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PAPER 4: AGRICULTURE IN METROPOLITAN AREAS

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AGRICULTURE IN METROPOLITAN AREAS

by

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AGRICULTURE IN METROPOLITAN AREAS.

1. Introduction.

When analysing urbanisation processes it is possible to highlight some fundamental aspects. Changes in the migratory fluxes and the loss of economic activities by cities have generated a new system of relationships between urban and rural areas, which have consequently involved agriculture.

In addition, the lack of re-utilisation of industrial and abandoned areas of the city have contributed to increased moving-out of production activities into rural areas, followed by a breaking-up of rural and urban areas.

The peri-urban areas, and in the north-east of the country metropolitan areas too, gained a value which goes far beyond the capitalisation of potential agricultural income (without forgetting the new CAP measures).

Finally, empty spaces resulting from industrial and functional abandonment and parcelling out in the peri-urban and peripheral zones, must be considered for an urban-economics programme.

It means that, in the future, in these areas, often including several provinces, the problem does not rely on filling the empty gaps nor in governing rural land, but rather to elaborate an integrated development project, in order to rationally use the city gaps and rural land.

In fact, in the absence of a plan taking into account the new relationships arising from the above phenomena, it would be really difficult to decide on empty spaces land use and metropolitan processes in rural areas.

1.1 From de-urbanisation to counter-urbanisation.

As the current system of agriculture in metropolitan areas depends on the evolution of urbanisation, it is interesting to look at the various faces of such phenomenon.

The '70's showed that suburbanisation processes and growth of peripheral areas could not cope with the exodus of people from cities and led to de-urbanisation (Hall and Hay, 1980; Van den Berg et al., 1982; Camagni, 1988). This phenomenon can be explained by industrial crises and new locating trends (non metropolitan industrialisation) which found better conditions in smaller towns and rural areas, associated with the demographic reduction, especially in Northern Europe.

The consequence of this was a decrease in the utilisation and costs of urban land and a reduction of conflicts on the job market due to the advantages offered by relocation. A further characteristic element is the expansion of information technology, especially in metropolitan areas (Camagni, 1986).

The population also contribute to the process of counter-urbanisation by returning to the central zones of big metropolitan areas, according to selective processes known as "gentrification" as they are mostly a few social classes in the upper income brackets ("yuppies" or "twinkies") who prefer the cultural aspects of the city to the environmental advantages of suburban areas.

Following economic recovery, the major metropolitan areas started competing to attract more people.

This is a clear example of selective re-urbanisation, since it is directed towards major cities and is characterized by a housing model which is spread out and discontinuous, i.e. low density.

Ville éparpillée, ville éclatée, ubiquitous city have been spoken about, but the best formula is metropolitanisation, and in some cases there is a return to the original Gottmanian concept of megalopolis (Camagni, 1993).

1.2 Peri-urbanisation processes.

The term "peri-urbanisation" appeared for the first time in 1977 with the synonym "rurbanisation" in "La rurbanisation ou la ville éparpillée" by Bauer and Roux (1977). These terms indicated adjacent zones to the city where urbanisation came up against agriculture activities at full steam and weakened a still thriving rural society. These processes proceeded in a localized and limited way and not along a compact front, and so they didn't dominate.

"It all happened as if the city had thrown itself into the rural area, exploding into many pieces and scattering everywhere" (Dezert et al., 1991).

People who like living in these areas normally have higher incomes, want open spaces, have cars, or on the contrary find the prices in the urban centres too high and the environmental degradation of the periphery unbearable.

Around the big cities there is usually a first ring (inner suburb), a second ring (outer suburb) which made way for all residential and productive expansion after world war two, and the latest peri-urban ring rich in prevalently rural characteristics but ever more invaded by single family residential lots, restored farm houses, re-location of major urban structures like university campuses, exhibition centres, airports.

There has been much analysis and debate since the '80's in Europe, which have generated two opposing views of the problem: the first is optimistic and underlines the widening choices of lifestyle of citizens and the transformation of the rural world under the positive influence of the city.

