Experience of thematic mapping using personal computer

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1-INTRODUCTION

The work that is presented here is the result of research conducted within and by the "Observatory of territorial and planning transformation" group of the faculty of Architecture at the University of Reggio Calabria, which was formed as a consequence of a commission called Coordination of Territorial Planning (C.T.P) given to the two Calabrian University by the Regional Government.

The premises of this Work are made with the conviction that the necessary condition (even if not adequate or sufficient) for efficient planning and management of a regional territory is the knowledge of the phenomena, the different characteristics and territorial possibilities and their temporal dynamics.

In the absence of a Regional information retrieval system it seems particularly worthwhile to be able to have an instrument that could allow for the management of a data base referring to specific territorial facts and thereby allow for their use in the construction of thematic maps for the interpretation and representation of different phenomena that could be used in the C.T.P. even if not only exclusively by them.

The first step was to organize a workable system taking municipalities as a working model. The information contained in the data base thus far refers to these municipalities and is useful for demographic, socioeconomic, residential heritage and other types of investigations.

2.- DESCRIPTION OF THE SYSTEM

The design of the system that has been developed has obviously been conditioned by the hardware available.

We have worked using a microcomputer that has the following characteristics.

- Computer type	IBM PC AT with mathematical coprocessor
- RAM	512 Kb
- Storage memory	Hard Disk 33 Mb
- Peripherals	Digitizer GTCO 12 X 12
	Platter Benson 1625-S
	Printer Mannesman 200 cps

We tried to develop a system that wouldn't be too tied to the characteristic of the base software or hardware. Rather we have tried to organize a structure that could be transferred to different system programs with equivalent characteristics to those used.

The problem can be considered to be that of management and interrogation of two data bases; a graphic one and a numerical one that represent the territory; and of correlating them. It is therefore thought that already existing software will be used for the management of the two data bases, while the linkage phase has

Data Base Managment System

| Define Structure | ↔ | Inquiring Data Base | → | Printer |

Connection Program

| Reading DB Output | → | Graphic Design Of the Map | → | Writing Command File |

Graphic program

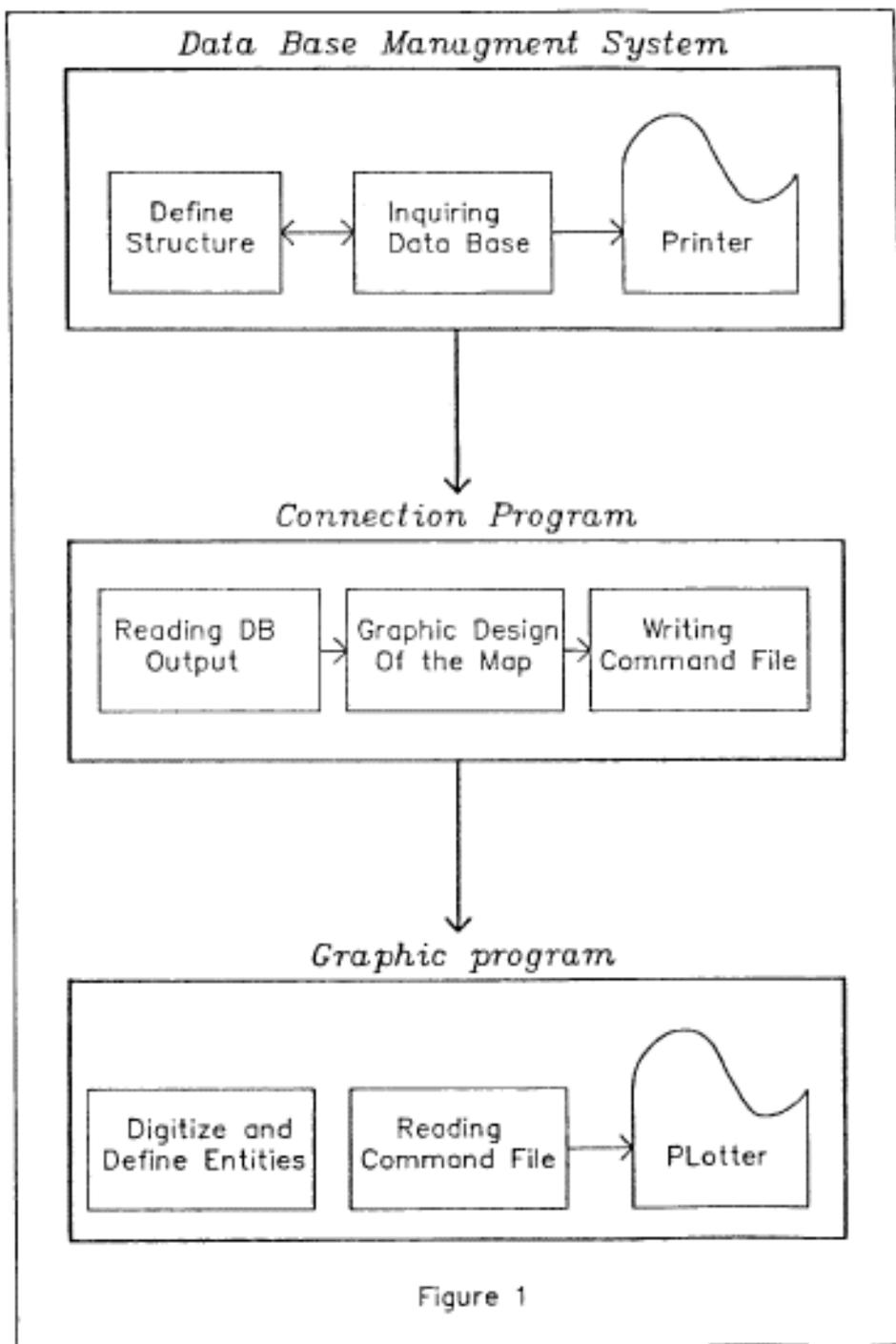| Digitize and Define Entities | | Reading Command File | → | PLotter |

