

LAND USE, PLANNING AND G.I.S.

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Abstract.

This work presents the methodology and the results obtained in the elaboration from an automated thematic cartography, through a program from G.I.S., on changes in the land use, on the period 1950-1990, in the rural-urban fringe of Granada. Departing, for this, of the information contained in the cadastral source.

1. Introduction.

One of the topics most discussed and analyzed in the geographical discipline, in the last years, comes being the impact of the central cities in its area surrounding; what is known as the rururban space. Thus the next municipalities to the great city have been seen dragged by a dynamic growth fort that it has gone transforming its own kernels nature eminently rural.

The consequences that they have been originated have been many; one of them, of great transcendancy in the spatial configuration, it has been the changes in the land uses. These changes have had, mainly, a double address; on the one hand, the lost rise of agricultural land through its retraining in urban land and, additionally, the changes experimented in the own cultivation system, in order to go adapting the agrarian economy to the new needs of the market.

This territorial dynamics, with their implications of very different nature: landscape, economic, social, functional, and so on, it is, by so much, the one which justifies the special attention paid to the topic.

Among the objectives that they have been labeled such studies, together to the own analysis of the changes, the elaboration of a cartography that express them has been one of the aspects that more attention has occupied. And this, thanks to the new technical of treatment of the information and available sources.

The analysis, therefore, are come effecting to very different scales and with sources and technical also

disparate. In this sense, the development of the information obtained through satellite images is displacing other technical of analysis more traditional, as is the case of the air photo or of the documental sources. This is normal that thus happening in the analysis of spatials dynamics in those which is pursued a knowledge, it more updated possible, on what is happening in the territorial reality.

However, when what is pursued is an evaluation of happened what is among two dates, for a very concrete space, where the great scale masters on the small scale, and where in addition to the spatial dynamics of the phenomenon, import other aspects intrinsically relate with the same, as allotment of the property, accurate study of the system of cultivation, soil categories, political of ranking, and so on, the traditional sources, for this sort of analysis, continue being of great value.

This work is inserted within this last category. Our basic objective in this case, however, it has been limited to the elaboration of a thematic cartography automated on the real dynamics of land uses and its overlapping with the urban planning for a municipality of the rural-urban fringe of Granada. Specially, the increase of land urban.

The work that is presented has as principal interest points, in the first place, the elaboration of a digitized cartography of the parceling rustic, in the one which remain reflected the changes experimented among 1950s and 1990; in second place, the exit of a cartography on dynamic of unpublished uses and, finally, the integration of the cadastral information with other relative to the territorial municipal planning in a G.I.S.

2. The elaboration process: Sources and methodology.

Departing of our objective initial we estimate that the information contained in the Cadaster of Rustic of town was the most adequate for our end. It was given the circumstance, furthermore, when was outlined the work, that running out of be accomplished a new cadastral review. The cadaster of rustic of 1950s on realize through inquiry; the cadaster of 1990 through air photo.

Of this manner the work we organize it in a series of stages.

The first stage was the emptied of the information contained in the characteristics notebooks of the cadatres

of 1950s years and 1990. Afterwards, equally on make with the zoning plans of the urban planning corresponding to the considerate period, through the training of the corresponding data bases. The parcelling unity has been the minimum unity of analysis. To this purpose was used the software Dbase IV.

The fields of the structure of the file were the following:

1. Municipality.
2. Polygon identification.
3. Plot identification.
4. Identification of Subparcela.
5. Cadastral reference.
6. Place denomination.
7. Surface. m2.
8. Cultivation or utilization.
9. Proprietary identification.
10. Qualification of use in P.G.O.U. 1973.
11. Qualification of use in P.G.O.U. 1985.

The second stage consisted in the elaboration of the digitized cartography of the rustic plots, corresponding to 1950s. It was taken as source the parceling plans of the corresponding polygons forming an only flat. Due to the lack of a coordinates system for this flat sort, the unification of the sheet had to be accomplished with approximation and adjustment procedures among the limits of the polygons sheets. The digitalisation consisted in the tracing of the parceling divisions. Each plot was labeled with its cadastral reference. The subparcelas also they were had in account. The objective was to obtain a digitized cartography it more staunch possible to the base document; for power to use it in the graph expression of the territorial results. Labor of digitalisation was accomplished with the application Arcedit of Arc-Info.