The second is a pessimistic view that underlines the irreversible damages induced in rural society, the social and environmental costs in terms of the using-up of non-renewable resources.

There is another fundamental problem with this approach which tends to analyse the phenomena in an extremely static way, identifying the characteristics defining peri-urbanisation today as permanent. Instead, also this probably must be considered a passing phase towards a wider spread and further compromising of the area in question.

A recent report by OETAMM¹, confirmed a common phenomenon of major western metropolitan areas, that territorial development depends on the residential housing market rather than economic trends and the localisation of the industry. In fact on the one hand the demand is constrained to move further and further from the centre or to choose these areas because they allow specific residential models; on the other there is only availability in these peripheral areas (OETAMM, 1993; Burgel, 1990).

According to Camagni (1993), it is possible to identify four different but co-existing routes in peri-urban development:

- the first is the expansion of the urbanised space, in terms of adjacent spaces towards green areas; we are talking about a continuous expansion like an oil stain, or better along the main infrastructure network and then filling the spaces in between;
- the second regards the expansion of urban centres (small villages or new towns planned from scratch) located in the rural hinterland;
- the third refers to localisation in the same areas as major urban structures like exhibition centres, university campuses, concert halls;
- the last is a new type of expansion from a qualitative point of view in terms of low-density housing.

1.2 Metropolitan areas: an attempt at definition.

Since nowadays we tend to talk about agriculture in metropolitan or peri-urban areas as the same thing, it is worthwhile to provide a definition of the terminology.

Regions characterized by so called "diffused economy" present a polycentric development model, in which rural areas, while retaining links with the main urban centres, establish stronger relations with secondary towns. It deals with open systems functionally integrated with an influx of people, goods and information where a more evolved society under a social and demographic, as well as cultural and professional aspect has imposed itself onto a rural society (Berni and Begalli, 1993).

Some studies have explained the relationship between the development of peripheral economies and the diffusion of less crowded initiatives in peri-urban areas with the economic opportunities and social synergy which favoured this type of urban expansion, such as choice of residence, due to the balance between cost and characteristics of the house, transport costs, conditioned by social and family ties and by environmental externalities (Reho, 1990).

The polycentric model inevitably determines competition for natural resources, in particular land, between agriculture and other sectors. Consequently a lack of land arises from this situation which even if it satisfies the demands of development, nevertheless involves modifications to the landscape and environmental equilibrium, which in turn constitute basic elements for a balanced territorial structure.

¹Economical-territorial observatory of the metropolitan area of Milan.

The need to satisfy housing and production demand determines the so called "less crowded development", which inevitably involves the need to satisfy other demands, such as improved services (socio-cultural centres, spare-time structures, green spaces...).

2. From conflict to interaction between agricultural and urban systems in the metropolitan areas.

Metropolitan areas are the expression of the maximum contrast between rural and urban systems regarding land use and exploitation of non-renewable resources.

The conflict is often described in terms of absolute loss and defeat of the agricultural system by a pervasive and unstoppable urban one, which manifests maximum growth and "non stop" development, or as Gottmann says "invincible" (Gottmann, 1983).

Not by chance the on going marginality and loss of the relative importance of agricultural production, its continuous and progressive loss of land, the decrease of people working in this sector and its inferiority in terms of income, are taken to be the main economical and social indicators by means of which the metropolitan reality is identified and the relative intensity is measured (Standard Metropolitan Area) (Beltrame, 1982).

The dynamics of the relationships are differentiated not by method and form of urbanisation (urban sprawl) in the development of not necessarily metropolitan centres, but rather in the quantity, in the speed of change and the relationship between use/waste of land and the correlation and integration between the two systems.

The qualitative and quantitative dynamics of the so-called urban "aggression" towards agriculture seem to be well known, both for the amount of land, according to Gottmann (1961), and for the effects and impacts (physical, social, organisational) of the urban model on the land (Cathelinaud, 1982).

