PROCEEDINGS OF THE 6TH JOINT CONFERENCE ON FOOD, AGRICULTURE AND THE ENVIRONMENT

EDITED BY

TIZIANO TEMPESTA
MARA THIENE

UNIVERSITY OF PADOVA UNIVERSITY OF MINNESOTA

1998

The Proceedings of Sixth Joint Conference on "Food , Agriculture and Environment", University of Minnesota, in honor of Philip Raup. Sponsored by Center for International Food and Agricultural Policy "The Retail Food and Agricultural Policy". With participants: University of Padova, Bologna, Firenze, Perugia, Piacenza, Siena, Alberta, Wisconsin.

Chapter 11

Observations on the problems connected to the management of rural territory in metropolitan areas

Tiziano Tempesta, Mara Thiene[1]
University of Padova, Italy

1. Introduction

Analysis of the problems connected to the growth of metropolitan areas has been tackled in the past with reference to two different theoretical-analytical approaches.
The first, placing the accent on the waste of land and the environmental impact of the phenomenon, have mainly given a very pessimistic interpretation of the dispersal of settlements over the territory. Several people have stressed the greater use of land per capita for housing, the problems of traffic congestion due to diffuse housing systems, the higher costs of managing social services, the problems of diffuse pollution, etc.
Those belonging to the second group, commencing from economic and social considerations, have given a mainly positive interpretation of the phenomenon. The notable vitality and innovative capacity of these territorial and production systems, the scarcity of social conflicts, positive integration between incomes of different origin and better use of the existing infrastructures in the territory, etc. have all been demonstrated.
It is also interesting that there is a cultural and scientific separation between the two schools of thought. A mainly pessimistic vision is upheld by the experts in the urbanist and, in part, agricultural disciplines. A more positive vision is that of the economists, especially those belonging to the so-called "main stream" i.e. the theoretical-analytical approach of neo-classical economics.
The two different methods of analysing the phenomena of metropolitanising have inevitable consequences on the type of proposals put forward on the subject of territorial policies. On the one hand the idea of strong urban planning has been re-launched that, equipped with new tools, is able to reduce phenomena of sprawl and restrict the ensuing social costs. On the other, the idea of the failure of urban planning is accepted as it is a discipline only able to control territorial development once it has passed from an economic growth based on centres to a prevalently metropolitan growth. The need is becoming more pressing, especially in some sectors, of being able to use production factors in a flexible way, often determining the need for re-allocation within the territory. The non-use or under-use of some resources (land, existing structures, etc.) would therefore be physiological aspects of the current phase of development that should not be impeded.
From many points of view it can be considered that the evaluations of both approaches are biased as they more or less deliberately ignore the arguments put forward by the supporters of the opposing hypotheses.
In many ways the time is ripe to stop and think about these problems in order to form a basis for the setting up of a well-constructed approach for studies, integrated at a national level, to tackle the problems connected to a correct management of the territory.

---

[1] Tiziano Tempesta is a professor at DEPAA, University of Milano and Mara Thiene is a post-doc student at TESAF, University of Padova. This study was carried out together by the two authors. Sections 1, 2, 3 and 6 must be attributed to Mara Thiene, and Sections 4 and 5 to Tiziano Tempesta. This study was supported by National Research Council of Italy, and is a part of the research "Land planning and sustainable development of agriculture in metropolitan areas", co-ordinated by Prof. Mario Prestamburgo

Within this context, an important contribution could be made by the economic-evaluative disciplines that should provide the tools for correctly interpreting the territorial changes and evaluating the effects of the alternative management and control policies.

2. Economic analysis and changes in land use: a general reference framework

Analysis of the changes to land uses in metropolitan areas can pursue different aims:

i) *of a descriptive nature* (to understand the phenomena in progress)

ii) *theoretical-analytical* (to identify the factors that determine the phenomena in progress and provide theoretical-interpretative models of them)

iii) *economic-evaluative* (to verify if the observed changes determine efficient use of the resources in both the allocation and distribution sense)

iv) *management* (to identify which tools can redirect the use of the resources, driven by the market or by the distorting effect of the public administration, towards situations of greater efficiency).

It is obvious that none of these aims can be pursued correctly if the preceding ones are not tackled first. In other words, it is not possible to provide a theoretical-analytical framework without an adequate knowledge of the phenomena in progress. Likewise, it would be unrealistic to try to tackle management problems when the economic-evaluative problems determined by the observed changes have not been adequately clarified.
At a national level each of these four phases have been investigated to a greater or lesser extent in the past, although it should be stressed that, generally, especially for the more properly rural areas, there has been no real co-ordination between these investigations.

