UDC 911.3:63:62 (439) = 20

Tamás Baukó *

# LAND USE PROBLEMS OF SETTLEMENT FRINGE ZONES IN AGRARIAN REGIONS

In the course of social-economic development land use shows constant changes reflecting the space changes of basic activities (settlement, industry, agriculture, infrastructure and recreation) and the relationship between them.

Even so, studies concerning land use often concentrate on agricultural land use, or, more rarely, they differentiate between the types of urban land use necessary to town planning. More comprehensive land use analyses are blocked by several factors. Among them are the intricacy of the problem and the fact that the data available are inadequate, territorially extremely heterogeneous and only true of different territorial units. Moreover, interest is scarce.

However, need for rational land use, especially when it comes to the intensive utilization of the environment, calls for studies aiming at exploring relationship and the changes within it. But the rapid deterioration in the quality of the environment, it seems, defines the conflict zones where both the qualitative (environmental) and the quantitative (territorial) problems of economy are numerous. Settlement fringe zones are territories like this. To study these zones is the most important task at present. Changes in land use (both in space and time) are more frequent here and it is also a "bump lane" of environmental effects coming from different direction, where it is mostly settlement-industrial effects that "win".

*Dipl.kartograf, raziskovalec, Centre for Regional Research, Alföld Group, HAS, Békéscsaba, Madžarska

The problem is especially conspicuous when we look at settlements developing extensively in an agrarian region. Settlements like this are numerous on the Hungarian Great Plain.

In six Great Plain counties (Bács-Kiskun, Békés, Csongrád, Hajdú-Bihar, Szabolcs-Szatmár, Szolnok) amounting to 39 per cent of the territory of the country can be found 44 per cent (2 872 thousand hectares in 1985) of the territory agriculturally cultivated. They provide half of the total agricultural produce.

Since 1950 (when the socialist industrialization started) the productive land of the country has been decreasing at a pace that exceeds the earlier one. Thus, it has fallen back from 92,2 per cent measured in 1950 to 88,7 per cent in 1985. Decrease in agrarian land is even more rapid (from 79,3 to 70,3 per cent). It has been sped up by the increasing afforestation. Tendencies on the Great Plain have been a little more favourable. Though the decrease of agricultural regions was near national value, the decrease of productive lands was, because of even more widespread afforestation, smaller in proportion. Parallelly, the proportion of non-productive lands on the Great Plain has increased more slowly, that is from an essentially equal level through the country in 1950 to 10.0 per cent in the region, while the proportion in the country has reached 11.3 per cent (Table 1).

All these bits of information may be useful from the point of view of monitoring regional and national tendencies they are hardly enough from the point of view of the concrete planning of sensible land use and that of the improvement of environmental economy because they consist of data aggregated on extremely large areas.

As detailed territorial data are lacking we have to approach the problem from the side of activity forms and potential data sources.

In spite of the Land Protection Act becoming more and more severe since 1961 Land Offices has only been asked for permission since 1980 as to functional changes of lands exempted from agricultural use. In line with this the exemption of more than 81.000 hectares

has been authorized in the country in five years after 1980, in many cases the exemption has not taken place, though. 63,8 per cent is used for afforestation and 16,0 per cent for raising water management. From the point of view of the environmental protection, however, it is other antropogenic changes of agricultural regions that are the most important. 10.0 per cent of authorized changes of functions was aimed at "other" new use (mostly for settlement development), 6,7 per cent at industry and mining and 3,5 per cent at the spreading of road and railroad network.

