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Mapping the tangible and intangible elements of the historical buildings and spaces

Edoardo Lorenzetti, Nicola Maiellaro

Direttore Emanuela Reale

Direzione CNR-IRCrES
Istituto di Ricerca sulla Crescita Economica Sostenibile
Via Real Collegio 30, 10024 Moncalieri (Torino), Italy
Tel. +39 011 6824911 / Fax +39 011 6824966
segreteria@ircres.cnr.it
www.ircres.cnr.it

Sede di Roma Via dei Taurini 19, 00185 Roma, Italy
Tel. +39 06 49937809 / Fax +39 06 49937808

Sede di Milano Via Bassini 15, 20121 Milano, Italy
Tel. +39 02 23699501 / Fax +39 02 23699530

Sede di Genova Università di Genova Via Balbi, 6 - 16126 Genova
Tel. +39 010 2465459 / Fax +39 010 2099826

Redazione Emanuela Reale
Antonella Emina
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Anna Perin
Isabella Maria Zoppi
redazione@ircres.cnr.it
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CNR-IRCrES Working Paper 2/2020

Mapping the tangible and intangible elements of the historical buildings and spaces

EDOARDO LORENZETTI[a], NICOLA MAIELLARO[b]

[a] CNR-IRCrES, National Research Council of Italy, Research Institute on Sustainable Economic Growth, Rome, Italy
[b] CNR- ITC, National Research Council of Italy, Construction Technologies Institute, Bari, Italy

corresponding authors: edoardo.lorenzetti@ircres.cnr.it
maiellaro@itc.cnr.it

ABSTRACT
The void is the key element of the urban configuration: an empty space identified by the work of man or nature, which is defined and transformed by civic, religious, and social events. It is the people moving, talking, living in the streets and squares, and identifying with the landscape which actually transforms geometrically or naturally defined spaces into cultural spaces. It is from here that we would move towards the proposal of an integrated approach to the study of cultural heritage in its substance, made of elements that are both tangible and intangible such as the spirit of places, celebrations, traditional skills, and the social memory of the urban spaces, which have been shaped by humanity through time.
Today, a crucial and innovative contribution to the approach sharped above is the practical possibility of direct involvement of the community, using innovative technologies, to map all the aspects and elements of their cultural heritage: as flexible, interactive maps (GIS-based) for the organization of different types of data about historic urban buildings and spaces, with specific reference to the strong links between tangible and intangible heritage.

KEYWORDS: city cultural heritages, intangible cultural heritage, cultural and environmental heritage, Geographic Information Systems, web-based tools.

JEL codes: R14, Z1

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CONTENTS

1 INTRODUCTION

The work proposed mostly draws on the experience, of some years ago, that led to the creation of a database on historic squares in Italy's southern regions and islands (*Piazze Storiche dell'Italia Meridionale e Insulare* of Agorà Project, 1987–1989), based on a sample of 168 squares. Ideally, it is from here that we would like to pick up the thread of our discourse, moving towards the proposal of an integrated approach to the study of cultural heritage in its substance, made of elements that are both tangible and intangible – "*that cannot be touched*" (Scovazzi, 2012, p. 151) – such as the spirit of places, celebrations, traditional skills, and the social memory of the urban spaces, which have been shaped by human history through time.

To start our discourse on cultural heritage, concerning specifically the urban spaces, we should look at the results that have been achieved so far, while also taking past experiences into account and avoiding extemporaneous rediscoveries: therefore, we wish to propose a reinterpretation of a significant experience, which provided a new methodological and operational direction for scientific research in this field.