3. Analyses of a descriptive nature

Although a great deal of effort has been made in the past to draw a knowledgeable, well-constructed and sufficiently reliable picture of the changes in land use, complaints are still made about the wide gaps related to both the entity of the phenomena and the cases involved.
Territorial changes can be analysed using many statistical sources that refer to different territorial ambits and are made available at different intervals. As regards the spatial aspect the following aggregation levels can be distinguished: communal, provincial, regional, national.
Concerning the time aspect, the following divisions can be made: information available systematically at yearly intervals or less than one year; information available systematically at longer intervals, information available irregularly.
The following table gives the main types of information available for each of the above-mentioned categories that can be considered useful for territorial management:

	communal	provincial	regional	nazional
systematic annual	- n. residents - demographic balance - mc housing & other types of buildings	- various information on private & public transport - principal crops & livestock raised	- occupied by type of sector - land use - economic & production data - road networks	- national economic budget
systematic pluri-annual	n. residents & socio-economic characteristics building assets characteristics - jobs & production units in the different sectors			
occasional	specific studies on the land market (area exchanged, values, etc.) - specific studies on recreational use of the territory - studies on land uses - studies traffic flows			

There is an obvious lack of availability of systematic information produced annually at an acceptable level of territorial disaggregation.

The only data available on territorial dynamics at a disaggregated level is that relating to the resident population and to building activities. Information relating to land use and to the land market generally derive only from occasional specific studies that, lacking the necessary spatial continuity and homogeneity in data gathering methods, do not allow spatial-time comparisons that could give an adequate theoretical-analytical description of the phenomena.

On the other hand, some detailed data relating to land use are produced only at a regional level, though the data gathering methods are such as to arouse grave doubts on their reliability. Although it may seem paradoxical, there is still no precise systematic information available on non-agricultural land use nor on the annual transfers of areas between different uses. Yet, given the onerousness of building authorisations, every commune has detailed information on the existence of new buildings (data that is passed on to ISTAT) and could easily also produce systematic information on land use.

Equally, with the exclusion of some regions(e.g. Emilia-Romagna) nothing is known about the land and property market for huge areas of the country. This lack could appear marginal given the ever lessening importance of the primary sector within the national economy. Given that land values are able to attract the economic expectations of the market, in metropolitan areas they can, on the contrary, provide precious information on the actual trend of land rent (and therefore the revenues expected in the territory). Land and property values can provide a measure of the economies of agglomeration connected to the different parts of the territory and therefore indicate the possible developing trends of the territory expected or required by the business community.

The information provided once every ten years by the general censuses of the population and production activities, although important, is generally made available after some delay and allows at best to "register" what has happened without consenting to adequate future projections.

This lack of knowledge is particularly worrying in metropolitan areas that are characterised by much more intense territorial dynamics than either urban centres or farming areas. To improve our ability to interpret the territorial management and phenomena in progress we must have information gathered systematically from the territorial point of view, at least at a commune level.

While not neglecting the problems raised, an analysis of the available statistical sources and research carried out ad hoc in the past paints a sufficiently well-constructed picture of some phenomena associated with the metropolitanisation of the system of settlement.

First of all it is possible to pinpoint the setting up of a system of settlement of a metropolitan type to the mid-1970's. Regarding this there is a pretty singular piece of data observed in Veneto. All the chief towns with more than 60,000 inhabitants started to show a negative demographic balance at practically the same moment (between 1974 and 1977), independently of the number of inhabitants, type of urban policies put into practice and the productive characteristics of industry and the services sector.

A useful descriptive interpretation of the evolution of the urban structure can be given using the so-called theoretical model of the life cycle of the town (Klaasseen, Paelink, 1981, Van der Berg et al., 1982). For example, taking the town of Padova, and the communes in the hinterland, the evolution of the resident population since the second world war has had the following trend:

period	Padova var. %	Urban belt communes var. %	Padova var.% annual average	Urban belt communes var. % annual average	Evolutional phases
51-61	17,89	11,12	1,78	1,11	UR
61-71	17,15	31,37	1,71	3,13	SR
71-76	4,57	11,9	0,91	2,38	SR
76-81	-3,10	5,99	-0,62	1,19	SA
81-86	-3,79	6,29	-0,75	1,25	SA
89-91	-4,70	6,02	-0,94	1,20	SA

where UR = relative urbanisation
SR = relative suburbanisation
SA = absolute suburbanisation

While up to the end of the 60's there was a phase of relative urbanisation, after this time a phase of firstly relative and then absolute suburbanisation began.