The metropolitan condition is still often presented through ideological prejudices which identify the high point of negativity of urban development in it (from metropolis to megalopolis to necropolis) or on the contrary, of being the most positive and creative expression of urban and economic development.

A common tendency is to reduce the conflict to merely competing for possession of the land. Agriculture as usual becomes the victim, especially in the conflict for the environment and the use of natural resources; it ends up looking as though the urban system is polluting the land and the agricultural one is cleaning it (Beltrame, 1991).

In reality, the conflict exists between the two systems for land resources, but although this is the more visible phenomenon, there is a less visible fight for the use and appropriation of other scarce resources of the biosphere, such as water and energy.

This demonstrates the complex relationships linking the two systems and the problems on which attention should be concentrated.

Both systems, by transforming natural resources have a strong impact on the environment.

For example, agriculture involves more and more mechanization and the increasing use of chemicals, strongly contributing to the alteration of the soil by techniques which are far from being ecological.

The widely-used model of "urbanized countryside" or "urban-rural continuum" (Turri, 1979) is becoming even more general, and the two systems are getting nearer and nearer to a prevailing urban model in style and method.

It is not entirely true that the main problem of agriculture is an increasing need for land. In fact the European situation is typified by an overproduction crisis, involving both spontaneous abandoning of the land and the resort to a non cultivation policy (set-aside) even for the most productive areas on the plains.

Of course it is not possible to resolve once and for all the conflict for land between the two systems by fixing a quota for agriculture in the short and long term.

Today the aims of land planning must be translated into global methods in order to minimize land utilisation, especially soil, while satisfying the need for economic development.

Nevertheless these ideological representations of the phenomenon tend to make the conflict more rigid while distancing analysis from reality and discouraging research for new positive solutions. At the same time, they impede new conditions of compatibility, balance and synergy between the two systems.

In the agricultural system, besides the resistance to urban development, organisational and production adaptations to the situation are developed to take advantage of the opportunities created by the new market for products in the peri-urban and metropolitan areas. On the other hand it is important to make production factors available for other activities, for example soil, in order to take increasing land rent opportunities, or labour in order to distribute it between agricultural and non-agricultural activities (Ocde, 1979; Lockeretz, 1987).

It is important to say that the agricultural classes are also involved in urban and metropolitan development, by influencing it on the basis of their specific interests and contributing to both the negative and positive aspects.

Organisation and localization of land use provides plenty of opportunities to re-use or recuperate urban land (reclaiming abandoned industrial areas) and for "urban renewal" in order to limit the use of land. Such spaces must not be considered solely as a negative product of urbanisation as they can allow a notable flexibility of programming in their new role of "opportunity spaces".

There is also a danger that these approaches become new ideologies which represent the result or the conceptual surmounting of the conflict between the two systems, since "rural space benefits from urban diffusion" (Diastaso, 1988).

As a situation without conflicts is static and incapable of change, the problem is not to remove all conflicts, but to rationally manage them, being aware that mechanisms such as automation or the "invisible hand" do not lead necessarily to sustainable development.

3. Agricultural changes in land use and rural systems.

The subject of the long-term evolution of land use in metropolitan areas can be analysed under two basic aspects, where the first considers that the change in destination of use involves an irreversible transformation from agricultural to urban use.

This is an external process to agriculture, studied by land and geographical sciences, which has appeared in metropolitan areas mainly in the last forty years (Chilò, 1981).

Nonetheless, talking about indigenous transformation, this doesn't just concern the changing of destination of the soil, but also the dismantling of the organisation of rural space and the increasing deterioration of basic resources: agricultural land, rural buildings and establishments, roads, waterways, surface and underground water (Fabbri, 1978).

Considering the second aspect, the change in destination represents an indigenous phenomenon in agriculture which arises from the intensification of production processes, the diffusion of monoculture, large farms, increased mechanisation and the widespread use of chemicals (Grigg, 1985).

