the medium and long term, whilst obviously bearing in mind the constraints represented by the present urban settlement that cannot be easily ignored¹¹.

11 ¹¹This reorganization is based essentially on:

12 a) the reorganization of 10 "metropolitan" cities, with as many "plans" of territorial and environmental recovery ("eco-plans"), that propose, for each city, alternative centre strategies that are, we repeat, in ratio to the size and problems present in each. For example: for Rome there has been suggested the creation of 4-5 alternative centres to the historic centre, to which will go parts of the catchment areas of the Roman and metropolitan population; for Naples, besides two other alternative centres, integration has been proposed with a third centre (that of the city and district of Caserta); for Bologna, the creation of a single alternative centre; and so on;

13 b) the organization of another 26 "systems of cities" throughout the national territory, in which will be grouped and integrated - with an appropriate transport strategy and distribution of superior urban services - a great number of medium-sized and small towns and cities, that by themselves would not reach the necessary urban effect and that - despite their apparent revitalisation - represent a constant risk of persistent gravitation to the metropolitan areas, and certainly not a factor of alleviation of the same in the growth of urbanisation. Some influenced by the relative territorial diffusion of settlements and by levels of economic activity, believed that they could or had to "theorise" a certain growth by "network" or by "directrices"; it is a question of an interpretive reading that is "pedestrian", and therefore a bit trite, of that which is taking place under one's eyes (as in other cases that have happened in the past, when the phenomenon of metropolitanisation has been overrated, the evidence of vast built-up areas called "megalopoli"). As regards the significance of the phenomenon it is a superficial reading. The network or diffuse distribution or that by "directrices", does not change the need for "centrality" in the urban phenomenon; and it is from this "centrality" (from its public spaces, its superior urban servi-

The Quadroter project has also outlined a reorganisation of the national system of transport (both of passengers and goods) that is coherent with that, above mentioned, for urban settlements: it is fundamentally aimed at a functional separation between "*inter-systemic*" transport¹² and "*infra-systemic*" transport - those aimed at serving specifically each urban ecosystem, in the above outlined strategic characteristics (of "de-polarisation" or "polarisation").

Map 1 delineates, cartographically, and very summarily, the design of this reorganization desired by the urban framework, as has emerged in the first instance from the Quadroter project; and also the design of pluri-modal and inter-systemic "corridors" as deduced by the General Plan for Transport (the Quadroter has not yet verified the coherence of the Transport Plan with the design of the new urban framework).

4. A Brief Look at the Strategies Indicated for Achieving Territorial Aims

On the scale of each urban system, the Quadroter project, as mentioned, has arrived at proposing a reorganization of the territory, bearing in mind the present settlements, the problems of overloading (or of "under-loading") that it noted, and the need to ensure future development aimed at the riequilibrium of territorial loads.

For each of the six aims indicated in the preceding paragraph we will summarise here the Quadroter guide-lines.

4.1. The Design of Alternative Centres to the Single Historic Centre of the Area

ces, and its social and "imagerial" quality) that the "urban effect" is born; and not from the sum of physical facts that create only environmental damage without creating the city;É□□□

14 c) finally, the organization of a large number of "territorial units of historical-cultural and environmental recovery" (UTRAS, in Italian) distributed through all the territory, (and belonging - for the superior urban services - to the ecosystems mentioned above; some of which cross over between the said systems, the regions etc.). On a first reading, the Quadroter has identified *over 270*.

15 ¹²By means of the identification and organization of "*pluri-modal*" corridors on a national scale (in accordance with the "General Plan for Transport" already devised and brought up to date by Cipet - the Interministerial Committee for the Economic Planning of Transport)

The only strategy possible in order to oppose hyper-congestion, to depolarise the function of the historic centre, and to reduce the overload is that of designing *alternative centres* that absorb a part of the centrality functions and public space functions reserved for the traditional centre.

However, these alternative centres must have certain dimensional requisites and they must represent an integrated functional whole with the same force of attraction as that of the historic centre, and, at least, have requisites that respect the "physiological" thresholds of use necessary for the economic development of the superior urban services in question. Decentralisation that does not have the polarising capacity of the historic centre is destined to fail and to thus constitute a waste. Alternative centrality in other words should respect the dimensional constraints of use that are considered sufficient for the functional economic development (not forced or protected) of the superior urban services on which it is based and centred.

