

The digital database of dovecote towers in Salento (Southern Italy)

Maurizio Delli Santi¹

¹ *National Research Council – Institute of Heritage Science, Lecce, e-mail: maurizio.dellisanti@cnr.it*

Abstract – The potential of GIS applications has been successfully applied in the most diverse fields for years, starting from urban planning to geology, from agriculture to cultural heritage, and from engineering to architecture. Through GIS systems, territorial information can be entered in a single container that allows not only to save and preserve them but also to study and process them. This GIS for the systematic filing of the dovecotes present in Salento in Puglia, implements GIS analysis technologies. With them the common characteristics of the architectures are immediately highlighted, thus creating tables which, converted into special formats, dynamically connect the artefacts and the thematic segments: a precious source for an innovative analysis tool, in terms of conservative recovery and subsequent enhancement of the entire system of dovecotes present in Salento.

I. INTRODUCTION

Currently, GIS applications are the most efficient and innovative tools for managing and processing large quantities of geographic data. The possibility of managing spatial data on a variable scale, and the open structure of this tool, are two of the features most appreciated by technicians and scholars working in this area.

II. THE DOVETOWER OF SALENTO

The dovecote towers are products of human activity in the landscape and characteristic of the Salento area. These become less present in the province of Brindisi to disappear almost completely in the province of Bari. From ancient documents we discover that in the past centuries the towers were by far more numerous, so much so that there was no farm, castle or noble palace without them. When the first dovecote towers appeared in Salento it is difficult to establish, however there are documents

from the 1300s which testify to their existence, however the decisive moment of their appearance as architectural structures is to be connected with Federico II's inclination to hunting with a falcon of Swabia. The only dovecote towers dating back to the 1400s left in Salento are those in Coccorzo in the countryside of Carpignano (Fig. 1) and that of the so-called Ugento Park. But the golden century, if it can be defined as such, remains the 1500s, significantly linked to a significant phenomenon of demographic recovery and agricultural development. The towers in the locality of Franite in the countryside of Maglie date back to this period, as well as the circular tower in the locality of Celsorizzo in Acquarica del Capo. While the dovecote tower of Caprarica del Capo dates back to 1555, built in the Specchillelle fund by Vincenzo Melacca, as the epigraph placed on the only window reminds us. The dovecote tower of Masseria S. Aloia in Melpignano dates back to 1567, while the tower of Masseria Fano in the countryside of Salve dates back to the following year (1577). We conclude with 1579, the year of construction of the tower of Masseria Morice in Galatone. A large part of the dovecote towers in the province of Lecce date back to the 1600s, among these we must mention that of Masseria Paladini, Masseria Coccioli (Fig. 2), Masseria Rauccio, the one on the old road to Surbo in Borgo San Nicola, etc. Already at the end of the seventeenth century and throughout the following century (1700) the phenomenon progressively decreased. This was due to the fact that in the previous decades there had been great building fervor in Salento. A certain recovery took place in the area close to the Municipality of Nardò following the earthquake of 1743 which devastated a large part of the building heritage and, which was followed by reconstruction. We must also remember that dovecote towers were built throughout the 1800s, to mention the quadrangular tower that the notary Serapione Carretti had rebuilt in 1816 on the foundations of a fifteenth-century watchtower, between Lecce and Arnesano, or the tower in

the locality Cafari in Cutrofiano. To conclude, it must also be said that dovecote towers were built up until the first decades of the 1900s when they only became the extravagant curiosities of wealthy pleasure-seekers. We can divide the towers into two broad categories: those with a circular plan and those with a quadrangular plan (Fig. 3,4), a scheme which in general can also suggest the chronological differences. The typical dovecote tower of the circular type has a circumference of about 25 meters and a height of one tenth greater than the diameter. The quadrangular ones, on the other hand, are lower and all the accessory elements such as shelves, friezes and crowning are made more roughly. The two small dovecote towers near Masseria Brusca (Fig. 5) in the Nardò area are an exception. It is also evident that there are typologies that have living or storage rooms on the ground floor, such as, among other things, the exceptional cases of the hypogeal dovecote towers of Ugento and Otranto; the latter is part of the district of Masseria Torre Pinta and is entirely excavated in the rock, it is composed of a long arm of 27 meters in length which in turn leads to a central room from which protrude like a Latin cross, three arms and all the walls have dug cells for pigeons. To conclude, we can note that the circular towers are concentrated in the Lecce area, in the hinterland of the Otranto area and in a small area of Capo di Leuca, while on the Ionian side, almost exclusively in the Neretino area, the typology is concentrated quadrangular (Fig. 9).