Generally the map-making method is the most appropriate one for the study of these phenomena, whereas the indigenous changes in agriculture are evaluated using statistical data, census results in particular.

It should not be forgotten that utilisation and waste of agricultural land are expressed by the surface area taken away from agriculture during a given period, the soil is not just a mere physical topographical space, but a well-organized structure.

By means of a more thorough analysis, it emerges that urbanisation causes more damage to agriculture by the forms of its expansion and its buildings which destroy the soil structure and the system of agricultural organisation, than by the removal of land (Gentile, 1978).

3.1 Agriculture in the metropolitan areas in Italy.

Having considered the basic aspects of agricultural transformation in soil utilisation, it is important to evaluate, from a territorial point of view, some rural situations more representative of the rural-urban conflict, for example the big metropolitan areas of Lombardy and Turin and the smaller areas like Parma, lower Isontino and Treviso.

Analysis provides a fairly homogeneous picture, in that the five situations, while differing depending on their location, seem to have much in common.

The problems come mainly from an urbanisation with very little respect for the emerging values of agricultural production, which have induced enormous changes in the production systems from which emerge economic-production transformations, those induced on the rural landscape and finally the trend of the land market.

3.1.1 The economic-production transformations.

Taking a study in the of Treviso area², the first interesting element is linked to the withdrawn surface area, which during the studied period (1961-1970), was mainly referable to the metropolitan area investigated and only in a small part to the rest of the provincial territory.

This trend has also been confirmed in the other analysed areas, in particular in Lombardy where there has been a considerable reduction in surface area according to a census of the period 1929 and 1982, i.e. 21% in Milan and 16% in Bergamo (Beltrame and Chilò, 1991).

An important change concerns the notable decrease in farm surface areas, in particular of the small and medium sized farms.

In Lombardy, the number of farms which produced in part for home consumption and in part for the market (surface area 2-5 ha) decreased, with an associated partial reduction in size until 1 ha, which has always represented an integral part of the family income.

The phenomenon of fragmentation of farm surface areas appears to be extremely widespread, which is probably linked to the decreased ability of farms to increase their dimensions, especially in areas where there is a lot of development, which are characterised by less dynamic farming systems. In such zones the great demand for land for non-agricultural use makes the break-up of land more possible, with obvious difficulty for the farmer to extend his farm.

It often happens that, because of doubts about the destination of use of land near the confines with urban centres, the owners assume an attitude of general non land investment which is explained by the phenomenon of "expected rent".

In the studied areas the trend towards production extensification is also widespread (Agostini and Franceschetti, 1983; Prestamburgo, 1991; Zappavigna, 1991), choosing crop systems with minimal use of capital and labour, apart from some areas of Bergamo where there has been a slight increase in livestock rearing.

The phenomenon of splitting, mainly found in the formation of rural areas which have been broken up, has contributed to the spread of uncultivated land (Maggioli, 1988).

The ageing of the active population is evident, especially of farmers, as is the abandonment of agriculture by the young labour force.

The clear loosening of the link between family and farm can be demonstrated through the substitution of relatives by wage earners, the choice of part-time employment and finally, the almost total recourse to contractors for working the land.

The farm is completely reorganised with frequent splitting up of the land and the consequent redistribution of income in favour of land rent and farms with non professional economic forms become more frequent.

²Agostini and Franceschetti, 1983.

Nevertheless, in Turin it is still possible to find combinations of small but highly intensive farms oriented towards productivity of the land and large extensive ones oriented towards productivity of labour (Schibuola, 1991).

These farms confirm that social-structural conditions and the aims of farmers or farming families can still find mediation in logistics, even if the pressures on these areas are really strong.

Part-time work on farms of less than 10 ha is widespread, which is acceptable and even vital if considered within a framework of family pluriactivity and mixed income families (Agostini and Maunder, 1984), following a model which seems to be generalised in the agriculture of advanced nations and in particular in their areas of urban development (Vert, 1985; Arkleto, Iam, Inra, 1987). The definition of part-time farms is considered to be 299 farm working days per year.

