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CHANGES IN THE SPATIAL AND FUNCTIONAL
STRUCTURE OF SELECTED TOWNS IN NORTH-EASTERN
POLAND

The towns under this study are situated in the north-eastern part of Poland in the Suwałki Province. As a province Suwałki stands out for quite a specific demographic situation. It has the lowest density of population in the country and an equally low level of urbanization. The largest urban agglomerations are the town of Suwałki with its 40 thousand inhabitants (according to the 1980 figures) and Augustów with the population of 24 thousand. These towns differ in their character, which finds its reflection in the relevant spatial structure.

In studying transformations in the spatial structure of towns extremely helpful appear to be air photographs as a highly reproducible, reliable and unbiased material. As regards Suwałki and Augustów, the air photographs taken were panchromatic, scaled as 1 to 10 000, and followed in two time intervals. They were then used as a basis for drawing up inventory maps. In these maps one could identify: high dwelling buildings, low dwelling buildings, industrial and commercial premises, industrial areas, municipal transport services, municipal greens, woods, waters, arable land, meadows, special-purpose areas and an uninvested land. Data from the inventory maps have been integrated and presented in the form of chorochromatic geometrical maps. Basic grid cells in these maps are rectangular in their shape and represent an area of 0.5 ha. The size of each lot has been chosen after an analysis of the 1, 0.5 and 0.25 ha area grid cells. Each lot represents coverage dominating in the area. Against the background of this material maps representing changes in the areas of investment in Suwałki and Augustów in the 1970—1980 decade have been made. Calculation made on the basis of these maps has made it possible to carry out a quantitative analysis of changes in the spatial and functional analysis of both Suwałki and Augustów.

The map presented (Fig. 1) shows that changes in the spatial and functional structure of the town of Suwałki from 1969 to 1981 embraced its whole area within the municipal administrative limits. In the

centre they mainly apply to the dwelling building stock and the further we go from the centre such changes tend to be found also in the industrial and municipal transport grounds and in the green land. The location of new investments, new buildings in particular, is influenced by a number of factors that tend to slow down spatial development of the town as a whole. In the west this development is blocked by land reserved for new railway capital projects, by highways, and aggregate mining grounds. In the north the town is surrounded by woodland being a kind of protective zone for the future metallurgical project. In the south further expansion of the town is hampered by woods, and in the east there is Lake Krzywe and the Czarna Hańcza River that stand in the way. (For transformations in the land use in Suwałki from 1969 to 1981, see Fig. 1 and Table 1). These figures show that the

Table 1
Land Usage Transformation at Suwałki between 1969 and 1981
(in hectares)