It can be observed that the metropolitanisation of the north-east can be ascribed to phenomena of a general nature that have involved the entire economy in a substantially homogeneous manner and are due both to national and international factors (an analogous phenomenon has in fact been observed in most urban areas in northern Europe). It can also be seen that these phenomena appear only in part ascribable to the spread of private transport, although in Veneto an extremely significant statistical ratio is identifiable between number of means of transport per head of population and percentage of residents in the chief towns of the province[2]. In every probability the demographic dynamics observed are related both to changes in the availability of private transport and to the relevant production re-structuring

---

[2] [1]For the period between 1970 and 1992 the following regression equation has been calculated:
corrected $r^2 = 0.98$
$Y = 30.63 - 12.47X$
with Y = % resident in the chief towns of the province
X = car per inhabitant for which road tax was paid.

processes in the industrial sector that began in the early 70's that are focussed on a progressive segmentation of the production processes and the de-centralisation of some phases towards small satellite production units (Graziani, 1975, p. 43).
Studies on the trend of land values have demonstrated that at the beginning of the 80's the town of Bologna was still able to influence agricultural land rent (Grillenzoni, Gellerani, Caggiati, 1983). This indicates how at that time there would be precise economies of agglomeration generated by the urban centre for the demands of use encumbering agricultural land.
A recent study in the commune of Padova (Tempesta, Thiene, 1996) has on the contrary demonstrated that the localisation with respect to the urban centre of Padova in no way influences the value of agricultural land, that is affected, on the contrary, by the vicinity of small inhabited centres, production areas (industrial, artisan and service sectors) as well as the nearness to a surfaced road. This is therefore a process of metropolitanisation that has by now reached full maturity where for many demands of use of the territory the economies of agglomeration have a micro-territorial dimension.
As regards the effects of the settlement sprawl on land use, various studies have shown that economic growth is inevitably accompanied by an increase in land use for new residents (Merlo, 1984; Merlo, 1988; Boscacci, Tarulli, Bagnati, 1986). This is motivated both by the lower values of land suitable for building on in the urban belt in the 70's and new housing needs and higher available incomes. How much of this greater use can be considered a physiological phenomenon intrinsic in the higher standard of living and how much, on the contrary, can be considered a waste of a scarce natural resource is difficult to establish. What's more it can be shown that the reduction in utilised agricultural surface that has taken place since the 70's can be ascribed much more to the expansion of woodland and uncultivated land than to the growth of urban areas.
A further element emerging from research carried out at a national level is the formation within cities of vast abandoned areas, generally vacated by old factories or now obsolete services. Very often at the basis of this phenomenon are the re-conversion processes that have led many production processes to move to peripheral areas. It must be remembered that the phenomenon can sometimes be explained by problems of environmental incompatibility or increasing diseconomies of agglomeration (such as traffic and congestion). Lastly the same regulatory plans, because of the extreme rigidity with which destinations of use are defined, can contribute towards favouring the re-conversion of abandoned areas to new uses, impeding a rapid adjustment of supply to demand.

4. The theoretical-analytical reference framework

Analysis and knowledge of territorial dynamics are shown to be insufficient for providing information of a management type if they are not supported by more general theoretical and interpretative references. In the absence of these elements, in fact, the data is fit for interpretations of a descriptive nature but does not provide any useful information on possible developments in territorial dynamics. In other words, the quantitative and qualitative data need to be correctly interpreted by an adequate theoretical support to give them the necessary level of generalisation that goes beyond specific fact to reach a global interpretation of the studied phenomena.
It should be stressed that, especially in the agricultural sector, little attention is paid to analysing the theoretical problems connected to territorial management. For example, regarding the land market, the fact that the neo-classical theoretical formulas, that are the basis of the theory of supply, are totally inapplicable has been completely ignored up to now and it also seems that little research has been done on which factors govern the supply of land.

This imbalance is particularly obvious when a tentative is made to connect the rent model proposed by Von Thunen with the model of formation of land price deriving from the game of supply and demand. In Von Thunen's model the rent necessarily assumes a residual role and is given by the lower transport costs coming from the proximity to an urban centre. In the model proposed by the equilibrium of the competing markets this derives from the price that, at equilibrium, is constituted by the break-even point between marginal benefit to the buyer and seller. In the case of the sale of agricultural land the supply curve cannot in any way be determined by the function of marginal cost and assumes rather the nature of a benefit expected by the sale. In the case of the buyer, within certain limits, this function can be assimilated to that of the marginal product, though very often other expectations of a subjective nature can influence the function of demand.

The distinction is then important between the agricultural and non-agricultural land markets and the different characteristics of demand that subtend the different types of markets.

Regarding this it can be considered that the different function of land is one of the factors that differentiates agriculture from other economic activities. While for non-agricultural activities the land nearly always constitutes a mere physical support, for the primary sector it provides a biological support. It follows that, while for agriculture the pedological characteristics of the land can affect profitability, and therefore the type of crops practised, they are substantially indifferent for all the other possible uses.