To obtain this it is necessary to design and promote the guided positioning (on the part of urban and territorial Plans on a suitable scale) of superior tertiary activities (starting from public activities) in *central locations* chosen somewhere in the peripheral areas to be recovered and requalified. The amount of the alternative centralities of this type depends on the size of the (user) population that presently gravitates to the hyper-congested centre, and on the size standard of the catchment area considered the minimum for the functioning of alternative centralities. Excessive diffusion produces the opposite result to the one sought for: further reinforcement of the traditional centre with an increase in the confused and chaotic peripheral settlements, a great waste of new resources and the continuation of the decay of urban quality.

In brief, the fundamental constraint that inspires the design of new "central locations" is that of the redistribution of the functional "burdens" in a catchment area that constitutes, however, a sufficient "critical mass" for the superior urban services provided previously (and perhaps redundantly) by the historic centres that are to be decongested.

For each of the "alternative centre projects" to be promoted, there will have to be drawn up - in agreement with the Regional, Provincial, and Local governments concerned - various "*Eco-plans*", ie environmental "Master plans", that will be in part indicative and in part normative.

4.2 *Design Aimed at the Requalification of the Metropolitan Peripheral Areas*

Action for the design of *alternative centres* in the metropolitan areas coincides largely with another action linked to this Programme of actions for the requalification of the metropolitan areas: that aimed at the requalification of the metropolitan peripheral areas.

In fact, the eventual alternative centres would be securely placed within these peripheral areas, in a strategic position, and in locations that would maximise the recovery of urban quality in the peripheral areas. It would mean the concentration of public spaces, (modern) monumental buildings, meeting places on the scale required by the prescribed catchment areas in the prechosen locations, which would be more efficient and direct with respect to the previous overburdening of the historic centres. The restoration of equilibrium between the supply and demand for central areas, squares, and public spaces, surely means initiating a process of recovery and requalification of today's "peripheral" areas and zones (besides better management of the balance between the pressures and the available territorial and environmental resources).

The design of the new centres in the peripheral metropolitan areas should give rise to a vast movement of ideas and proposals from the wealth of opportune ideas arising from the *Competitions* that will be in keeping with the strict initial terms of reference.

4.3 *The Planning and Management of Urban Transport with respect to the Depolarisation Strategy of the "Historic" Centres in the Metropolitan Areas*

An action simultaneous with the two preceding ones, and aimed at the same objectives of the Programme of actions, consists of the tight linking together of the planning and management of the urban transport systems in the metropolitan areas in question with the prechosen strategies of the two preceding designs, in the same integrated design.

The management of automobile traffic should be such as to promote the development of the new alternative centralities and to "free" as well the traditional centre from the overburdening of traffic, as another factor of further depolarization.

Planned transport development (supply of transport) should not continue to respond acritically to the development of the demand for transport, as this appears nowadays, but rather should respond to transport demand as it is "programmatically" simulated and determined by the territorial plan, within an overall conception of "land use /transport".

With this approach, the historic centres should be destined and geared more and more for cultural and tourist activities, for which they perform an irreplaceable function, which is moreover always expanding in terms of the

relative dimensions of the activities. Transport demand for which investments in infrastructures and services are made, should be calculated with respect to this "different" land use and this different territory destination. We will see what implications this can have for real traffic needs (for example, the fact that tourists and those benefitting from there "spare time" are more favourable towards pedestrian accessibility than to other types of accessibility).

At the same time accessibility to new alternative centralities, and the connected investments in infrastructures and services, should be calculated and designed not with respect to the "actual" traffic demand, which could be modest and limited, but rather with respect to the (simulated) demand generated by the new land use destination. In order to help the new centralities to grow, the strategic weapon could be above all the creation of metropolitan railway systems that conform to territorial strategies, and are not merely in line with a present demand for transport in the absence of any strategy.

4.4 *The Urban Recovery and Restoration of the "Historic" Centres in the Metropolitan Areas*

In connection with the other actions aimed at the requalification of the metropolitan areas contained in the programmes already indicated (design of new centralities, recovery of peripheral areas, urban transport planning) the picture can be completed with a Programme relating specifically to the restoration of the historical centres that make up the metropolitan areas.

The relief granted by the other actions will allow the historic centres to be restructured with the aim of a recovery of their age-old function, and of a specific adaptation to their new functions (touristic, cultural etc.), to which they can be orientated without over burdening their building or urban structure.

A good urban "restoration", is, in short, essential for their renewal within the modified context of environmental pressure.