Fig. 1. Carpignano (Lecce). Masseria Cocorzo.



Fig. 2. Lecce. Masseria Coccioli.



Fig. 3. Galatone (Lecce). Masseria Corillo.



Fig. 4. Nardò (Lecce). Masseria Nucci.



Fig. 5. Nardò (Lecce). Masseria Brusca.

III. GIS STRUCTURE

For the creation of the GIS application, it was necessary to follow a precise programmatic procedure which envisaged, as a first phase, the creation of a data model. A data model is obtained through a logical path which consists, first of all, in having clear objectives to be achieved, in the selection and organization of the information to be used, in the choice of software and formats most suited to the type of information used, in the evaluation of data processing (processing techniques, implementation and data analysis). The most interesting element of a GIS data model are the databases. Generally cartography has as its main objective the production of maps for the representation of information; a GIS, on the other hand, has data analysis as its main objective, to become a decision support tool. The analysis conducted using GIS does not lead to a mere geometric representation of the artefacts or objects: what is highlighted are rather the direct spatial relationships between the different

elements, such as connection, adjacency or inclusion. From the aforementioned relationships, the GIS system will allow - through the structuring of different but complete data - to define complex space monitoring analyses, outlining the specific features of the topos from time to time.

In practice, the data model, with a view to effective interaction, must provide for the insertion, within it, of descriptive data of the individual real objects, which can be defined as attributes of the space. These three sets of information (geometry, topology, attributes) are then effectively implemented in a GIS using a specific physical model, which today is based on relational data structures, typical of the most advanced databases and on hardware and software architectures client/server, typically in local computer networks: in our case, the GIS software used for

the implementation and subsequent data management was QGIS (Fig. 6).

More generally, the essential steps to produce a geographical data processing are: data input, data management, data analysis, data presentation. However, it will be necessary to distinguish the type of data itself, they can usually be divided into two categories: spatial data (i.e. the positioning of the geographical elements, in our case the dovecote towers of Salento) and attribute data (i.e. the whole of the monument, location of the same, name, century of construction, state of conservation, etc.), associated with spatial data (Fig. 7). Spatial data (maps, surveys, etc.) were implemented through manual digitization, scanning and graphic files in vector format; the attribute data, on the other hand, were entered via computer keyboard scripts (Fig. 8).