Figure 1

been done by the group.

However, it has always been thought that the data could be transferred to another system. Particularly the digitized graphics, which because of the unavailability of a scanner became a laborious and lengthy operation.

All the files that contain graphic and numerical data can be readable by other programs allowing for different analysis than those already done as well as permitting a transfer of the data either directly or onto magnetic support.

These ideas have allowed us to design a three-part system (see figure 1), each part of which permits different and independent tasks.

The first part is related to the acquisition, management and interrogation of the numerical data that are related to graphic entities. This part has been organized using a system of relational data base that allowed us to create in a very short time a data structure that is trustworthy and correspond to our present needs.

The second part of the system permits us to define inter-actively the graphic design of the map: the kind of hatching, the colors to be used for keying, the scale and the part of map to be reproduced and the printing of geographic or alphabetic codes within the areas.

According to the kind of graphic chosen and to the result of the previous interrogation of the data base, a command file is therefore written that provides the graphic program with all the necessary input for the production of the map.

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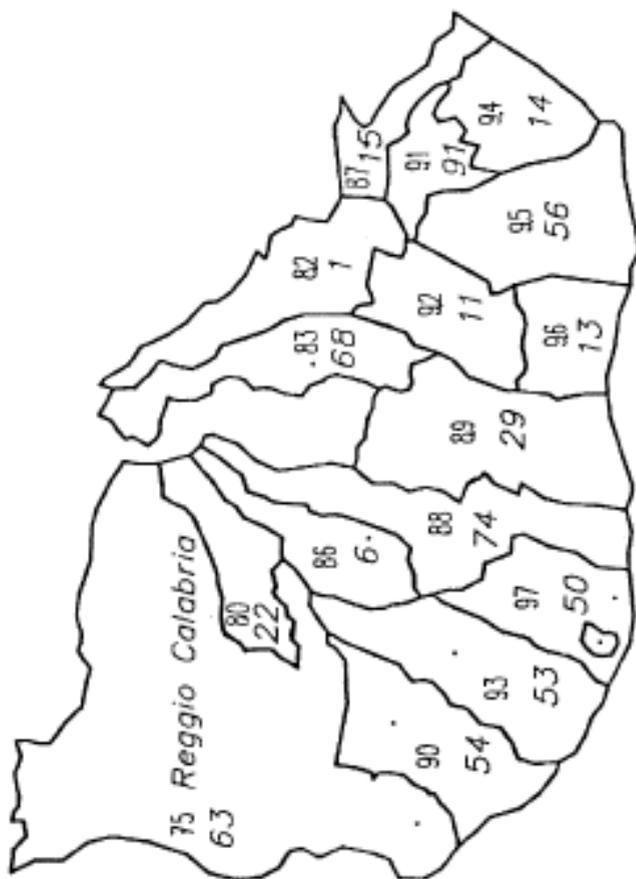
The third part of the system serves to acquire, define and therefore manage the graphic entities that represent the territory or more generally the graphic information that need to be related to the numerical information by means of a code that represents the area; in our case the geographic code for each municipality has been chosen.

The definition of the graphic elements that have to be related to a given code and therefore to a specific card of data has been achieved using some characteristics of the graphic program that foresee the possibility of coding both graphic and alpha-numerical elements into a string. In this way it is possible to create polygonal figures that represent a certain area and relate one or more characters to it to make it identifiable.

With respect to the two part of the system to which the management of the graphic and numerical data is entrusted it is important to note that the use of these, or other, already existing software packages performing the same tasks is made possible because both programme foresee the possibility of reading correct files previously written by other programs and because they allow for the import and export of data files. These two characteristics, in fact, make possible the insertion of the programs as part of more complex systems that are developed by the user.
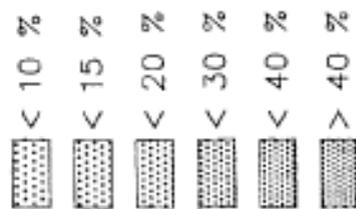
3- CONCLUSION

The organization of the system described above , allows us to continue towards further and more detailed applications at diffe-

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rent scales of representations of territorial and urban phenomena.

In particular, a second step of the research foresees the realization of maps that will represent physical characteristics, such as contour maps, land-use maps, slope stability maps and others up to and including environmental sensibility maps. It is obvious that for this kind of representation it is necessary to arrive at a discrete description of the basic map, that will be the U.T.M. grid and its division as has so often proved effective in such cases.

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