Starting from this observation, land uses can be classified as follows:

A) natural areas where man does not operate directly and consciously to obtain various kinds benefits and whose evolution depends on either natural factors or by human action only in an involuntary way;

B) cultivated areas where the biological and ecological capacities of the land are exploited to support the production of primary goods;

C) areas where there are buildings or human creations of various types that in their turn can be split into:

C1 – uses directly connected to cultivation, such as farm buildings, reclamation work, etc. (*agricultural settlements*);

C2 – uses of cultivation support, which include all services to the primary sector, both directly (marketing of products and production factors) and indirectly (sale of products that are used mainly by farmers) (*rural settlements*);

C3 – uses that have no connection with farming activities (*urban settlements*).

This classification, in many ways obvious, allows the different uses of the territory to be divided in a sufficiently unambiguous way and provides analytical support for the understanding of the developmental phenomena in metropolitan areas. In fact, the distribution of the different uses over the territory has always been the object of incessant changes that have led in the past, like today, to the setting up of distinctive territorial systems. It is also interesting that the farming, rural and urban settlements have very often not had a homogeneous spatial distribution, based on a rigid spatial separation, just as, in some eras, cultivation took place within the towns. The rivalry between town and country is in many ways a product of the industrial town, where the presence of very marked economies of agglomeration connected to the industrial production have led to the forming of urban agglomerates strictly separated from the country.

The presence of different uses of the territory, determined by the level of development of the economy, does not therefore necessarily imply the growth of the town as we know it.

Aggregation by homogeneous areas is not an category inherent in the way of man relating to the territory, but rather the outcome of concrete economic and historical-cultural factors.

In many ways it can be agreed with Camagni (1993) that the town has been come about because throughout history man has felt it worthwhile to spend most of his life within a

spatial system characterised by a net separation between uses of the territory. There are many factors that push towards agglomeration in urban areas, amongst these are economies of scale, reduction in transaction costs, availability of public goods, improvement of the flow of knowledge, etc. (Camagni, 1993).
The tendency towards agglomeration involves the forming of urban rent deriving from the preference that the different people who use the territory display in comparisons of the central areas with the periphery. The principal of agglomeration and the cropping up of rent phenomena can be considered the two driving forces that organise the system of the territorial assets. While economies based on agglomeration act in the sense of driving most non-agricultural human activities towards the central location, the cropping up of rent tends to re-distribute these activities, basically forming an economic hierarchy of the space.
The presence of land rent can conversely be considered one of the main indicators of the presence of economies of agglomeration and as such should be analysed (Camagni, 1993).
The theoretical model proposed by Von Thunen could prove itself to be an interesting conceptual reference for the interpretation of a part of the phenomena described in the previous paragraph. As is known, the analysis conducted by Von Thunen can demonstrate, elegantly and coherently with the marginal economy theory, the trend towards the differentiation of the spatial distribution of the different economic activities. π_y being the profit deriving from the production of a good y, p_y it's price, $c_y$the production costs per unit surface area, q_y the production per unit surface area, ct_y the transport costs per unit of production, km the distance from the centre where the good will be sold and Rt the income, the following function of profit can be defined:

$$\pi_y = (p_y - c_y)\, q_y - ct_y\, km\, q_y - Rt \qquad [1]$$

Assuming that in a position of equilibrium $\pi_y = 0$ or is the nearest to the standard profit, the income can be determined as follows:

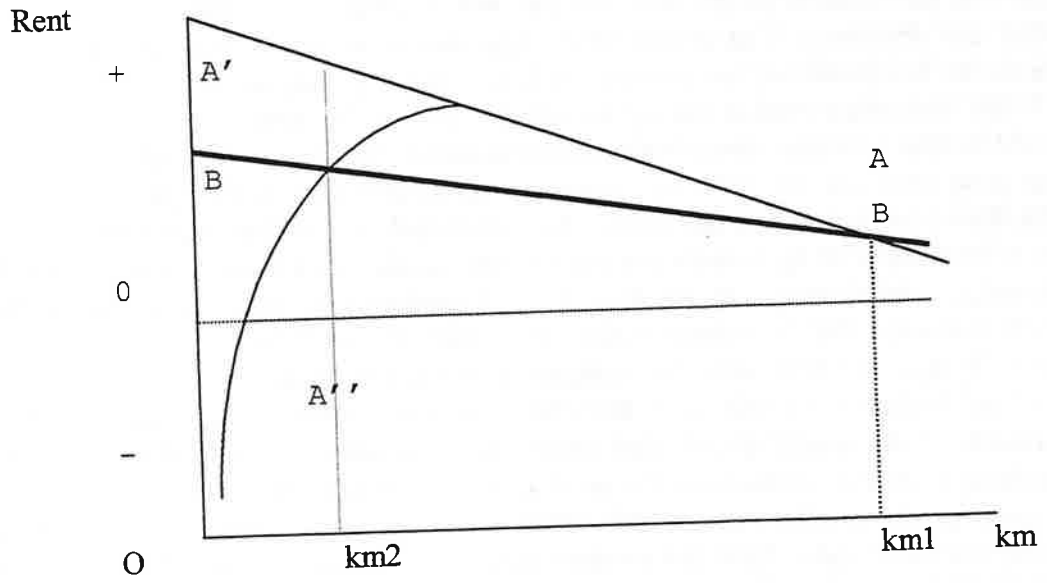
$$Rt = (p_y - c_y)\, q_y - ct_y\, km\, q_y \qquad [2]$$