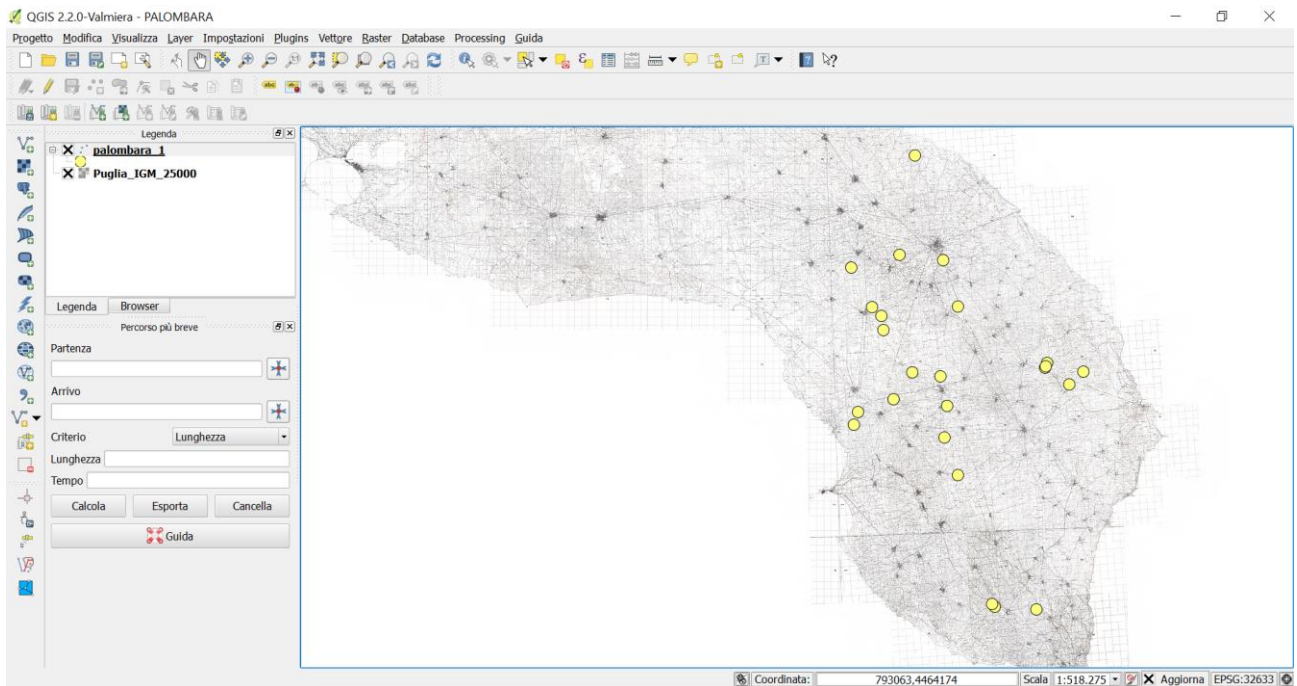


Fig. 6. Screenshot during a work session: the dovecote towers in Salento are highlighted with the yellow dot.

Tabella degli attributi - palombara_1 :: Totale degli elementi: 29, filtrati: 29, selezionati: 0

	id	comune	provincia	masseria o	tipologia	diam o lat	h	superficie	cubatura	celle
ii	2	ACQUARICA DEL CAPO	LECCE	MASSERIA MACAGNINO	CILINDRICA	NULL	NULL	NULL	NULL	NULL
1	1	ACQUARICA DEL CAPO	LECCE	MASSERIA CELSORIZZO	CILINDRICA	800	850	3944	42704	1748
2	3	ALESSANO	LECCE	LOCALITA MADONNA DELLA SCALA	CILINDRICA	570	720	2810	18363	1080
3	4	ARNESANO	LECCE	MASSERIA PALOMBARO	QUADRATA	NULL	NULL	NULL	NULL	NULL
4	5	CANNOLE	LECCE	MASSERIA TORCITO	CILINDRICA	960	750	4733	54259	1620
5	6	CARMIANO	LECCE	MASSERIA LI PAMPOLI	QUADRATA	NULL	NULL	NULL	NULL	NULL
6	6	CARPIGNANO SALENTINO	LECCE	MASSERIA CANFORE	QUADRATA	565	675	3204	20397	957
7	7	CARPIGNANO SALENTINO	LECCE	MASSERIA COCORSO	CILINDRICA	1200	1200	5916	135648	3139
8	8	CARPIGNANO SALENTINO	LECCE	VIA ISONZO	CILINDRICA	650	615	3204	20397	957
9	9	CARPIGNANO SALENTINO	LECCE	VIA MASCAGNI	CILINDRICO	NULL	NULL	NULL	NULL	NULL
10	10	CAVALLINO	LECCE	MASSERIA BERNARDINI	CILINDRICA	NULL	NULL	NULL	NULL	NULL
11	11	CAVALLINO	LECCE	MASSERIA OSSANO	CILINDRICA	NULL	NULL	NULL	NULL	NULL
12	12	COLLEPASSO	LECCE	MASSERIA GRANDE	CILINDRICA	NULL	NULL	NULL	NULL	NULL
13	13	COPERTINO	LECCE	MASSERIA CHELLI	QUADRATA	NULL	NULL	NULL	NULL	NULL
14	14	COPERTINO	LECCE	MASSERIA MOLLONE	QUADRATA	NULL	NULL	NULL	NULL	NULL
15	15	COPERTINO	LECCE	VILLA QUARTA	OTTOGONALE	NULL	NULL	NULL	NULL	NULL
16	16	CUTROFIANO	LECCE	CASINO CAFARI	QUADRATA	490	705	1960	16927	456
17	17	GALATINA	LECCE	CASINO SAN VITO	QUADRATA	NULL	NULL	NULL	NULL	NULL
18	18	GALATINA	LECCE	MASSERIA MONTISANI	CILINDRICA	685	605	3377	22285	1152
19	19	GALATINA	LECCE	MASSERIA SAN GIUSEPPE	CILINDRICA	NULL	NULL	NULL	NULL	NULL
20	20	GALATONE	LECCE	MASSERIA CORILLO	QUADRATA	NULL	NULL	NULL	NULL	NULL
21	21	GALATONE	LECCE	MASSERIA LI DOGANIERI	QUADRATA	NULL	NULL	NULL	NULL	NULL
22	22	GALATONE	LECCE	MASSERIA MORICE GRANDE	CILINDRICA	840	950	4141	52620	1537
23	23	LECCE	LECCE	MASSERIA COCCIOLI	CILINDRICA	790	1040	3895	50952	1938
24	24	LECCE	LECCE	MASSERIA MADAMA	CILINDRICA	710	860	3500	34032	1760
25	25	LECCE	LECCE	MASSERIA MARGIGLI	QUADRATA	NULL	NULL	NULL	NULL	NULL
26	26	LECCE	LECCE	MASSERIA PALADINI	CILINDRICA	965	1010	4757	73832	2337
27	27	LECCE	LECCE	MASSERIA PALOMBARO	CILINDRICA	930	935	4585	63481	2352
28	28	LECCE	LECCE	MASSERIA PROVENZANO	CILINDRICA	930	935	4585	63481	2352