The third phase was centered in the integration of the information of the parceling attributes with its corresponding unity parceling graph. For this, it has been used the software Arc-Info v. 6.1.1. mounted on a Station SUN p-40. Built the topologie in the plan, the cadastral reference field was used as the liaison field among the cartographic base and the textual.

The fourth phase has consisted on the development of the information. Graphic and statistic analysis and elaboration of cartographic thematic. The statistic analysis that empowers the program has permitted the

obtainment of the summary statistics on the changes in the principal land uses. The cartography alludes to the present situations in the final and initial moment of the period and the synthesis map that contains the changes that they have been produced especially during the same.

3. Results.

The tables I to III collect the statistic data on the changes operated in the land uses.

In the Table I can be observed the intensive demographic growth that they have achieved the nearby municipalities to the Granada city. In the majority has been bent or triplicate the population. This has been translated territorially in a lost very important of rustic land in favor of the urban land.

The table II shows the evolution, more itemized, of the occupation of the large uses in the municipal term of Maracena. Underline the reduction of the cultivation zone practically to half of the surface occupy in 1950s; in change, the urban zone passes to represent in 1990 47,9% of the surface of the municipal term.

Finally, the table III summarizes the evolution in the cultivation system. There is a net evolution toward the monoculture of cereal of irrigable, with a setback of the grove cultivation and vineyard.

The graph output includes the following maps:

- occupation map of the soil in 1950s.
- occupation map of the soil in 1990.
- map of uses classification of the soil in the urban planning.

TABLA I.- CAMBIOS EN LA OCUPACION DEL SUELO EN LA FRANJA RURURBANA DE GRANADA.

MUNICIPIOS	POBLACION EN 1950	POBLACION EN 1991	DIFERENCIA	SUELO URBANO EN 1950	SUELO URBANO EN 1990	DIFERENCIA
ALBOLOTE	4487	10015	5528	176740	5884970	5704230
ALFACAR	2367	3701	1334	94301	1230407	1136106
ARMILLA	3936	10782	6846	341500	2050261	1708761
ATARFE	6453	9869	3414	581005	2918964	2337959
HUETOR VEGA	2278	6577	4299	74200	2006523	1932323
MARACENA	4411	12844	8433	298712	2328000	2029288
OGUABES	2358	5062	2704	157792	4388487	4230695
SANTA FE	10130	11621	1491	273142	986667	713525
LA ZUBIA	4827	8741	3914	263342	5038005	4774663
TOTAL	43.199	81.203	37.963	2.262.684	26.834.274	24.571.550

Fuente: Censos de población y Catastro de rústica.

TABLA II.- EVOLUCION EN LA DISTRIBUCION DE USOS DE SUELO EN EL MUNICIPIO DE MARACENA:1950-1990.

APROVECHAMIENTOS	SUPERFICIE EN 1950			%	SUPERFICIE EN 1990			%	DIFERENCIA
	Ha	A	Ca		Ha	A	Ca		
ZONA DE CULTIVOS	426	02	23	88,03	236	90	36	48,80	-1891187
EDIFICACIONES	3	44	63	0,71	13	73	0,02		-33090
REDES DE INFRAESTRUCTURA	22	94	84	4,74	15	57	22	3,23	-73762
ZONA URBANA	31	49	85	6,52	232	80	00	47,95	+2013015
TOTALES	483	91	55	100	485	41	81	100	

Fuente: Catastro de rústica 1950 y 1990.

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TABLA III. EVOLUCION DEL SISTEMA DE CULTIVOS EN MARACENA.

CULTIVOS	1950			%	1990			%	DIFERENCIA		
	Ha.	A.	Ca		Ha.	A.	Ca		Ha.	A.	Ca
L RIEGO	389	44	76	91,0	228	10	40	96,20	161	34	36
FRUTAL RIEGO		54	69	0,12	2	22	62	0,93	-1	67	93
OLIVAR RIEGO	17	64	04	4,14	6	57	34	2,77	11	06	70
VID RIEGO	16	97	24	3,98							
VID SECANO		90	00	0,21							
TOTALES	425	50	73	100	236	90	36	100			

Fuente: Catastro de Rústica.