In this frame, a reread of the historical and architectural data from research on *Piazza VI Gennaio* at Roccagorga, a small community in the Southern Latium, Italy (https://goo.gl/maps/Ygzik), brings out new and interesting perspectives, which confirm the validity of cultural anthropology in this type of study. Interdisciplinary methodological approaches involving anthropology are particularly useful in opening up possibilities for innovative analysis of the intangible dynamics related to the tangible constituent elements of the urban spaces under examination. In the case of Roccagorga, we examine two themes that can most certainly be assigned to the intangible category. The first is the capacity of the economic, political and cultural powers to translate their strengths as physical signs. The second is the bipolar opposition seen in the contrast between the controlling class's hegemonic-overall processes of developing the themes and representative aspects of the urban reality, versus the popular-partial processes of the subordinate classes.

2 A REREAD

Roccagorga was probably established around the 10th century, during the medieval period characterized by a wide castle building, as a military stronghold for control over agricultural lands. The character of the settlement remained practically unaltered until the feud became the property of the Ginetti family of Velletri, in the early years of the 17th century. In the European Baroque, the theatrical development of places received special attention; urban squares became symbolic places *par* excellence, serving as the privileged settings for parades, executions, proclamations, and more.

Under the Ginetti, there began a broad process of ideological redefinition of the economic, social and political roles in the settlement, materially expressed in the organization of the architectural elements situated on the piazza. The Ginetti interventions are different than those of the other aristocratic families that preceded them, both for their global approach and for the accomplishment of results. During the latter half of the 17th century, unproductive lands were brought under cultivation, the road system was improved, and new houses were constructed, while the success of such economic and social improvements was confirmed by the accompanying demographic growth.

The global approach to this development is reflected in the re-conception of the city piazza, which assumed its definitive configuration in the early years of the 18th century. Thus, the principal axis initiated from the south, at the pre-existing baronial palace, and arrived in scenic conclusion at the newly built Church of Saints Leonardo and Erasmo (Restaini, 1986), on the north.

Fig. 1. Piazza VI Gennaio, Roccagorga, Italy.

This spatial organisation demonstrated a radical re-dimensioning of aristocratic power. The new church, the centre of secular strength for the Catholic Church, rising in a position facing the baronial palace, is wilfully situated at the juncture of the two hills delimiting the surrounding territory. Over the course of the 18th century, various members of the Ginetti family would be called to fill important roles within this very structure. The political-communicative message expressed in this new symbolic arrangement was redoubled by another element: the reflection of the church in the waters of the massive public water reservoir and fountain known as the *Rifolta*, situated immediately in front.

The element of water is further signal of symbolic importance, utilised by the Ginetti to enter in communication with the sphere of popular thought.

They began the redevelopment of the piazza in 1642, with the construction of an aqueduct fed by mountain springs near the Hermitage of *Sant'Erasmo*. This effort was doubtless planned primarily to secure the community's water supply, however in the popular image of the works, this aspect seems to recede in importance.

In fact, in the traditional, popular representation, it was Saint Erasmo that controlled the water: the same element that, in the mythical time, the saint made to gush out from the Monte Nero, and now led by Ginetti to the town centre, just in the square. As with the mirroring of the church, we see another replication at Roccagorga, this time of the saintly miracle. On the same theme, prior to 1700 there had never been a liturgical celebration of *Sant'Erasmo*: it was the Ginetti family that, for their own self-celebration, raised him to the stature of the city patron,

Thus, a relation is developed between the two levels of social stratification of the era, but it is an unequal exchange, based firstly on differences in political power, and only secondly on cultural and economic differences. The presence of the official cult of *Sant'Erasmo* at Roccagorga cannot be traced to the subordinate class, at least not only, and their role in this aspect was certainly not autonomous. Instead, the development results from the political elite exploiting an element of popular tradition, in service of their own strength.

We see that the anthropological analysis of the piazza reveals the symbolic function of the component urban elements in their role as communicative signs for the *visualization* of the strenght of the power as well as in terms of the underlying ideological paradigm that gives them a sense. As Camillo Sitte (1980) wrote, we observe a "closed urban square, of beautiful unity"; but the unity of the redesigned piazza is not only of "dimension and form": it is also structural, in the specific linguistic and anthropological sense of this term.