It results that the offered rent tends to reduce with the increasing of the distance where the sale takes place from the centre. In the second place, it can be noted that the economic activities tend to be distributed in the territory according to their profitability per unit surface area and production per unit surface area, assuming that the unit costs of transport are substantially similar between the different producing activities. Productions with a higher unitary profitability are found closer to the centre, while, moving further away, productions with ever-more decreasing unitary profitability will be found.
The model can explain some changes underway in the use of land in the old town centres, where activities with higher added value per unit of land occupied are becoming established. On the other hand, it shows that urban centres with different characteristics can generate different rent phenomena. In other words, while some demands of land use can be influenced by proximity to some central locations, others are not. For example, when analysing the agricultural land market it must be considered that only some demands of use of an urban type can involve cultivated land. It follows therefore that analysis of urban rent in a rural area can provide suitable information only for some demands of potential use and not for others.
The simple model proposed by [2] could be suitable for interesting extensions if it is considered that an urban centre can in general cause localised economies and diseconomies that are not traced back to transport costs alone. From a more general point of view [2] can be re-written as follows:

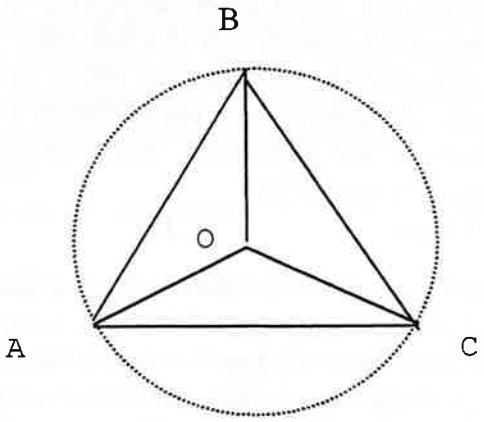
$$Rt = (p_y - c_y)\, q_y - ct_y\, km\, q_y + E(km) - D(km) \qquad [3]$$

The rent is therefore an important indicator of the capacity of an urban centre to create economies or diseconomies in favour of certain activities. In this way the forming of

functions of supply of rent with a positive slope to the varying of the distance and not negative as in Von Thunen's model also becomes plausible. If the function E (km) and D (km) have a different trend, they can have functions of rent supply with a non-linear trend and with a first positive and then negative slope, as shown in the following figure:



If initially two types of production have rent supply curves equal to A'A and BB, respectively, the space surrounding the central area will be occupied in the stretch Okm1 by production A and in the rest by production B. If diseconomies begin at the expense of A, the function of rent supply can change into AA''. In this case we must find production B in the stretch Okm2, production A between km2 and km1, and at a greater distance, once again B. Where an urban plan constrains the more central areas to the use initially more appropriate (A), the onset of diseconomies would involve the non-utilisation of the more central locations, at least in the stretch where the rent supply is negative. From a social point of view there would also be waste due to the fact that in the central area the production that determines a lower product for society would become localised.
Factors such as that illustrated could be at the basis of the changes that can be seen in many urban centres with the forming of huge areas unutilised because of lack of demand.
Other elements for understanding territorial changes can be obtained considering some of the simplifications introduced into Von Thunen's theoretical model. In this, in fact, it is not taken into consideration that the forming of a central location implies costs (for the organisation of the structures and infrastructures necessary to the running of the market itself) that can make the setting up of a grid rather than polarised system preferable.
If, as an example, the case is considered of three production units situated along the apexes of an equilateral triangle that all produce a single good that they intend to exchange with one another. The problem becomes if it would be more advantageous to exchange the goods in a single central location (with the formation of a market area) or to carry on with multiple exchanges.



Putting the transport cost per kilometre as equal to Ct and hypothesising for simplicity that the amount of goods being exchanged is the same for all the production units and transportable in a single trip in the case of exchange in the central location, the total cost will be:

$C_1 = 6\ OA\ Ct + Cm_1$ con $OA = OB = OC$

If the grid structure is chosen the cost will be:

$C_2 = 6\ OA\ \sqrt{3}\ Ct + Cm_2$

where Cm_1 and $+ Cm_2$ are the costs of setting up and running a market system in the central location or over the whole production area, respectively.

