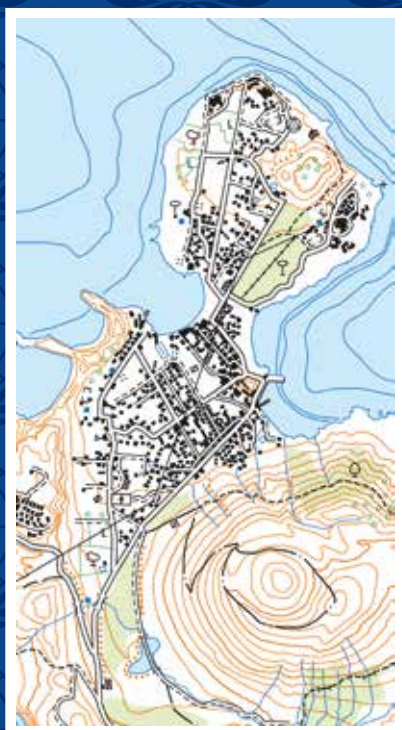




Toponymy and Cartography between History and Geography

Edited by
Andrea Cantile and Helen Kerfoot



International Scientific Symposium
Venezia [Venice] – Italia, 26th – 28th September 2018

IGMI - Firenze [Florence] 2019

“Nomina si nescis, perit & cognitio rerum”

(LINNAEUS C., *Philosophia botanica*, 1751, p. 158, aph. 210)

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The content of this book expresses only the opinions of the authors.

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The Italian Geographic Military Institute and the Veneto Region project for a new geographical names database

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Abstract

Veneto Region and the Italian Geographic Military Institute (IGMI) are developing a project for integrating their geographical names databases. The project is based on the INSPIRE Directive and the UN recommendations for the standardization of geographical names and human rights concerning the indication of the names of the places where people live.

The data used in the project come from archives of various organizations and will be standardized and merged. Examples of these data are the official Map of Italy, Veneto Region Base Map, topographical databases and archives from local authorities. At an operational level, in the first phase the original databases were merged and standardized in order to have consistent data.

This goal was reached using semi-automatic data processing methodologies due to the volume of data and information from various sources.

At the end of this processing, data will be shared with all Veneto Region municipalities for a complete integration.

Keywords: *integration of regional and national toponymy, toponymic databases merging, Veneto Region.*

The name of the places as a code of territorial identities

The toponymy existing in the topographic maps represents one of the most complex themes of cartographic operations since its significance is not the result of instrumental technical activities and scientific calculations, but derives from a series of relationships that surveyors establish with inhabitants and local institutions to obtain information on the names of the different places.

In the past, the writing of toponymy on maps was linked to the sensitivity of the mapmaker who had to choose the most suitable ways to give readability to the toponyms on the paper avoiding overlap with the geometry of the map. Not much has changed in the collection of data in the most recent form of representation of computer-assisted cartography; we can, if anything, observe how the new technologies seem to have reduced the operators' attention to the quality of the products.

At the same time the geographic information systems and the most modern

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search engines of geographical information allow informative searches through the names of the places and the road directories; the toponymy is becoming the most used key for accessing particularly complex databases even if it does not seem to be structured enough to respond to this new question.

Over forty years since the beginning of the regional project “Formation of Regional Base Map”, the need for a check and a review of the work carried out so far has been felt, giving new structural contents to the toponymy information of the Region. It is essential to unify, in a single regional database, the contents of the various institutional archives on the subject, which include the IGMI Map, the Regional Base Map and maps of the Local Authorities, taking into account the United Nations recommendations on toponymy and the INSPIRE European Directive on geographical names.

The regulatory context and institutional references

UN activity

The UN Group of Experts on Geographical Names (UNGEGN) was established at the United Nations, in compliance with resolutions 715 A (XXVII) of 1959 April 23rd and 1314 (XLIV) of 31st May 1968, of the United Nations Economic and Social Council (ECOSOC) and the decisions adopted by the Council itself on 4th May 1973.

The fundamental aims of the Group are related to the standardization of names at the national and international levels, to the study and proposal of principles, guidelines and application methods to solve problems of unification of toponymy at national and international levels with special attention to developing countries. The standardization activity is based, in terms of linguistic treatment, on scientific methods in compliance with national achievements.

The activities are organized in 24 divisions; Italy chairs the Romano-Hellenic Division, which also includes Andorra, Belgium, Canada, Cyprus, France, Greece, Luxembourg, Moldova, Monaco, Portugal, Romania, the Holy See, Spain, Switzerland and Turkey.

The INSPIRE European directive

The Directive 2007/2/EC of the European Parliament and of the Council of 14th March 2007 which dictates the principles for an “Infrastructure for spatial information” in the European Union, provides with Annex 1 that the Member States must transmit important sets of spatial data; these include the component relating to toponymy and, of particular interest for the purposes of the present project, the following specific geographical names: name of areas, regions, localities, cities, suburbs, towns or population, centres or any geographical or topographic element of public or historical interest.

The national scenery

The main reference is constituted by the Italian Geographic Military Institute invested with the relevant expertise since 1911 and later reaffirmed with the Law of 8th June 1949, no. 605 “Composition of the permanent commission charged with directing the toponymic revision work of the Map of Italy”, subsequently with the

Law of February 2nd 1960, no. 68, the IGMI has been indicated as a cartographic organ of the State, and the geographical, topographic and chorographic maps produced are referred to as “Official Map of the State”.

Since the post-war period, the Institute has led the major projects of the Map of Italy, at scales 1:25,000 and 1:50,000, from which it has implemented the database of official toponymy of the Italian territory.