3 TANGIBLE AND INTANGIBLE IN THE URBAN SPACES

Paradoxically, the void is the key element of the urban configuration: an empty space identified by the work of man or nature, which is defined and transformed by civic, religious, and social events. It is the people moving, talking, living in the streets and squares, and identifying with the landscape who actually transform geometrically or naturally defined spaces into cultural spaces; as pointed out by Marc Augé (1996) "the anthropological place […] is a principle of meaning for the people who live in it, and also a principle of intelligibility for the person who observes it".

Significantly all UNESCO's normative tools – including naturally the Convention for the Protection of the World Cultural and Natural Heritage (1972) and the Convention for the Safeguarding of the Intangible Cultural Heritage (2003) – have always emphasised the need to not separate the two aspects of cultural heritage. In 1992, the World Heritage Committee added *Cultural Landscapes* to the list of criteria and requirements for the inscription of properties on its List, in order to ensure their acknowledgement as 'combined works of nature and man of outstanding universal value'; for this purpose, three main categories were identified; where some points of similarity can be found with the approach underlying the European Landscape Convention, even though their purposes are different (Vallega, 2007).

Still in 2003, the Kimberly Declaration emphasised the importance of protecting the social intangible values (memory, beliefs, local knowledge, and sense of belonging) of monuments and sites and the characteristics of local communities as irreplaceable custodians of these values. In 2004, with the Yamato Declaration, UNESCO definitively opted for an integrated approach to world cultural heritage: the focus was no longer on individual assets but rather on sets of assets (such as cultural routes, *caminos*). At last, an interesting view of the concept of landscape can be found in the Vienna Memorandum (2005), which introduced the innovative definition of 'historic urban landscape', applied to the environment outside a city as well as to the urban centre itself. In addition, the 2013 UNESCO's Operational Guidelines for the Implementation of the World Heritage Convention (Intergovernmental committee, 2013) explicitly recognizes the essential need for the "participation of local people in the nomination process"; the last UNESCO recommendation is very important to us, since it plays a crucial role in our operating proposal, that indeed aims at providing applied tools directly in the hands of the local communities concerned.

In such contexts, anthropology can operate in a collaborative manner, in the areas at the boundaries between disciplines, experimenting with integrated methodologies that draw on different bodies of knowledge for the integrated observation and representation of complex societies, just as it has done for traditional ones. As Claude Lévi-Strauss observed in Structural Anthropology, "the urban space is small enough and homogenous enough (from every point of view except the social one) for all its different qualitative aspects to be ascribed mostly to the action of internal forces, of both formal and social origin […]. There have been practically no attempts to correlate the spatial configurations with the formal properties of other aspects of social life." (Lévi-Strauss, 1980, pp-324-325).

Choosing from its disciplinary assets, long developed in traditional spheres, anthropology can offer heuristic tools suited to addressing the complexity of the challenges. This is particularly true in the urban European cultural sphere, where the city squares and streets represent the places of intersection between civil history and cultural movements, collective and material imagination, imposed symbolism and popular tradition, religious rituals and political behaviours.

Urban spaces can thus be seen as the great anthropological form of European culture. Think only of the names assigned: square (or street) of the *Market*, of the *Green'*, of *Arms*, of the *King*, of the *Republic*, of the *Cathedral*, of the *City*, of *Liberty*. From these names, and their counterparts in every language, we can understand the profound links between civil and urban history, between the life and form of the city, ultimately between the tangible and intangible elements that over time come to form the spirit of the place.

Urban spaces, with their delimiting structures, and even the functional distribution of occupation (outdoor/indoor; public/private), provide a tangible definition of an entire series of social and economic relations. The presence in the square makes public, official, socially meaningful the existence of the individuals and the groups; as well, a time, of the social class they belonged.