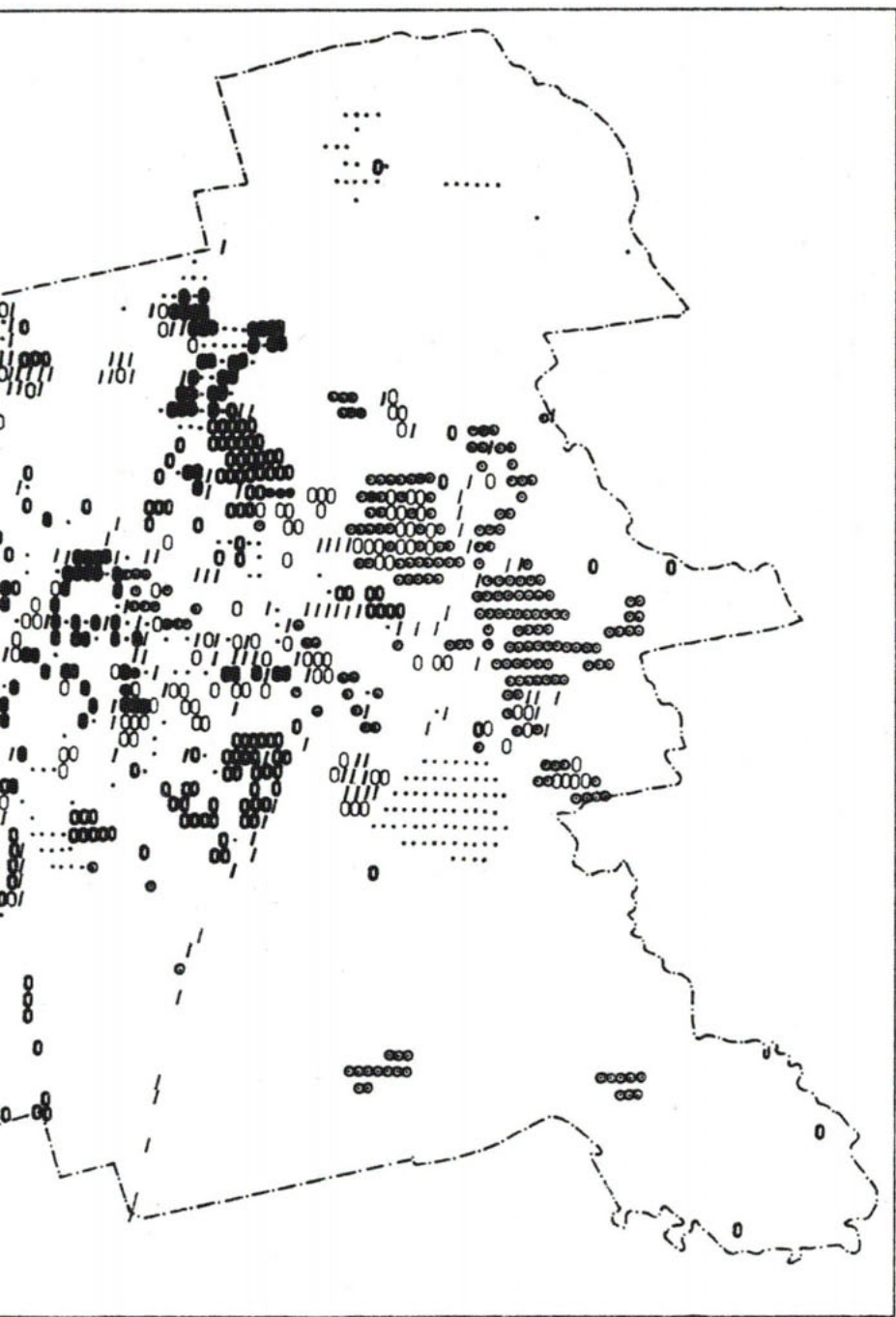
IT.		1969												TOTAL
		A	B	C	D	E	F	G	H	I	J	K	L	
1	A	—	15.5	0.5	—	8.5	2.0	19.0	—	—	—	—	—	45.5
2	B	0.5	—	0.5	—	6.5	6.0	82.5	3.5	0.5	—	—	6.0	106.0
3	C	0.5	12.0	—	5.0	7.5	4.0	31.0	3.0	—	—	—	0.5	63.5
4	D	—	4.0	1.0	—	5.5	0.5	136.0	11.5	—	—	5.5	—	164.0
5	E	2.0	10.5	3.0	9.0	—	2.5	52.0	5.5	—	—	1.5	1.5	87.5
6	F	—	22.0	0.5	0.5	8.5	—	104.0	13.5	—	—	0.5	0.5	150.0
TOTAL		3.0	64.0	5.5	14.5	36.5	15.0	424.5	37.0	0.5	—	7.5	8.5	616.5

Notes: Data read horizontally denote hectares of other useful land [A, B, C... 1969] that has changed its application, as e.g. A in 1981; data read vertically, on the other hand, say for A 1981, denote hectares taken over for cropland: A, B, C... 1981. A - High apartment buildings, B - Detached houses - low buildings, C - Industrial and commercial premises, D - Industrial grounds, E - Transport services grounds, F - Municipal greens, G - Arable land, H - Meadows and pastures, I - Woodland, J - Water. K - Uninvested grounds, L - Special-purpose grounds.

greatest increase in area is found to be in the industrial grounds. Unfortunately, their area was increasing chiefly at the expense of the arable land whose acreage went down by more than 13%. The same applies to the municipal greens which expanded in their area. Allotment gardens and plantations have been worked out of cropland and meadows. New blocks of houses have been erected in the centre of the town and outside it on the grounds that were once a farming land. New dwelling houses in their bulk represent low single-family buildings which in 78% of their stock were erected on the arable land. Population of the town of Suwałki rose in the time under study by ten thousand. With that level of migration, newcomers must have been secured and

SUWAŁKI





provided with a number of dwellings. This task was fulfilled by the multi-storeyed constructions.