The historical centres of the metropolitan areas that deserve the most attention within the framework of an integrated policy of environmental renewal and thus suggest as many "actions" for recovery and restoration, and special project elaboration are those of *Rome, Naples, Venice, Milan, Florence, Turin, Genoa, Palermo, Bologna, Bari and Catania*.

4.5 *The Design of New "Systems of Cities", as "Urban Eco-Systems"*

The accomplished actions of this Programme coincide with the territorial Projects to which they should make way, ie the "functional integration" territorial projects between various intermediate and medium-sized cities that are able to provide for the new "urban eco-systems" the critical catchment mass in order to achieve the city effect (the superior urban services). These territorial projects will be distributed strategically throughout the eco-system's whole intensive and polycentric territory and will be able to create an alternative polarisation for these cities that gravitate towards the present metropolitan areas.

The Projects that the study group of the "Quadroter" elaborated - based on numerous past proposals¹³, concern the projects that we have mentioned

16 ¹³From those of Project '80 (1969), to those of the "Venetian City" (1970), of the Commission for Studies on Urban Systems in the Mezzogiorno of the Ministry for the Mezzogiorno (1983), and those of the General Transport Plan (1986), all cases of territorial planning which have seen further progress in Italy in the urban systems inaugurated by Project '80.

in Note 9. By way of example we will give three which are particularly different in structure:

a "*City of the Tanaro*", based on the functional integration of Alessandria, Asti and Cuneo and their territories; the catchment area for the SUS would be of 1,200,000 inhabitants, that today gravitate towards Milan and Turin with serious social and environmental costs;

a "*Tuscan-Tyrrhenian City*", already largely in existence with Pisa-Lucca-Viareggio and Massa, that need to be better integrated functionally, with a catchment area today of about 1,600,000 inhabitants with poor urban quality, even with the rich values inherited from the past;

"*City of the Salento*", based on the functional integration of Brindisi-Taranto-Lecce, with a potential catchment area of 1,700,000 inhabitants including their territories, who today make do with low urban quality that is mitigated by constant gravitation towards Bari.

The "systems of cities" proposed above are to be realised in different ways and with different lengths of time. But they have potential requisites in common: within the territorial space in question and within the minimum catchment area (these systems of cities together with the others are exhibited in Map 1).

Involved are about 80 "intermediate cities" that represent a very important part of the urban population, which have not achieved modern levels of urban quality and which in relative terms are losing urban quality in comparison to the "metropolitan areas".

Without a policy of creation and design of the aforementioned "systems of cities", the urban environment of these intermediate cities, although it will improve in physical terms, will tend to worsen in social and cultural terms. Moreover many of these cities will become "peripheries" of the metropolitan areas (for many rare services they are already thus, and for others for which they are not, it is at the cost of having given these up).

The absence of such a policy moreover will compromise any policy in support of the metropolitan areas aimed at their decongestion. In fact without the "polarization" of the intermediate cities formed autonomously, no "depolarization" will be able to take place in the metropolitan areas and any environmental policy in the one or the other Italian urban context will be destined to failure.

The new 26 "systems of cities" of the more than 80 "intermediate cities" may be classified and distinguished internally according to their degree of income development, the level of which may to a greater or lesser extent facilitate the take-off of urban quality and the city-effect sought for, and

according to their level of urban values that, although in decline, to a greater or lesser extent facilitates recovery.

For each of the "new system of cities", *"Eco-Plans"* will have to be elaborated - in agreement with the Regions, Provinces and other interested local bodies - ie environmental "Master Plans" that are in part indicative and in part normative.

4.6 *Qualification of the Non-Urban Areas : the UTRAS ("Territorial Units of Historical-Cultural and Environmental Recovery")*

Italy is rich in territorial areas (often defined as "internal" areas) that because of their geo-morphological nature (mountainous or hilly, reduced or conditioned accessibility, peripheral or isolated etc.) have not been involved in the industrial economic development, and therefore residential expansion characteristic of the stronger areas.

This has resulted in their environmental decay. A physical decay that is marked by the abandonment of these areas by the adult population, the lack of economic activity opportunities, and above all by decline in agricultural activities. Numerous programmes of economic and financial assistance have not halted the above-mentioned abandonment.

The environmental physical decay of these areas is today at risk of finding itself repropounded in new ways: through a disordered "return" of second homes, the locating of rubbish dumps, the construction of warehouses in need of space, ie by the regurgitation of the areas that have reached their maximum capacity and are overburdened.

Today these areas are in danger of being doubly penalised - from the environmental point of view - by an uncontrolled and unregulated territorial development. A first analysis has pointed out 257 of these areas throughout the whole country (see Map 2).