More than 20 years ago, Costantino Dardi (1988), one of the founders of the Italian Historic Piazzas Project, provided a first conceptual identification of these places, in terms of their "opposition, at close distance, of high and low, open and closed, opaque and transparent, solid and light, earthly and atmospheric, public and private, and continuous and discrete". At first glance, Dardi appears to have concentrated on the formal, architectural aesthetic, but in reality, his reading goes beyond this, assuming viewpoints that bring out the complexity and materiality of the analysed forms, which cannot be translated exclusively in a figurative theme. We see that the conceptual grid for the comprehension of the component elements of urban spaces must of necessity open to the tangible and intangible aspects of anthropological study.

According to the methodological vision above mentioned, we wish to implement a model where the overall data structure will cover two closely interrelated reference areas:

1. Urbanistic and architectural area, concerning the historical and symbolic features of buildings (*Tangible Heritage*);
2. Social History and Ethno-anthropology, concerning the ordinary and non-ordinary use of urban spaces (*Intangible Heritage*).

In such, already tested, methodological framework will be possible to use pre-collected data, in particular referring to the physical representation of historic spaces, with the help of innovative geo-referencing tools for the interaction with other types of information; they will regard:

- architectural and archaeological elements as well as elements concerning the monuments and landscape, which characterise the historic (urban and/or extra-urban) space;
- pre-existing planimetric and altimetric surveys or other systems for the physical representation of historic spaces;
- relations with other historic spaces, sharing common features in relation to their history, typology, location, and proximity;
- the physical characteristics of the historic space;
- the cycle of life of the historic space and its evolution/transformations, studied through cadastral documents and in relation to its iconography, and original intended use;
- bibliographic, archival, iconographic, and oral sources;
- the ordinary use of the historic space and of its tangible elements;
- the non-ordinary use of the historic space studied through written and oral documentation concerning current and past intangible elements.

The proposed model, which can be easily scaled and quickly implemented, can be organised in modules, bearing in mind that the research effort needed to gather data about a given sample decreases considerably as the sample size increases. The surveying technologies available today make it possible to save a great deal of resources in the reconstruction of the physical environment, a key reference element in the contextualisation of tangible and intangible data: thanks to the Web, gathering and sharing data has become much quicker and easier; augmented reality technologies, overlaying the visual field, will enable users to obtain all the information audio and video they need, either automatically or on demand.

However, it should be noted that we do not wish to place emphasis on a captivating use of information technology, but rather on investigating the history of urban spaces with reference to their ordinary, tangible and intangible, use (relationships among social groups, fairs, markets)

and non-ordinary use (traditional religious rituals and lay celebrations, spirit of places), by adopting readily available technological means.

The use of geographical data as main element for data aggregation allows for extremely effective circulation and cross-referencing of other series of data (civil celebrations, religious rituals, artistic events, concerts) taken from various archives (*Teche RAI*, *Istituto Luce*, *Discoteca di Stato*, and others in Italy), also following diachronic thematic lines.

Today, a crucial and innovative contribution to the approach sharped above is the practical possibility of direct involvement of the community, using GIS technologies, to map all the aspects and elements of their cultural heritage.

In the specific case, the Construction Technologies Institute of National Research Council has successfully experimented, in various scenarios, the Smart Map+ procedure, specifically designed to simplify the publication of geo-referenced information generated using a camera equipped with GPS: a low-cost and effective way to produce multimedia maps available on the Web with advanced functionalities.

4 GIS IN CULTURAL HERITAGE: SOME EXAMPLES

The use of geographical information systems (GIS) in cultural heritage, well documented in Petrescu (2007), is now involving the Web through applications called WebGIS, accessible from anywhere using a common web browser.

There is a wide variety of approaches, supplying about any GIS function, at land level – as Malta (www.visitmalta.com) and Cyprus (http://geomatic.com.cy/visitcyprus) – and at urban level – as Lake Havasu (http://lakehavasu.micromaps.com) and Oswego (http://oswego.lunarcowimap.com/imap).