Buildings, both industrial and commercial, came into the scene on the former cropland, and in the centre of the town they took the place of the old dwelling houses.

The least changes in terms of acreage within urban confines have been those of the woodland area. Its location, far away from the centre of the town, rather on its peripheries, contributes to recreational functions performed by woods.

Within the town itself there came into effect several water reservoirs in which use was made of the former gravel quarries. Sports and recreation centres were brought into being near some of these water pools. Unutilized grounds of the older-time, gravel quarries and sand pits have been qualified as waste land.

The analysis carried out has confirmed dynamic growth of the town of Suwałki in the seventies. Changes as a result of capital projects comprised seventeen per cent of the total urban area. This development was chiefly linked with the seat of the Province's authorities established in Suwałki after an administration reform implemented in 1975.

A similar analysis has been carried out to assess transformations that had followed in the spatial and functional structure of Augustów. Our attention focused on an even distribution of investments throughout the whole area of the town. In the town's centre they referred to detached houses, apartment buildings as well as industrial and commercial premises. A certain amount of evolution is observed to have followed in the municipal-transport-services grounds and in the town's greens. In the industrial area new buildings came into the scene, where accompanying facilities had once stood as a part of the industrial works. The industrial sector has got new grounds, east of the industrial quarters called Lipowiec. Thirty-nine per cent of the entire area situated within administrative confines of the Augustów's urban agglomerations consists of woodland. This creates a sound basis for tourism, recreation and sanatoria to hospitalize the sick. The latter activity has been developed against the presence of the locally found mineral water resources and therapeutic mud. The industrial development may follow potentially in the southern part of the town, housing projects having more chance in its western quarters.

Figure 2 and Table 2 show that the greatest changes have occurred in the low building stock. These low buildings have chiefly been entering parts of the arable land and town's greens. A great deal of new houses came into effect in the woods and on meadows. The urban green

Table 2

Land Usage Transformations at Augustów between 1970 and 1979

IT.		1970												TOTAL
		A	B	C	D	E	F	G	H	I	J	K	L	
1	A	—	2.5	0.5	2.0	0.5	4.0	2.0	1.0	—	—	—	—	12.5
2	B	5.0	—	—	—	—	38.5	38.5	9.0	11.0	1.0	—	—	103.0
3	C	1.5	3.5	—	16.5	1.0	5.5	4.5	2.5	6.5	—	—	—	41.5
4	D	—	0.5	2.5	—	3.5	—	3.0	9.0	23.0	0.5	3.0	—	45.5
5	E	2.0	6.0	2.5	1.5	—	4.0	4.5	2.5	13.0	1.0	0.5	—	37.5
6	F	1.0	13.5	0.5	1.0	3.0	—	33.0	29.5	10.0	2.5	—	—	94.0
TOTAL		9.5	26.0	6.0	21.0	8.0	52.0	85.5	54.0	63.5	5.0	3.5	—	334.0

For legend see Table 1

land rose in its acreage as tended to expand through the existing cropland and the meadows. There were parts of woodland and river bank brushwood which after having been cleared and ordered up changed into a kind of woodland park. An increase in the acreage of the town's greens has also been linked with the establishment of a number of recreational centres. In the centre of the town, greens made room for the newly erected apartment buildings and accompanying facilities. Industrial plants while expanding did this at the expense of woodland and meadows. Industrial and commercial projects came to fruition chiefly in the previously industrial grounds. Transport services that accompanied industrial building activities progressed at the expense of the woodland area.