Mostra tutti gli elementi

Fig. 7. Database associated with spatial data (dovecote towers).

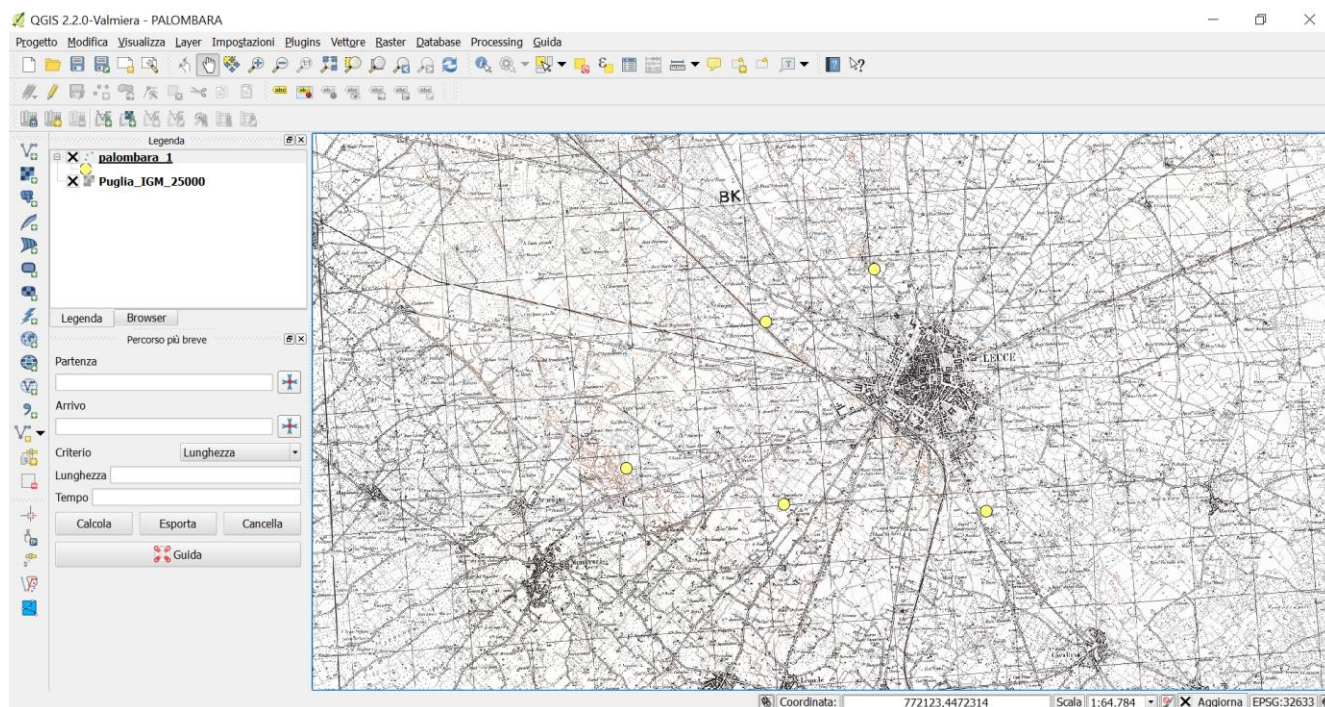


Fig. 8. Screenshot during a work session.