It is clear that the areas where large amounts of agricultural land are under a prevalently part-time regime, are strongly urbanized or on the way to becoming metropolitan areas.

Family pluriactivity is connected to mainly marginal rural activity, both from the employment point of view and farm size, in fact the latter contributes less to the making up of the family income. The ties of family members in non-agricultural employment with the farm, other than the obvious domestic ties, must be based on logistical or family interests such as land inheritance, rather than on the use of spare-time working or the investment of non-agricultural incomes in the agricultural activity.

Nevertheless, considering the agricultural system and land mobility, farms run part-time, but fitted into a pluriactivity framework can have a greater vitality than expected.

Finally, the urban system influences social-demographical aspects as well as economic-productive ones, with a strong transition from traditional rural lifestyles to mainly urban ones.

New residential needs are arising, among which the importance of "staying in the country" stands out as a positive way of life.

3.1.2 Rural landscape transformation.

The factors influencing rural landscape can be divided into external and indigenous ones.

Of the external ones, the most obvious is urbanisation, meaning the development of new residential, industrial, small business and public service areas. In general, urbanisation does not take into account the inadequacy of urban indexes as an instrument for the rational use of space.

A second factor, maybe less evident, deals with planning forecasts which, if excessive in respect to needs, can lead to situations of non investment of agricultural land capital, poor cultivation or abandonment of the soil, as it creates expectations of the placing of agricultural land on the market for building land.

A third factor deals with the construction of railways, roads and related infrastructures. In all such cases the rural zones involved are saddled with problems which limit cultivation and cause a decrease in land value. These infrastructures also often cause a huge impact on the environment, and in such

cases the impact is not only represented by the land withdrawn from agricultural production but also by the break-up of the pre-existing organisation of agricultural land.

These are the external elements transforming the agricultural landscape from a continuous agricultural area with occasional urban interruptions, into a vast metropolis where agriculture assumes marginal characteristics.

Regarding indigenous transformation of agricultural landscape, an important factor until some years ago was the use of crop rotations which were strongly dependent on irrigation and land reclamation. In areas rich in surface water and springs, water meadows and permanent meadows were common. Today instead, water meadows are vanishing, leaving only the permanent meadows and cereal monoculture.

A lower availability of water is linked to the increasing of the irrigation network and the presence of tree plantations in the countryside in relation to the number and size of irrigation channels.

The rural landscape has been strongly influenced by these infrastructures, in particular the longer is the rotation cycle, the less the colours change. Considering that the length of rotation was linked to field size, travelling, for example, from the Milan plain to the Bergamo plain the agricultural landscape changed from a simpler colour composition to a more complicated one, and from larger fields to smaller ones.

The landscape is also highly affected by the presence of tree plantations and analysis of data from the land register shows that the disappearance of mulberry trees and vines are related to economical and technological factors dating back to half a century ago, whereas the huge reduction in trees is of a more recent date.

A final basic element is mechanisation, which has contributed to redesigning the shape and dimension of cultivated land and the road and irrigation networks, which have consequently been widened.

Long-term analyses have thrown light on transformations of activity and landscape which have occurred relatively recently, contemporarily to the huge urban transformation caused by the development of metropolitan areas.

3.1.3 The land market.

It is retained that the major phenomena characterising urban and rural systems pass through the land market, the place of exchange and valorization of the land, which is decisive for the development and the fate of the two systems.

The large number of land sales during the '70's which can be ascribed to non farmers and, especially at the end of the '80's, is a clear indication of an active presence of non-agricultural interests on the land market. Generally the exchanges on the land market seemed to reach maximum expansion towards the end of the '70's, following a general trend in the developed nations (Raup, 1986). After this there was a massive decrease until an inverse trend towards the recovery of the land market after the middle of the '80's.

The agricultural land market crisis of the '80's was caused by an imbalance of agricultural markets due to a policy of support and defence of the markets of developing countries when international demand dropped. This situation strongly limited the possibilities of large-scale land purchasing by farmers, who wished mostly to enlarge their farms by buying small pieces of land deriving from the break-up of family property, the retirement of elderly farmers and the sale of scattered farm fragments.