**Table 1: The Rate of Major Land Use Categories in Hungary and on the Great Plain (6 Counties)**

| | 1950 | 1960 | 1965 | 1970 | 1975 | 1980 | 1985 |
|---|---|---|---|---|---|---|---|
| **Productive Land** | | | | | | | |
| Hungary | 92,2 | 91,5 | 90,6 | 90,3 | 90,0 | 89,2 | 88,7 |
| Great Plain | 92,1 | 91,8 | 91,1 | 90,8 | 90,6 | 90,2 | 90,0 |
| **Agricultural Area** | | | | | | | |
| Hungary | 79,3 | 76,8 | 74,7 | 73,9 | 72,8 | 71,2 | 70,3 |
| Great Plain | 87,8 | 85,0 | 83,3 | 81,9 | 80,9 | 79,7 | 78,9 |
| **Forest** | | | | | | | |
| Hungary | 12,5 | 14,0 | 15,3 | 15,8 | 16,6 | 17,3 | 17,7 |
| Great Plain | 5,9 | 6,3 | 7,0 | 8,1 | 8,9 | 9,6 | 10,2 |
| **Land exempted from Cultivation** | | | | | | | |
| Hungary | 7,8 | 8,5 | 9,4 | 9,7 | 10,0 | 10,8 | 11,3 |
| Great Plain | 7,9 | 8,2 | 8,9 | 9,2 | 9,4 | 9,8 | 10,0 |

The latter conversions have taken place mainly in settlements and their fringe zones. Deducing from the earlier tendencies of industry and settlement development we can say that changes might have occured in the same way in times when there was no statistical registration of conversions. To illustrate these we are presenting

some examples from the Great Plain, where conflict zones may mean, because of the characteristics of agricultural environs and specific urbanization, a more important problem. We have used cartographic and remote sensing (aerial photography) methods.

**The stimulus of the second phase of urbanization in Hungary was socialist industrialization, which started later, in early 1960's, on** the Great Plain. This fact implied some elements of planning: the decentralization of industry, parallel with the intensive development of Szeged and Debrecen, was aimed at the extensive industrial development of some central settlement on prepared industrial territories in them. This had its economic advantages, but, at the same time, the concentration of industry on relatively small areas increased the number of potential and actual conflicts.

In the case of Szolnok (80 000 inhabitants, 1985) plans directed industrial activities towards the southern "industrial park" of the town, although the industrial ring is being developed in the north and west fringes too. Nearly half of the southern industrial zone had been built up by the 1980's and the area of prepared industrial estates had approached the size of the built-up area of the town in the early 70's (Fig.1).

In **Mátészalka** (19 000 inhabitants, 1985; Szabolcs-Szatmár County) industry has just been planted on areas already having infrastructure in the western fringe of the settlement. The built-up rate of the industrial zone (about 200 hectares) was more than 50 per cent in the 1980's (Fig. 2).

In **Békéscsaba** (70 000 inhabitants in 1985), beside of the old southern area, in the western fringe an area where mainly services will be available is developing, whereas in the north a new industrial park is coming into being with industrial units newly planted or taken out from residential areas (Fig. 3).

Using cartographic and aerial photography information we can deal with land use changes similar to the ones mentioned above in a more detailed way. We present an example through following the development of the northern fringe of the town of **Békéscsaba**, where the Northern Industrial Estate is developing.

The area studied is nearly 380 hectares. It was defined by the area covered by aerial photographs taken in 1985. Within this area the industrial estate in the same year occupied 209,7 hectares. Land use and land cover schemes (Fig. 4) as a result of the interpretation of aerial photographs from different years between 1950 and 1985 partition the main forms of functions. The utilization of areas of agricultural nature is treated in a rather detailed way with an eye to the fact that the spreading of an industrial estate is always to the disadvantage of agricltural areas and that during spreading the nature of cultivation on agrarian lands surrounded by industrial objects will also change (detached farmhouses, gardens, orchards, small parcels, large fields). From this point of view, it is very remarkable, parallel with the gradual dying out of detached farmsteads, how "closed" areas become unfil for cultivation by large fields and how they turn into lands with small parcels.

Interpretation schemes can be the source of cartographic and statistical information as to how the industrial estate develops in time, how residential areas grow, what types of land use changes can be differentiated, what main future conversions can be foreseen.

We can apply similar methods when studying other land use changes accompanying urbanization.

Gerla has been administered by Békéscsaba since 1984. This village is one of the few rural settlements in Békés County the population of which has not decreased for the past decades: the number of inhabitants in 1983 was the same as in 1960 (1420 people). Meanwhile, the number of dwellings together with the built-up area of the village have increased considerably, which, besides, refers to a remarkable improvement in social conditions (Fig. 5).