For example, the Audio-visual Archive of Aragon (Convention, 2014) use a map (http://www.acparola.com/aaa/?section=2) to identify the different linguistic expressions throughout the territory; each callout (fig. 2) opens a web page with vis-à-vis video, its transcription and photos.

An integral part of this approach is the engagement of the community using GIS to map both tangible and intangible cultural heritage. Therefore, a Smart Map+ procedure has been developed specifically designed to simplify the publication of geo-referenced information generated using a camera equipped with GPS.

In other words, a low-cost and effective way to produce multimedia maps available on the Web with advanced functionalities.

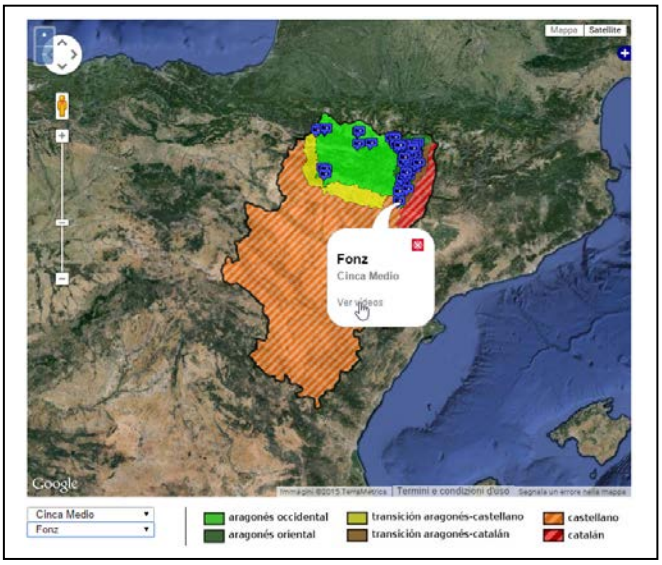

Fig. 2. Audio-visual Archive of Aragon: Video link in a callout.

It was developed in the framework of the Mu.S.A. - Must See Advisor Project, aiming at giving visibility to communities by valuing knowledge from selected stakeholders (Artese et al., 2013, pp. 244-245). In our applications, stakeholders' representatives are involved in GPS mapping activity, gathering information and data entry, concentrating the efforts on the tangible properties – as cultural heritage themselves or location linked to intangible cultural heritage elements.

In effect, the Smart Map^{+} procedure includes: planning and executing of a survey with photos acquisition for each property; geo-localization (using metadata available for shots taken by GPS camera, map surfing, or GPS in smartphones); data entry and map generation.

The last step is performed through an Authoring System, specifically implemented, running on a web browser (Maiellaro & Varasano, 2013); at present, it reads two different data sets:

- a "list" file containing, for each property, basic information (longitude and latitude; title; accessibility level; century; age; address; short description; marker name; typology; typology marker name; survey date; filename of extended description; name of the main photo at different resolution and frame; rating);
- a "media" file containing additional information about media available for each property (reference property; media type as sheet, image, audio, video, 3D; preview image of media; property title; media description; media URL; source; source URL; media date of production).

Then, using switchable parameters, it produces a preview map using Google Maps, given the purpose of the system and possible difficulties in finding cartographies.

Finally, it allows to input additional parameters for the project (the map filename and the window title), the header and the map (clustering distance and threshold); when the user has completed the data input, it prompts to produce the interactive map according to the output needed with different contents and functions. For example, the "Smart Cities" Project for the municipality of Siracusa" (Lerario &Maiellaro, 2014) needed maps for desktop, qr-code app and totem.

The desktop map interface, now evolving to work also on mobile, has five components: menu, sidebar, navigation commands, markers and callout.