III. CONCLUSIONS

Today, for a number of reasons, the dovecote towers have emptied of the ancient inhabitants, abandoned like the farms and coastal towers of the 16th century, unfortunately they risk disappearing. Therefore, an inventory of this architectural heritage is urgently needed as an indispensable premise for a recovery work, which could also contemplate the recovery of their ancient function.

REFERENCES

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id	comune	Masseria o località	tipologia	Diametro o lato	Altezza h	celle
1	Acquarica del Capo	Masseria Celzorizzo	cilindrica	8.00	8.50	1748
3	Alessano	Loc. Madonna della Scala	cilindrica	5.70	7.20	1080
5	Cannole	Masseria Torcito	cilindrica	9.60	7.50	1620
7	Carpignano	Loc. S.M. della Grotta	cilindrica	12.00	12.00	3139
8	Carpignano	Masseria Canfore	quadrata	5.65	6.75	540
9	Carpignano	Via Isonzo	cilindrica	6.50	6.15	957
17	Cutrofiano	Località Cafari	quadrata	4.90	7.05	456
18	Diso Marittima	Dietro il Castello	cilindrica	6.95	6.50	1092
19	Diso Marittima	Via della Resistenza	cilindrica	6.30	8.80	1520
23	Galatina	Masseria Montisani	cilindrica	6.85	6.05	1152
26	Galatone	Morice	cilindrica	8.40	9.50	1537
29	Lecce	Masseria Aria Sana	cilindrica	6.40	8.70	1520
30	Lecce	Masseria Case Bianche	cilindrica	7.40	8.30	1776
31	Lecce	Masseria Coccioli	cilindrica	7.90	10.40	1938
33	Lecce	Masseria Madama	cilindrica	7.10	8.60	1760
35	Lecce	Masseria Malcarne	quadrata	2.25	7.40	190
36	Lecce	Masseria Mendule	cilindrica	7.20	8.80	1410
38	Lecce	Masseria Paladini	cilindrica	9.65	10.10	2337
39	Lecce	Masseria Palombaro	cilindrica	9.30	9.35	2352
40	Lecce	Masseria Provenzano	cilindrica	7.95	8.65	1728
45	Leverano	Masseria Don Cola	quadrata	4.40	6.30	532
46	Maglie	Masseria Cocci	cilindrica	5.60	5.60	1012
47	Maglie	Masseria Palombaro	cilindrica	7.00	7.40	920
49	Melendugno	Masseria Tartari	cilindrica	6.10	7.45	918
50	Melpignano	Masseria San Loi	cilindrica	6.20	7.60	1276
53	Nardò	Masseria Brusca	quadrata	6.00	6.30	684
54	Nardò	Masseria Carigliano Grande	cilindrica	8.40	9.20	1786
55	Nardò	Masseria Castelli Arene	quadrata	7.00	5.60	1280
60	Nardò	Masseria Nociglia	quadrata	4.30	5.60	360
61	Nardò	Masseria Nucci	cilindrica	8.40	9.20	1225
66	Nardò	Masseria Trappeto	quadrata	5.80	8.05	832
70	Poggiardo	Località Vaste	cilindrica	7.20	8.10	1504
77	Salve	Casino Foscarini	quadrata	6.00	4.40	864
78	Salve	Località Serra la Calia	cilindrica	4.45	6.20	644
84	Supersano	Masseria Pagliare	cilindrica	7.00	8.40	1702
87	Tricase	Località M. di Loreto	cilindrica	7.40	8.30	1665
89	Tricase	Palazzo Baronale	cilindrica	4.70	6.40	765
90	Ugento	Colombaia	cilindrica	6.30	7.10	1008
91	Ugento	Masseria Palombaro	cilindrica	8.50	6.35	1456

Fig. 9. Table showing the type, size and number of cells of the dovecote towers surveyed.