There is an outcome of the raising urbanization, which is not yet common on the Great Plain nevertheless typical, namely that recreational settlements are brought about. Szanazug, which is situated at the confluence of Rivers Fekete and Fehér Krs, meets the week-end and partly long-term recreational needs of people living

mostly in Békéscsaba (20 km). There can be found both private second houses and company week-end recreation camps. Resort planning has been developing rapidly here since the middle of the 70's. The area built up with rest-houses and week-end cottages was 19 hectares in 1980 whereas in 1985 it was almost 30 hectares (Fig. 6). Private and company resort buildings altogether provide 350 beds.

What we have discussed so far represents an important part of the problems concerning the present urbanization of the settlements, namely, the land use and environmental conflicts in the fringe zones of settlements and agrarian territories. We have referred to some difficulties and the widespread use of the aerial photography method, by means of which we can carry out further effective retrospective analyses and monitoring in the fields of resources research and environmental economy.

## Bibliography

1. Baukó, T. 1987: Légifényképek alkalmazásának egy lehetősége iparikörnyezet - vizsgálatokban mezőgazdasági régióban. (A possible contribution of aerial photos to industrial environment research in agricultural areas). Proceedings of 2nd Alföld Conference, 1986. MTA RKK, Békéscsaba, pp. 227-240.
2. Berényi, I. 1980: A területhasznosítás átalakulásának főbb irányai az Alföldön. (Main directions of transformation of land use on the Great Hungarian Plain). Alföldi Tanulmányok, vol. IV. Békéscsaba, pp. 63-84.
3. Bowden, L.W. (ed.) 1975: Urban Environments: Inventory and Analysis. In: Janza, F.J. (ed.): Manual of Remote Sensing. A.S.P. Falls Church, Virginia, pp. 1815-1880.
4. Coleman, A.1976: Is planning really necessary? Geographical Journal 142 (3), pp. 411-437.
5. Dingsdale, A. 1986: Ideology and leisure under Socialism: the geography of second homes in Hungary. Leisure Studies 5, pp. 35-55.

6. Dingsdale, A., Simon, I. 1986: Industrial Estates in the East Midlands (United Kingdom) and in the Great Hungarian Plain. Manuscript. Békéscsaba-Nottingham-Krakow, p. 15.
7. Pal, A., Zsigó, L. 1981: Az elkőszített ipartelepítés példái az Alföldön. (Examples for prepared locations of industry in the Great Plain). Alföldi Tanulmányok, vol.V. Békéscsaba, pp. 113-130.
8. Rhind, D., Hudson, R. 1980: Land Use. Methuen, London and New York.
9. Schönfelder, G. 1984: A területhasznosítás változásainak elemzése és ábrázolása a vegyes területeken. (Land use changes analysis and cartographic presentation for mixed areas.) Környezetvédelmi Tanulmányok, vol. 4. Pécs, pp. 99-110.
10. Smith, D.M. 1971: Industrial Location. An Economic Geographical Analysis. John Wiley and Sons, Inc.
11. Central Statistical Bureau, 1986: A környezet állapota és védelme. (State and Protection of the Environment.) Budapest.