Only in the case where $C1 < C2$ will the setting up of a central location be worthwhile. In the simple case illustrated this will occur when $Cm_1 - Cm_2 < 4.38\ OA\ Ct$. It can be inferred that with increasing differentials in the costs of setting-up and running the market system between central areas and decentralised areas and/or the lowering of transport costs, the change from a polarised structure to a grid structure could become advantageous. From the strictly economic point of view both spatial structures can be totally acceptable. It is also interesting that the cost of Cm will in any case be strongly affected by what has happened previously, i.e. the existing structures and infrastructures. This introduces a strong element of rigidity into the evolution of the territorial and urban structure and contributes towards explaining the high persistence over time of the settlement system in the territory (Mancuso, 1977). The forming of new locations, of new grid structures, etc. can occur only where there are big changes in the profitability of the productions and technological and market changes. These considerations allow a better interpretation of the model of life-cycle of the towns from a strictly economic viewpoint. The relationship between a central location and the adjacent territory can go through periodic phases of change with periods of centralisation of the population and phases of de-centralisation. There may also be times of breakdown of the circularity of the processes that lead to the setting-up of new territorial systems, distinct from the emerging of new central locations or, as seems to be happening just now, to the forming of metropolitan or grid structures. Obviously the characteristics of the zones at one time considered rural can alter radically during intense moments of breakdown and change in the economic-settlement structure. The intermingling between more properly agricultural uses of the land and urban uses can become the rule or even the actual structuring principal of these new realities. Any tentative to interpret these new systems making reference to concepts of the past such as, for example, the division between town and country, the waste of cultivated land etc., can be unfounded and misleading. It is more useful to understand if and to what

point the excessive use of scarce resources is innate to the new settlement and productive structures and within what limits this can be right.
A final conceptual investigation that could show interesting developments at a theoretical-applied level is analysis of the spatial equilibrium of a business.
Supposing that a business that intends to maximise profit utilises two production factors (Land and Labour or Capital). The price of the land depends on the distance from a central location where the goods produced are exchanged. When, to simplify, the capital is ignored, the function of profit to be maximised will be:

$$\pi = y\,py - L\,pl - T\,pt - Ct\,km\,y \qquad [4]$$

where: π = profit, y = quantity of goods produced, py = price of the good produced, L = amount of labour, pl = labour cost, T = amount of land, pt = annual cost of the land (or rent), Ct = transport cost per km and product unit, km = distance from the centre.
It is further supposed that pt = g(km), i.e. that the cost depends on the distance from the central locality. The conditions of profit maximisation are obtained equalling to 0 the first partial derivatives with respect to T, L and km and are:

$$\partial\pi / \partial L = dy/dL\,py - pl - ct\,km\,dy/dL = 0 \qquad [5]$$

$$\partial\pi / \partial t = dy/dt\,py - g(km) - ct\,km\,dy/dT = 0 \qquad [6]$$

$$\partial\pi / \partial km = -g'(km)\,T - ct\,y = 0 \qquad [7]$$

Relating profits, costs and returns to the unit surface area, dividing [7] by T, we have:

$$-g'(km) = ct\,y/T \qquad [8]$$

At equilibrium the first derivative of the rent with respect to the distance from the centre will be equal to the transport cost of the produced good per unit surface area. The model proposed by [8], that is in many ways analogous and coherent with that of Von Thunen, gives a better understanding of the results obtainable through empirical studies on the trend of land values in the territory, i.e. to obtain a quantification of the economies of agglomeration. In fact, ct y/T can be considered as the net balance referred to unit surface area of the benefits connected to proximity.
Within the ambits of a research project on the values of agricultural lands carried out in the metropolitan area of Padova (Tempesta, Thiene, 1996), the following relation was identified between land values and local characteristics:

LNVALUE =	0.96 LNSUP	+ 0.42ACCESS	+ 0.22 KMPD	- 0.18 KMINDU	- 0.07 KMCAB	+ 8.73
	(22.481)	(4.261)	(1.685)	(-2.342)	(-1.246)	(19.530)

corrected $r^2 = 0.92$

with LNVALUE = natural logarithm of the value; LNSUP = natural logarithm of the surface area sold; ACCESS = variable dummy plots at the roadside; KMPD = natural logarithm of the distance from Padova +1; KMINDU = natural logarithm of the distance from the nearest commercial or industrial zone +1; KMCAB = natural logarithm of the distance from the nearest inhabited centre +1.
(the value of the student-t test is between brackets)
From this it can be estimated that a plot of one hectare positioned 5 km from Padova and from the nearest inhabited centre, beside a road, and if it is close to a production area enjoys a flow

of annual benefits of Lit. 340,000[3]. This benefit tends to decrease rapidly the greater the distance, so much so that at just 6 km it becomes Lit. 34,000/hectare.
The simple theoretical models illustrated obviously only make up a fairly limited part of the important theoretical elaborations inherent in the urban growth proposed after the second world war (Camagni, 1993), but allow to identify some variables that can assume great importance for a correct understanding of the changes underway in metropolitan areas, especially the problems of interactions between farming and non-farming activities. Amongst these the following can be cited:

- transport costs or, more generally, problems connected to accessibility,
- evolving of land values,
- costs of intermediaries or running of central locations,
- emerging of new technologies and new production processes.