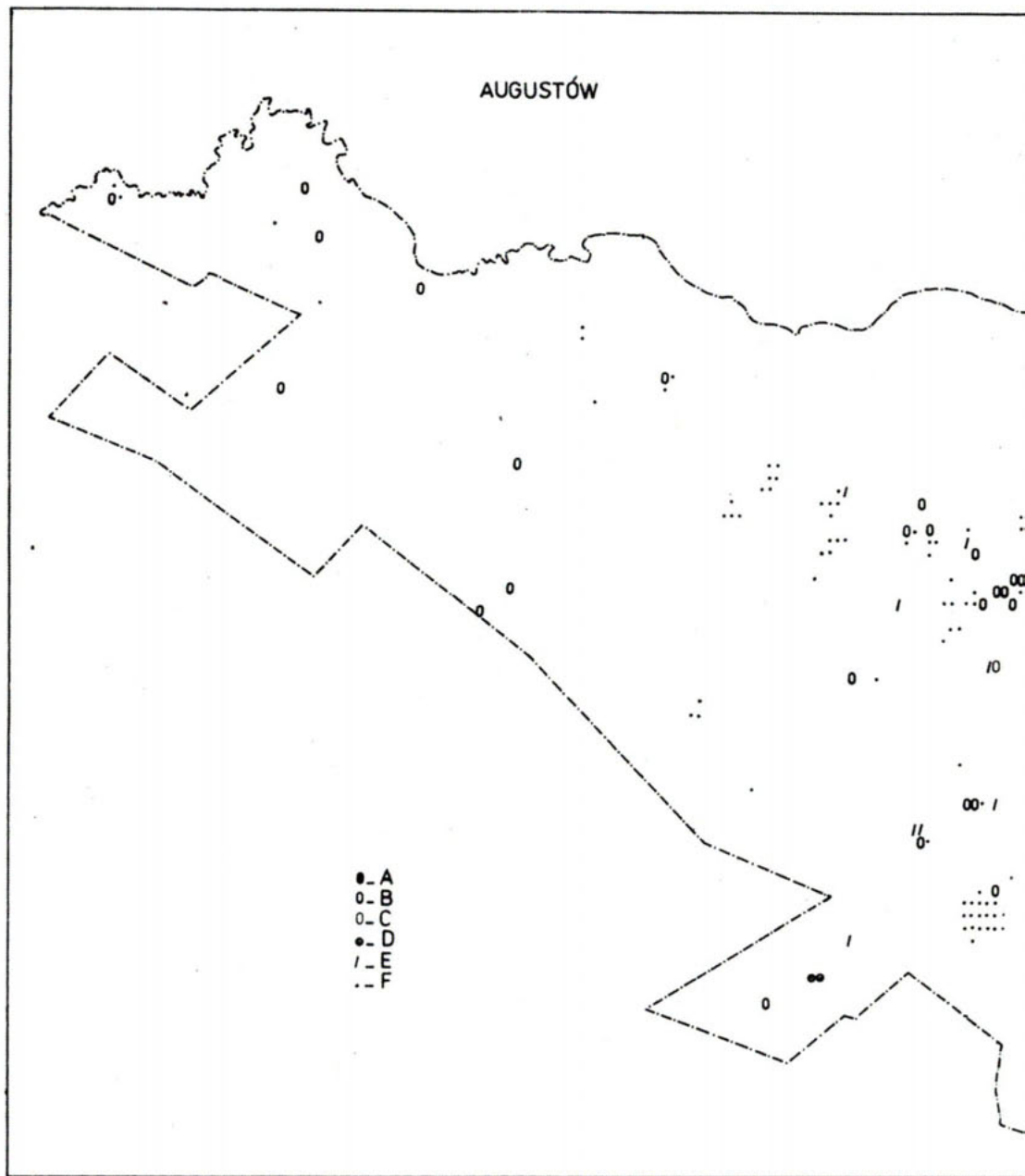
Table 3

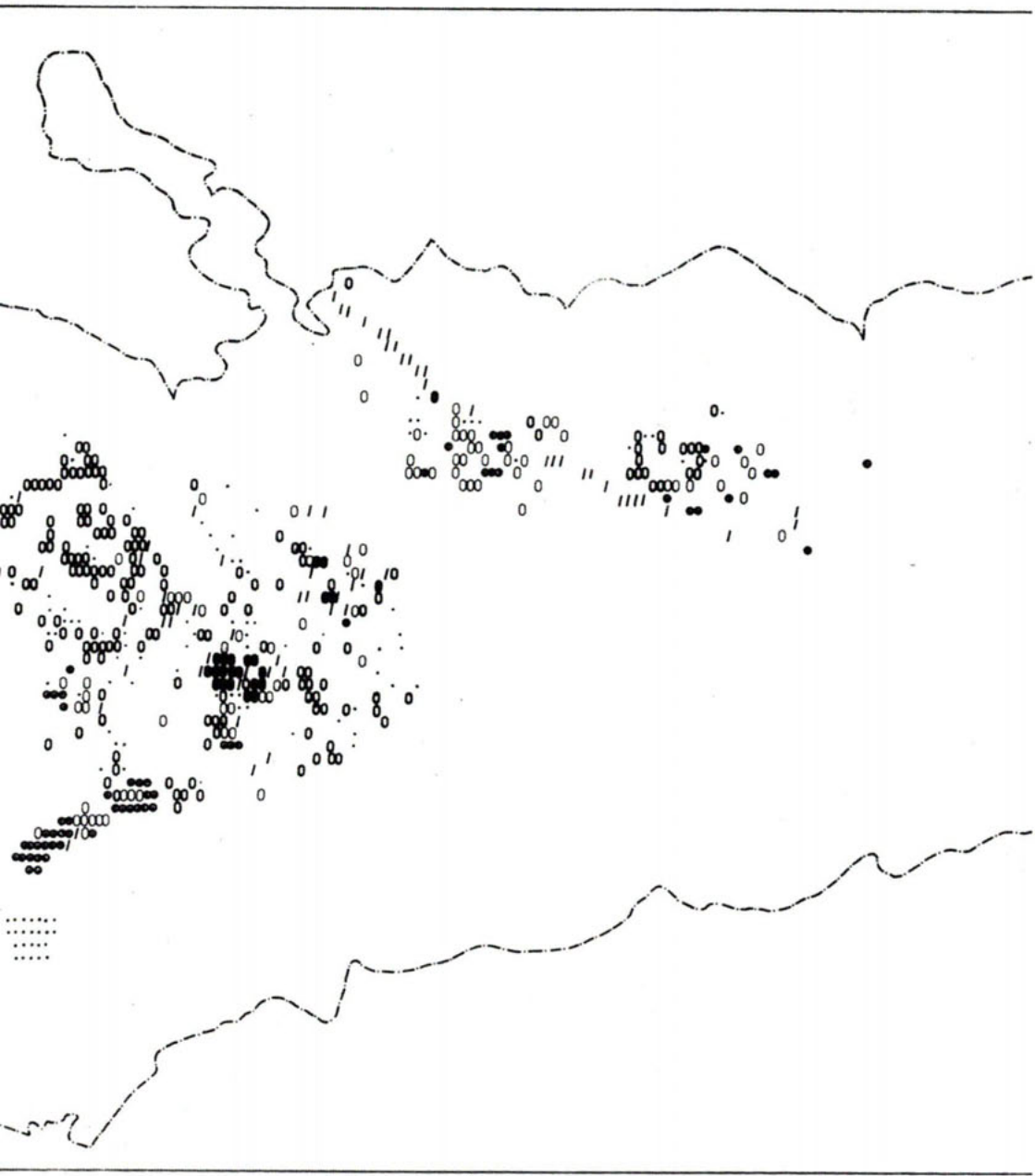
Comparison of Land Usage Transformations at Augustów and Suwałki