Fig. 1. The building-up of the southern industrial area of Szolnok

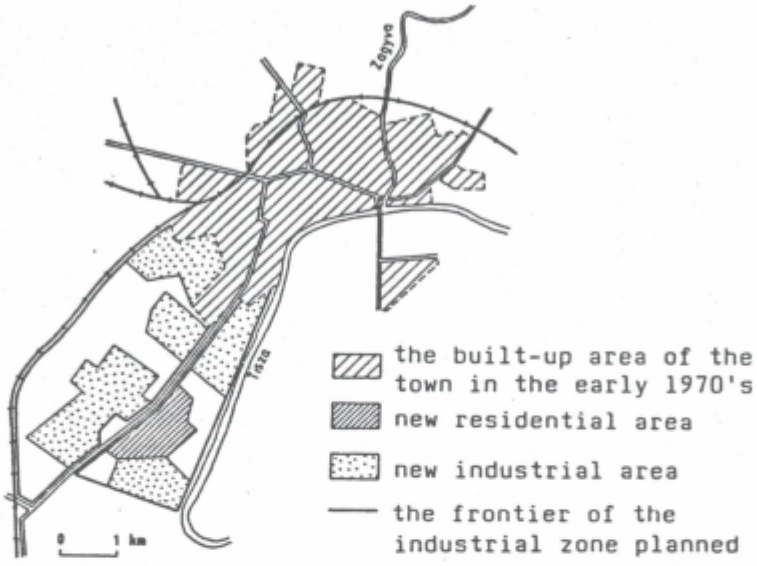
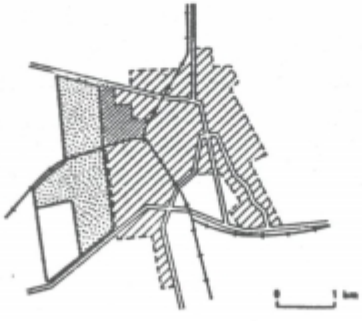



Fig. 2. The building-up of the industrial area of Mátészalka




For legend see Fig. 1.

Fig. 3. Industrial zones in Békéscsaba in the early 1980's

Fig. 4. Changes in land use in the north of Békéscsaba between 1950 and 1985 on the basis of aerial photography interpretation

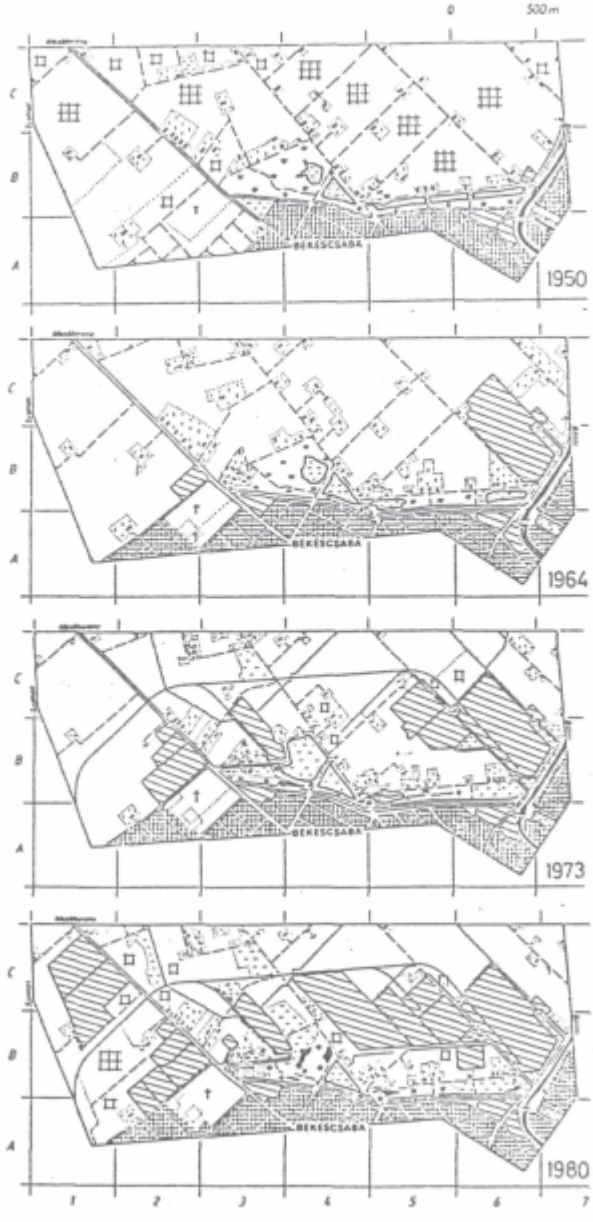
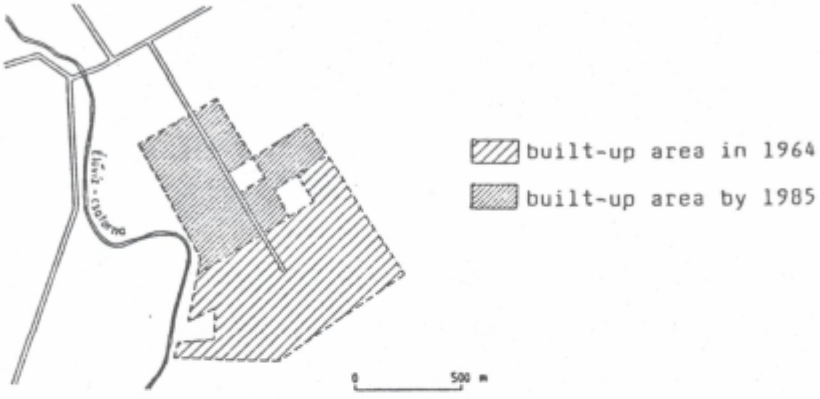