The regional context

The Veneto Region, with the Law of 16th July 1976 no. 28 “Formation of the Regional Base Map” has activated the project for the elaboration of the Regional Technical Map at the 1:5,000 and 1:10,000 scale. With the Law of 23rd April 2004 no. 11, it was reiterated that municipal land planning has to use the Regional Digital Base Map and at the same time municipalities must develop their own geographic information systems.

Protection of historical linguistic minorities

The protection of linguistic minorities is sanctioned by normative regulations issued at the different administrative levels. In fact if for the UN it is essential to recognize the right of the peoples in the national sphere to determine the names of the places of their territory, thus safeguarding the rights of historical linguistic minorities, Italy and Veneto have complied and defined their own rules through the appropriate areas of competence.

The operational aspects of the project

The Project expects to realize the integrated control of the regional toponymy expressed by the various datasets (State-Region-Local Authorities) and its structuring in a database that can be used in the various search engines relative to regional geographical information.

The Project is organized according to the following phases:

1. recovery of the toponymy databases of the IGMI and of the Region;
2. verification of the contents of databases and harmonization of sources;
3. organization of datasets for each municipality;
4. experimentation of the methodology with some local authorities;
5. sharing of data (through a Web GIS) with all the Municipalities for integration;
6. definition of the computerized archives of integrated regional and national toponymy;
7. integration with data from multilingual and historical toponyms.

Main sources

The main sources used are:

- The IGMI toponymy database: it consists of some Excel files with 50,519 records; sometimes there are duplicate records, subsequently reduced to single instances in the final version of the shared database, to be able to associate a unique identifier to each toponym.

- The regional database consists of a shape file including all the cartographic representations obtained from the various editions of the Regional Digital Base Maps produced over the decades and integrated with data from other regional databases; this file consists of 1,520,020 records.

The preliminary treatment of the toponymy database provided by the IGMI was carried out using simple procedures that basically produced the genesis of a shape file that associates a point to geocode each toponym.

On the contrary, the operations performed on the data of the Veneto Region were articulated through a complex procedure with numerous steps, identified on the basis of objective experimental findings, with the aim of making the work as automatic as possible.

Basically, we tried to obtain a dataset already essentially suitable for comparison and integration with the IGMI database, leaving only the content issues open, such as the presence of different names in the two databases or the coexistence of dialectal and Italianized toponyms.

Returning to the processing of data, you can list, in a nutshell, the operations performed on the original file (called raw.shp) of the toponyms produced by the Veneto Region.

The attribute table of the raw.shp is divided into several fields, which correspond to the provisions in the document “Codifiche per la CTRN alla scala 1:5,000 e 1:10,000” [Codes for Regional Digital Base Map at scale 1:5,000 and 1:10,000]; those of interest for the Project are:

- a. LIVCOD, indicates the coding of the different classes of objects in the Regional Base Map and consists of 4 digits: the first two from the left indicate the level while the other two indicate the entity within each level;
- b. LABEL, indicates the text reported on the Regional Base Map;
- c. ANGLE, indicates the angle at which the text is represented on the Regional Base Map.

The main processing steps that have been performed using the QGIS 2.14.12 software are described below:

1. elimination of unsuitable LIVCOD-related records (for example, data referring to elevation points or contours, as well as numerous other types of records not relevant to our research);
2. removal of all records that are certainly unsuitable because the LABEL field is defined by names including the words “street”, “road”, “railway”, etc;
3. elimination of the names associated with the roads by deleting all those having in the ANGLE field a value greater than 2 degrees;
4. removal of the points falling within a buffer around the road axes; in this way the names identifying the viability have almost completely disappeared with negligible loss of place names.

With regard to point 4, it is worth pointing out that, after numerous experiments, it was decided to use the road classes of the Land Cover Map of the Veneto Region of the year 2012 to calculate a buffer equal to a total of 20 metres; this option, compared to the tests carried out on the regional road graph or on the data of the Regional Base Map, was the best for the homogeneity of the input data and for a better processing speed.

At the end of the operations described, a file containing 175,457 toponyms was obtained, referring to the categories of toponyms of interest for the project, starting from the original dataset compilation from 1,520,020 cartographic sources; 89% of the records were then removed using semi-automatic procedures with low commitment of human resources.

Subsequently, the comparison and integration between the two databases was carried out for a case study on a sample territory consisting of 12 Municipalities. At the end of this operation, performed by experts in the field, we can highlight the excellent results achieved in terms of comparability between data of different origins that allowed aggregating and harmonizing toponyms from the two databases.

Conclusions

It is expected that, once the operations of definition and implementation of the Region's toponymy database have been completed, thematic developments will be promoted and implemented, aimed at increasing toponymy information resources. Of particular importance could be the recovery of toponyms reported in the historical cartography preserved in the State Archives (national and international). The comparative analysis of ancient and modern toponyms would, in fact, not only allow researchers to obtain information on the evolution of the population and on the characteristics of the environment, but also to develop a series of considerations about the natural and anthropogenic transformations that have affected the Veneto region over the years.

Through a careful study of geographical names, we could then get useful data to reconstruct the evolution of the landscape and to restore a historical-cultural value to the places that have been deprived of their identity.

Of equal importance is the development in the new Spatial Data Infrastructure of the Veneto Region for a Places Name Web GIS; the Portal will be developed as Participatory GIS and will become an indispensable tool both for local Public Administrations and for different communities, for the continuous updating and verification of data held by the Region and the IGMI.

The methodology of the participatory GIS will allow the gathering of much more information as different groups of people, public and private, even without specific skills in GIS, will be able to "participate" in a simple way to the collection of data that by their nature belong mainly to the culture and to local traditions.

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