The Menu

The menu (fig. 3, up on the left) contains the functions:

1. Best site, to locate on the map the most interesting property.
2. Satellite, to switch between map and earth view.
3. Slideshow (fig. 3, bottom), to activate a moving set of main photos; clicking on a photo, the map centre itself on the related properties, opening its callout.
4. Time slider, to automatically hide/show markers of properties according to the selected century.
5. Folder, to display the previews of all the media belonging to all the properties in the project. The default approach is a gallery, displaying previews item by item in a dynamic resizing window - the current item number and the total item number is reported in a panel, containing also function icons to:
6.
    a. Open/close Tile - all previews are displayed in a scrolling window, giving a media overview;
    b. Activate the media (sheet, image, audio, video, 3D) linked to the previews;
    c. Locate on the map the property linked to the selected media;
    d. Navigate in the gallery (backward, forward, start/stop automatic forward);
    e. Open/close full screen.

7. Table, to list all the items belonging to the project, using a panel with columns alphabetically ordered. The search textbox allows the user to find media according to the typed letters. Clicking on an item opens the linked media.
8. Info, to display a short note about the project.

A. The Sidebar

The sidebar (fig. 3, up on the right) has two sections: a search box with a filter function and a dynamic legend.

The legend displays cultural heritage properties by typologies using box with different default colors, unambiguous both to colorblind and non-colorblind people (http://jfly.iam.u-tokyo.ac.jp/color); these constraints limit to five the total number of different typologies (sub-typologies to increase the number of different set of properties are under construction). Each box (fig. 4) contains:

- A “marker button” on the left, to hide/show in the map all the markers for that typology – subsequently the box colour change to grey/default colour.
- A “typology name button” on the centre, to show/hide a group of boxes containing a focused image, title and address of properties belonging to that typology, according to search/filtering results.
- A display (on the right) showing the total properties available for that typology, according to search/filtering results.

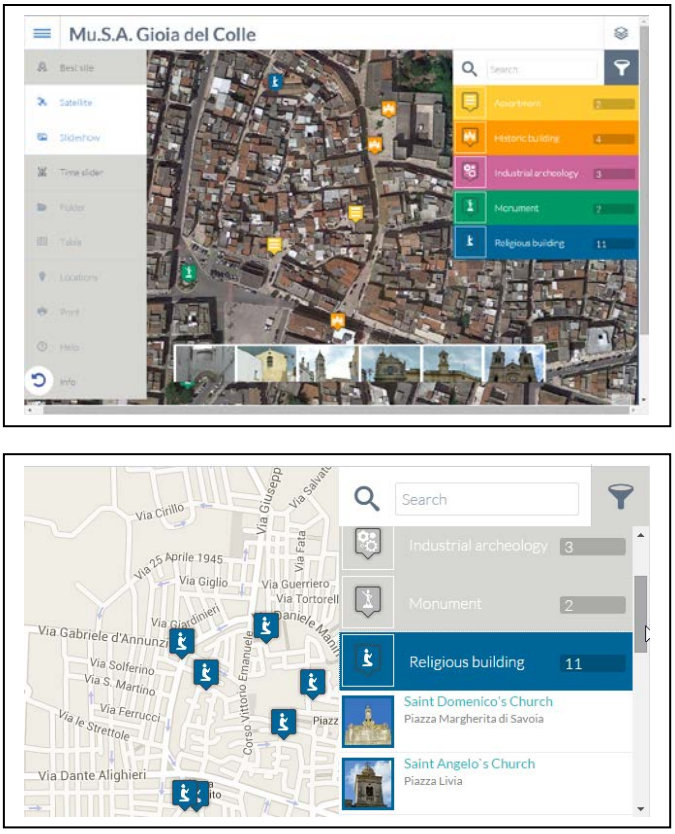

Fig. 4. The sidebar (Only one typology is disclosed in the map).