Fig. 5. Increase in the built-up area of Gerla on the basis of aerial photography interpretation




area of industrial units and services

residential area

railway

paved road, street

unpaved road

levee

sports ground

cemetery

watersurface

sewage

moor

other unused area

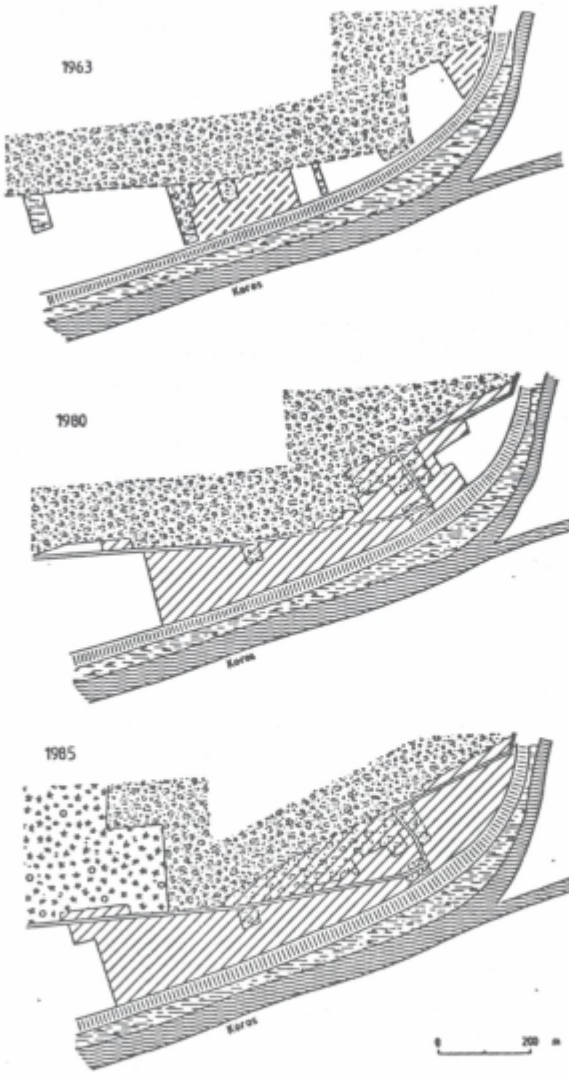
garden, orchard,
scattered farmstead

small parcel agricultural area

large agricultural fields

forest

Fig. 6. The development of Szanazug recreation settlement on the basis of aerial photography interpretation



Baukó T.

# PROBLEMATIKA NASELITVE IN IZRABE TAL V ROBNIH KMETIJSKIH PREDELIH

## Povzetek

Dosedanja razprava predstavlja pomemben del problemov v zvezi s sedanjo urbanizacijo naselij, namreč izrabe zemlje in konflikte okolja v obrobnih naseljih in agrarnih področjih. Opozorili smo na nekatere težave in na široko uporabo metode fotografiranja iz zraka, s pomočjo katere lahko izpeljemo nadaljne učinkovite retrospektivne analize in nadzorovanje na področjih raziskovanja naravnih virov in ureditve okolja.