The environmental recovery of these areas merits being the object of a Programme of actions.

This Programme of actions consists of the following actions.

- a. The precise legislative definition of the requisites of such areas to be defined as "Territorial Units of Historical-Cultural and Environmental Recovery" (Utras, in Italian).

In fact such areas must be officially defined for their characteristics and functions if they are to benefit from certain assistance conditions. We must

never ignore their integration function in the urban systems to which they belong which in turn allows for their qualification.

- b. The promotion of Consortiums between local Bodies, with special Programme Agreements (with the presence of the Ministry of the Environment)

The "Quadroter" has already identified over the whole national territory the areas that deserve attention as "Territorial Units of Historical-Cultural and Environmental Recovery". It is a matter of ascertaining and negotiating with the respective regional and local authorities the Quadroter proposals, the confines of such areas etc. It will be possible to do this with special Programme Agreements and with the promotion of the Ministry of the Environment for a unified design of the UTRAS.

- c. Elaboration of "*Eco-Plans*" for each UTRAS that is in concordance with the preceding actions

5. The Nature and Limits of the "Quadroter" Project as an Instrument of Territorial Policy

Having illustrated the research for a construction of a "Territorial Framework of Reference for Environmental Policy" (Quadroter), and its ecological foundations, we will conclude with some notes about the functionality of the Quadroter as an instrument of the policy of the territory and of the city.

The Quadroter was conceived, in fact, as an instrument of "programmatic orientation" for any type of *operation of land utilisation* that at various levels of responsibility - sectorial or spacial - authorities and public bodies and also private bodies will want or will have to undertake in the future (plans, programmes, projects etc.).

As such the Quadroter is - from the institutional point of view - an instrument of dialogue, of further study and negotiation between various institutional actors: ministers, public bodies, Regions and other local bodies with their plans and projects. Thus the Quadroter is also an instrument subjected to a permanent action of verification, up-dating and modification.

The Quadroter has assumed an ecosystemic reading of the Italian territory, orientated towards *programming*, ie aimed at conceiving and proposing *alternative ways of territory organization*, with respect to present and predicted evolution. The way in which the minimum cost and maximum so-

cial benefit may be realised; and the ways that are *feasible*, ie essentially "compatible" with the overall needs and inevitable development of social and economic activity. Feasibility and rationality become in this sense synonymous.

The Quadroter from the methodological aspect is not very innovative with respect to the research developed for the territorial projections of "Progetto 80" (1969), which laid the foundations of one of the four "social projects" of Project 80 itself: that dedicated to the "Environment"¹⁴. It is very innovative, however, from the aspect both of the available information and evaluations and of the programmatic contents (for example, the growth of economic availability and income per capita, by increasing the frequency of use of the superior urban services and in general the catchment area, has lowered the minimum thresholds of use, expressed in user units, that are indispensable for their existence).

But it is without doubt that the Quadroter, in its guidelines on the future use of the territory, will be able to be subjected to periodic revision, with respect also to the way in which the operators have followed (or not followed) it in mind.

In a document prepared in 1989 by the Ministry of the Environment, in which the construction of the Quadroter was advocated, it was said that:

"the role of the Quadroter is essentially that of expressing the use objectives of the territory (and therefore of the environmental resources) so that the socio-economic activities (the actions, interventions, projects, works, of private or public origin) that concern it, always conform to these objectives; and so that their importance is evaluated and their results predicted - in terms of environmental damage or even benefit - having as a permanent point of reference those objectives." (Ministry of the Environment, 1989, p. 41).

The acceptance of the strategic guidelines of the Quadroter would render therefore more coherent amongst themselves and more coordinated to their purpose the multiple lines of intervention that emerge from the national, regional or local initiatives of public and private bodies. This is why the conformity or not to those strategic lines would be the means for the evaluation of the efficiency of the instruments that put into effect with respect to the objectives of environmental protection and ecological equilibrium that have been assumed. The function of the Quadroter would be therefore that of an instrument of indicative and "cognitive" planning available to all the decision-makers in the exercise of their prerogatives, and not lastly to central government that has instruments of intervention for the

17 ¹⁴See Ministero del Bilancio e della Programmazione Economica [Ministry of Budget and Economic Planning], 1969, and the Centro di studi e piani economici (1971 a & b).

orientation of the choices of the other decision makers; whether public or private, towards solutions that are as much as possible rational and coordinated.

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