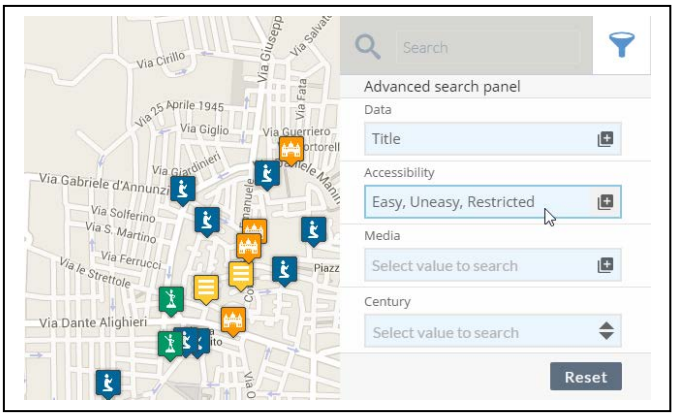

Fig. 5. The Filter panel in the sidebar (All typologies are disclosed in the map).

The search textbox allows the user to find properties according to the typed letters: it updates the display and the group of properties of each typology according to the search results. Moreover, it is possible to select the properties using the filter panel (fig. 5) selecting parameters in:

- Data (default field for text search: title; it is possible to extend the text search in the field address and content – short description).
- Accessibility (default: all; it is possible to filter the search to properties having any combination of easy/uneasy/restricted accessibility).
- Media (default: all media; it is possible to filter the search to properties having any combination of media - Sheet, Gallery, Video, 3D)
- Century (default: all; it is possible to limit the search available: each century in database)

B. The Navigation commands

A set of navigation commands (fig. 3, down on the right) allows the user to locate its position (Locate me) and to magnify (Zoom in) or to reduce (Zoom out) the map scale.

C. The Markers

Each property has its own marker: it could be the same reported in the legend (in the sidebar), or a customized one in order to point out a feature. We use those available at http://mapicons.nicolasmollet.com (it contains also our markers), selecting a black boundary to improve the visibility on clear backgrounds.

D. The Callout

A click on a marker filters the 'media' file on the selected property and opens its callout (fig. 6) showing the name, the address, the main photo, a set of function icons, a short description linked to an extended version (more), age and a set of status icons (qr-code presence, rating and accessibility level using three emoticons - easy, uneasy, restricted).

The following interactions are available, at a click on:

- Main photo: open Folder with all the media;
- Function icons sheet, image, video, 3D: open the Folder filtered by the selected media type;
- Function icon table: open the Table with all the items.

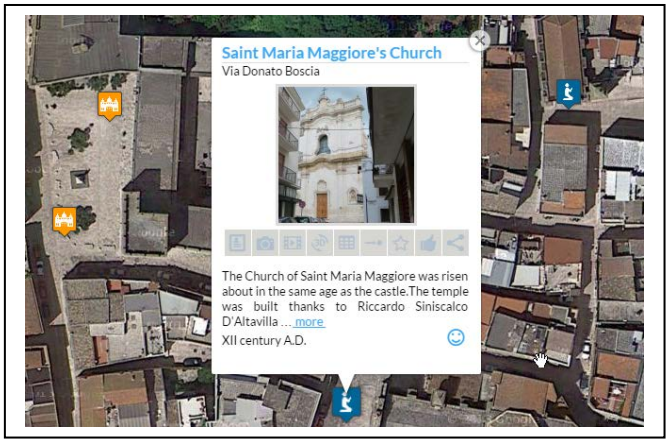

Fig. 6. The callout.

We have developed an authoring system to produce a WebGIS having multiple features and functions to support the users in searching for cultural heritage information according to their needs. Future work will extend the WebGIS use as a tool to assist with the process in the first phase (as opposed to the current manual system) adopting the participatory GIS approach, an effective method for people to identify and communicate resources and values they consider important (http://www.mappingforrights.org/video-training). As a result, if fittingly utilized, it will stimulate innovation and social change, among communities involved, placing control on access and use of culturally sensitive spatial data in the hands of those who generated these.

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