This therefore meant that purchases for setting-up new farms would not allow professional full-time agricultural activity. Even in the case of enlarging farms that were already cultivated, they were not able to achieve full-time professional activity, assuming 5 ha as the minimum farm size to allow this (Maggioli, 1991). The resulting rural structure was consequently fragile, vulnerable to rapid change and not very resistant to transformation to other utilisations.

The types of sellers were mainly non farmers, both individuals and societies or organisations, especially in the more urbanized areas, and in the case of individuals it was found that they were sales between relatives, i.e. portions of inheritance.

Generally decisions of economic experts, capable of determining land supply and demand, seem to be influenced by achievable incomes, coming not only from agriculture but also from alternative land management.

In any case, these fringe areas, made up of marginal agricultural lots and fragmented farm land, constitute a large supply reservoir for the land market, especially for non-agricultural purposes, in fact such sales are often more frequent in the more fragile areas, with a stronger demand for non-agricultural development.

This trend is also confirmed by the clearly higher prices of sold lots, for example in the area north of Milan, characterized by fragmentary and residual agriculture but with further residential expansion, than in the south of Milan, with a strong agricultural base, productivity and income, but still relatively unaffected by the growth of the nearby metropolis.

Another area near Milan, in the Magentina with recent metropolitan expansion, the prices of agricultural land have risen by 50-80% compared to normal quotations.

Specific analysis on land sales have revealed that the volume of sales with a non-agricultural destination have decreased less than those for agricultural purposes. The trend of the medium-sized surfaces sold for agricultural use has been to converge towards the average-small surface areas bought for non agricultural purposes.

At the same time the lots defined as urban fringe have increased. They are made up of cultivated land belonging to no specific farm, of abandoned land and other areas, all included in the class "other green areas".

5. Conclusions.

Unlike the old vision of traditional agriculture as being static and having only a productive function, it is necessary today to recognize the agricultural system as having a multifunctional role.

Modern agriculture has a specific "self-defence capability" due to structural and management factors such as farm size, income level, European Union subsidies and ability to function, that have allowed it to develop important production units even in areas already compromised by urban development, in particular in the so-called metropolitan areas.

We must therefore abandon the image of agriculture as victim of the "predatory invasion" of the urban system.

Recourse to mixed economic-productive forms seems to represent for the rural system a possible solution for many of the problems, especially in the areas where the conflict between the rural and urban system is strong. It is necessary to pay attention to the fact that reaching a balance is not always easy, because it often happens that a second employment could become the most important by confining agriculture to the sole role of manager of the land.

The part-time and pluriactivity phenomena fit well into the areas characterized by widespread development, giving economic-productive order to otherwise marginal zones, given the high level of fragmentation of farm land.

In this context agriculture can be seen as a part of a wider vision, where service production and environmental defence for the benefit of the entire population, becomes more and more important.

These other roles of the agricultural system respond to the ever-pressing demand for improved environmental quality and wider availability of green spaces for the public.

The two-fold function of the agricultural system today would be much appreciated in metropolitan areas where the conflict between the rural and urban system exists, allowing a move from the stage of "plundering" to one of interaction and "symbiosis".

Given such a situation, three contexts for meditation and rule-making intervention could be suggested, of which the first analyses the attempt to address the market in a coherent direction with social welfare through a system of taxation and incentives, in order to limit administrative and binding actions.

Secondly, efficient land use forms should be identified in areas of the urban fringe, considering both the costs of infrastructures and the private advantages in terms of land values, as well as the common advantages for population welfare.

Finally there is the problem of the impartiality and indifference of the different owners towards land planning: this is the problem arising from compensation differences in values of areas situated in similar zones but bound by restrictions, for example green belts.

These spheres for reflection today allow room for proposals and discussion given the enormous number of as yet unsolved problems.

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