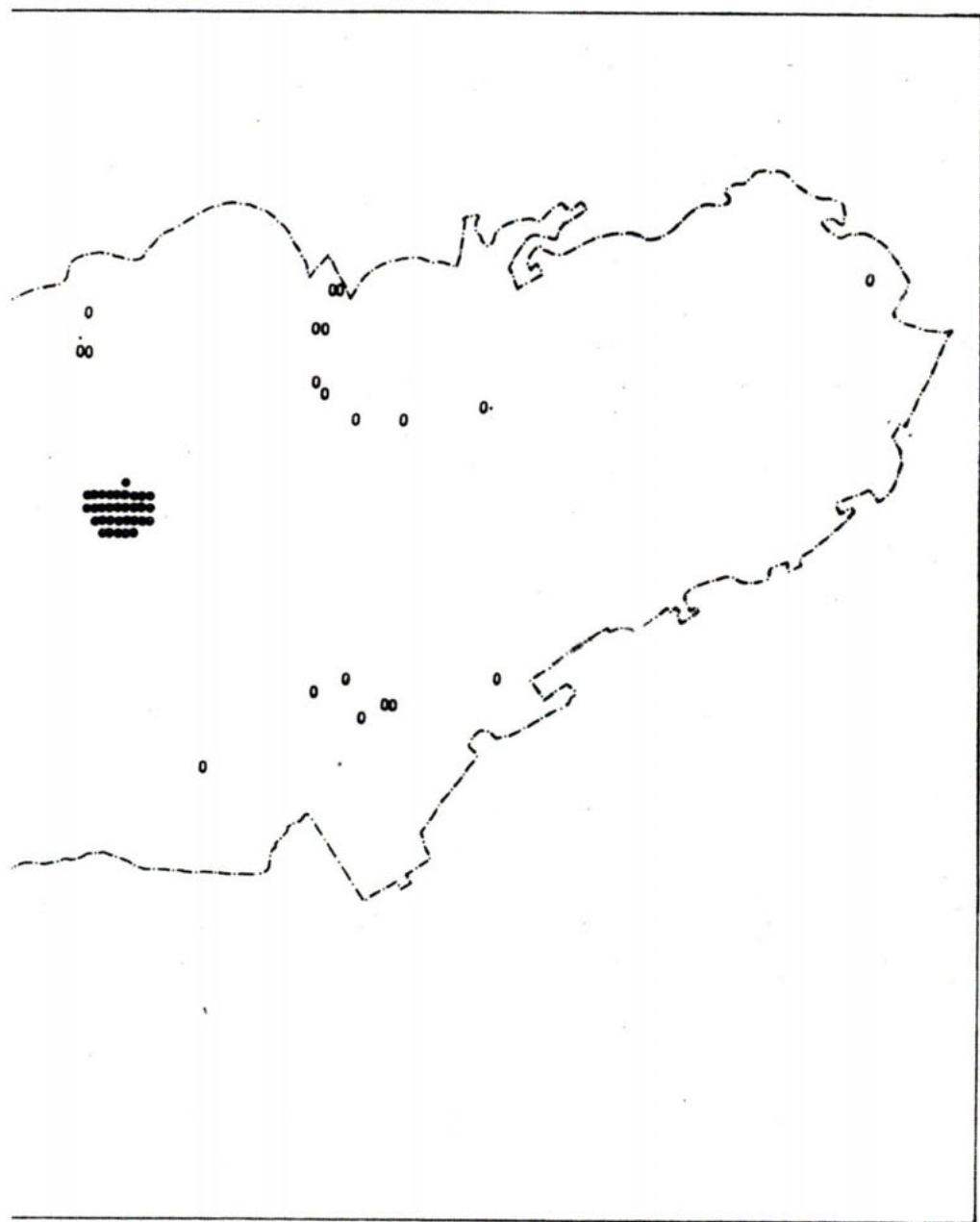
	Suwałki	Augustów
1. Detached houses — low building	0.4%	0.8%
2. High apartment buildings	1.2	-0.4
3. Industrial and commercial premises	1.5	0.2
4. Industrial grounds	3.4	0.2
5. Transport services grounds	0.9	0.2
6. Municipal greens	3.1	0.2
7. Special-purpose grounds	-0.7	0.1
8. Meadows	1.8	-6.3
9. Woodland	0.8	0.3
10. Water reservoirs	0.4	-0.1
11. Arable land	-13.1	4.2
12. Uninvested grounds	0.3	—

AUGUSTÓW

- - A
- - B
- - C
- - D
- / - E
- F







On the whole, spatial transformations embraced four per cent of the total urban area. In their character, they are linked with the recreational and health-resort's functions Augustów is performing as a town, too. The difference in the functions performed by the two towns made it that they came to vary also in the character of changes they were undergoing in their spatial structure (see Table 3).

It also results therefrom that the location of the capital of Province in Suwałki accelerated the growth of the town which started to develop since then much more vigorously. If we compare areas liable to reconstruction in both towns, we can easily notice that the process of restructuring tended to concentrate in the central parts of the newly-established administrative territorial units.

Mapping of the spatially-oriented functional structures and calculations were possible thanks to the application of air photography. They produced not only spatial but also reliable image of the town in two time-profiles. With their help it was possible to carry out detailed interpretation of the area and to avoid tedious and time-consuming ground surveying operations.