An adequate monitoring of these variables would therefore allow to correctly interpret the changes underway, obtaining useful information for the correct management of the territory.

5. Efficiency and inefficiency of territorial changes

The relationship between town and country, starting from a profoundly and wrongly dualistic vision, and ignoring the elements of dynamism in the different uses of the territory, was for a long time seen almost exclusively in the light of competition for the use of land and natural resources. While it is undeniable that competitive relationships must exist between agriculture and other activities over the use of natural resources, particularly land, it is now equally clear that the type of interactions that are installed at a socio-economic level are much more complex and not unambiguous in their results. Indeed, greater affluence in the countryside is almost always connected to the spread of activities of a more urban nature in the territory or, in general, to an improvement of the accessibility of the land for urban uses.
The field must therefore be cleared of much of the schematism with which in the past the problems connected to urban growth and the sprawl of urban activities in the countryside were seen. The concept of competition is in itself sterile and allows no serious progress along the path of understanding of the phenomena of change in the use of the territory. For example, from Von Thunen's theoretical model of urban rent it can easily be argued that not just the productions with higher unitary profitability but also the best businessmen, who are undoubtedly the creators of these better economic results, tend to localise themselves close to the urban centre. The town or the settlement network would from this point of view become an important source of selection of the best and most able forces. At a level of production efficiency it is certain that, more than the consumption (or waste) of land, the high values of land connected to land rent can cause serious problems that can hinder the re-structuring and reorganising of a farm.
The concept of integration can be of equally little use if the levels to which this refers are not adequately specified. There can be integration both at the level of territorial use and of production structures (businesses, families). In the former case integration phenomena can begin if the primary sector accepts that the landscape (and therefore cultural) picture is modified in a way that responds to the needs expressed by the urban population. Regarding this, an example can be some of the contributions that came about with Regs. 2078 and 2080 of 1992, aimed at the re-qualification of the landscape and rural environment.
Another thing is integration at the level of production system or, as often happens in the farming world, of family. In this case the effects on the agricultural use of the territory and on the economy as the whole are distinct and under many aspects, still little studied. For

[3] For the determination of flow of benefits a sample of capitalisation of 3% was used

example, the role of the part-time farm in the conservation of the rural landscape, and therefore in the production of positive external effects to the benefit of the community appears in many ways to be controversial. It is probable that in some cases the part-time farmer progressively diminishes his work in this direction, causing not negligible aesthetic and hydro-geological problems.

6. Policies for administering the territory

As has been mentioned, scientific contributions relating to points "ii" and "iii" are lacking at a national level, especially concerning cultivated and rural areas. The two intermediate phases are very often skipped over, trying to work out planning strategies and territorial management from an at times approximate knowledge of the phenomena involved.
In the normal procedures of the territorial policies in Italy there is a tendency, now as in the past, to substitute knowledge of the phenomena and their correct interpretation, with the "paradigms" now and again proposed to provide a conceptual support to the decisional processes and legislative framework.
This involves both advantages and disadvantages. The advantages are made up essentially of it being possible to rapidly adapt the reference paradigms to changes in the situation as their processing is not by means of laborious phases of surveys and collection, analysis and interpretation of the data. The disadvantages come from the difficulty in demonstrating the superficiality of the paradigms as they are not based on real data but on the perceptions the academics or decision-makers have of the phenomena.
These paradigms almost never clearly define what the outcome of the territorial planning will be and this makes it possible to adopt different or non-coherent strategies, in spite of starting from the same paradigm.
It can even be shown how freeing territorial management from any considerations of an economic-evaluative character, and in particular from concepts that are the basis of economy of affluence, the territorial plan becomes a tool lacking space and time that finds it's reason for existing from within. It therefore ends with making plans to satisfy the "need for plans" and not the needs of society.
The idea on which this type of approach is based is that any plan is always better than no plan at all.
This ignores the fact that:

1. urban and territorial tools are indeed "tools" and are means to use to reach ends. This implies the necessity that the aims of the interventions are defined and the possibility of using as many tools as the number of aims to be pursued.
2. any urban-territorial tool involves costs and times for drawing up that sometimes make it unsuitable for controlling rapidly changing phenomena.
3. each type of tool interrelates with the working of the single economic subjects and can therefore cause significant modifications to the functioning of the markets, with consequent reallocation phenomena and, more generally, flows of costs and benefits.

This does not mean that the spontaneous operating of the market, that is in many cases inefficient, must not be modified but just that the mechanisms on which price forming are based must not be altered.
It is also worthwhile remembering the factors of market inefficiency, represented by the presence of monopolies, scarce resources, resources that assume the nature of public goods and external effects to production. It must, of course, be understood that all these factors of inefficiency have implications of some relevance in the management of the territory.
Very often the resources of the territory are not reproducible (for example agricultural land). In other cases they are the fruit of externalities and take on the nature of pure public goods, as

in the case of the rural landscape. Lastly the presence of phenomena of demand polarisation, or the intrinsic characteristics of a resource, can make them assume characteristics of uniqueness thereby determining, implicitly, the formation of monopolistic or oligopolistic markets.

Therefore, from the point of view of economy of affluence the tools of territorial management can be seen as tools aimed at making up for the inefficiencies of the market in the allocation of resources.

This approach allows territorial management to be freed radically from the general urbanistic rules currently followed and foresee equally efficient alternative approaches towards maximising society well-being.

Regarding this, it is interesting that the urbanistic policy makes use of both tools of the command and control type (zoning and standard definition) and economic tools (duties of urbanisation ex law 10 of 1977).

Without entering into the merits of the controversy between supporters of one or other type of tool, it is true that recourse to traditional planning tools in the past has, in the case of central Veneto, involved:

- the accentuation of phenomena of monopoly and rent;
- the spread of urban areas not utilised or under-utilised because of discrepancies between planning forecasts and real demand for land, with the establishing of widely-sprawled settlement systems;
- an increase in the negative external effects of urban growth due to the settlement sprawl itself (landscape degradation, pollution phenomena, worsening of the water system, disappearance of sites of historical-cultural interest, etc.).

From the point of view of economy of affluence, there has therefore been an accentuation of the factors of inefficiency of the market and not their correction, even if the phenomena cited cannot be ascribed totally to the lacks of urbanistic tools. The decentralisation of the population from the urban centres in Veneto has involved all the main towns in a substantially uniform manner since the second half of the 1970's. It is therefore difficult to identify a single cause for decentralisation exclusively in the plans in force as they differ in their forecasts of expansion. Other factors could have contributed towards determining the phenomenon, such as:

- increasing availability of private transport;
- territorial reallocation of the production activities partly due to the spread of private transport and partly to technological requirements;
- the sprawl of endogenous phenomena of urban growth, businesses and service industries in areas of rural settlement and in the countryside.

It is anyway certain that urban rent differential (accentuated by urban plans), disparity between planning forecasts and demand for land expressed by the market and the spread of private transport are factors that have combined to determine much of the change to the settlement system observed in central Veneto in the 70's and 80's.

The effect of law 10/1977 has been a marked reduction in building activity over the whole region. This reduction is much less marked on the larger farms than on farms run part-time. This has put emphasis on at least two characteristics of the economic tools applied to management of the building trade:

- they are extremely efficient in determining the quantitative control of the new building construction;
- they can act in a differentiated and selective way in the territory and between different subjects.

It cannot anyway be ignored that introducing urbanisation dues, in the absence of adequate control, can accentuate the trend towards constructing buildings totally contrary to the

planning forecasts, especially in areas that are more difficult to control, such as agricultural ones.

What must be emphasised is that, when the territorial policies and the tools adopted in them are assimilated to the widest possible field of action to mitigate market inefficiencies, it becomes possible to borrow, with appropriate precautions, some of the operative indications produced within the ambits of environmental economy in the past decade.

References.

Boscacci F., Tarulli E., Bagnati T. (1986), "Le analisi alla scala regionale. Configurazione territoriale ed elementi di interpretazione dei consumi di suolo", in "Interazione e competizione dei sistemi urbani con l'agricoltura per l'uso della risorsa suolo".

Camagni R. (1993), "Economia urbana. Principi e modelli teorici", NIS.

Graziani A. (1975), "Aspetti generali dell'economia italiana nell'ultimo decennio" in "Crisi e ristrutturazione dell'economia italiana" a cura di , pag.43.

Grillenzoni, Gallerani, Caggiati, (1983)"Un modello di inferenza statistica nella stima del mercato fondiario", Genio Rurale, n.8.

Klaasseen L., Molle W., Paelink J.(1981), "Dynamics of urban development", Gower, Aldershot.

Mancuso F. (1977), Esplorazioni sulla crescita urbana nel Veneto : Modelli morfologici e detrminanti strutturali in alcune situazioni tipiche, in Mioni A. (a cura di), Sulla crescita urbana in Italia, Franco Angeli, Milano.

Merlo M. (1984), "Un'analisi dei fattori che influiscono sull'uso dei suoli", Rivista di Economia Agraria, 3.

Merlo M.(1988), "Una riconsiderazione dei fattori che influiscono sull'uso del territorio: le tre Italie", Rivista di Economia Agraria, 2.

Tempesta T., Thiene M. (1996), "Valori dei suoli agricoli e crescita urbana", Genio Rurale, 7/8.

Van den Berg et al., "Urban Europe: a study of growth and decline" Pergamon Press, Oxford, 1982.