Dealing with the past: the case of the Dodecanese

Enrico DE BENEDICTIS

Vrije University of Amsterdam

Abstract: Some archaeological contexts must ultimately come to terms with an important issue: how to utilize archaeological data produced in the past. Old data has very important information, since they constitute archaeological activity in the main zones of an archaeological site. This becomes an important issue for contexts which have to deal with this situation, especially if the data are extremely important. A good example of this is the archaeology of the Dodecanese. Here, the most important archaeological site excavations and archeological activities were carried during the first-half of the twentieth century under Italian direction. All data were elaborated following the models which were in fashion during the period. The reclamation of these works is the main challenge for the archaeology of the Dodecanese, especially for Kos and Rhodes, where Italian archaeologists like Biliotti and Maiuri were extremely active. Another important issue relates to the creation of a specific topographical cartography set that includes the “carta archeologiche”. These maps, created by the Italian IGM bearing Italian toponyms, were used as the basis for chart series created by the German and American armies. The same maps were used for all the archaeological surveys in the archipelago, among which it is possible to quote the work of Lazenby and Simpson. This paper describes the solution to these issues using the web tool “Tifide”. This ongoing project will make possible to link old raw data and cartography with new data and new cartography in a digital space. The method used here will allow a “regeneration” of the old data that could represent an important development for archaeology in the Dodecanese. In addition to the old cartography materials, specific researches in some archives will complete the “old data pool” together with old publications.

Keywords: Recovery old data, GIS, Web tool, Archaeology of the Dodecanese, Database

Introduction

One of the challenging issues of 21st century archaeology relates to how researchers should confront archaeological data from old excavations. Until techniques begun to be applied systematically in archaeology, such data were considered “lost” and not useful or utilizable since they were created under poor scientific standards radically different from today. Thanks to technology, however, archaeology is progressively improving not only its scientific standards, but also in finding plenty of “join points” with other disciplines like geography and the biologic sciences. The same technology, together with some of these “join points,” finally allows us to recover old data, regenerate them, analyze them, and join them together with new data. A good example of such developments is a tool designed two years ago. Here, will be introduced it by demonstrating its aims, structure, components, working frame, and adoption to a test study.

The Aims

The tool was conceived to provide a wide and standardized data set with specific regard about archaeological and geographical fields. Another characteristic of the tool is to give specific, detailed and complete bibliographical references to each data entry. Other aims of the tools are to make this data pool easily available through the web and make it downloadable in way to help the researchers with a concrete support for their studies. This last aspect is very important since the tool will allow to centralize a heterogeneous data corpus which otherwise will be expensive and not easy to acquire. It is also important to do not underestimate the possible positive outcome if the tool will be applied into cultural heritage field. Furthermore, its settings make the tool an open system and inclusive. In fact, it could be possible not only to improve it quantitatively (spatial and chronological levels), but also qualitatively because every data addition could also produce an improvement of the data already stored. Another important feature of the tool, which it will be described in detail later, is that it allows the recovery of old excavation data that since now were considered of little use because they were worked in base of old standards.

Tool structure, the database

The tool is composed in three main elements which, working together, will fulfill the aims previously stated. There will be a database element which will provide the foundations for the system. It will be shaped in way to contain the sensitive data about archeology and basic geographical information, plus a strong bibliographical base. This type of interaction between archaeological and environmental data will facilitate the identification of trends and/or specific patterns otherwise not recognizable adopting a conventional archaeological study approach. The archaeological data will provide a precise, wide, and punctual overview about every single entry and in a way to give better data coverage on the requested entry. The bibliographical data will provide a very useful bibliographical pool which will refer to the required entry. Entering in the details, the database will be set on archaeological sites as an “entry unit”. It will provide the actual name of the site, the ancient name of the site (if different from the modern), a brief site introduction, a site profile, which kind of archaeological research was carried on the site, the type of archaeological site and its context, material class description, information about the archeological activities, C^{14} data, historical references, chronology (absolute, relative, regional), information about the site quality status, and bibliographical notes. The geographical data will provide coordinates (longitude, latitude, and elevation), information about the site’s general placement (state, region, province, district), a “vicinity datum”, a general referring to the qualities of the site location, photos, and drawings. The bibliographical part will include all published academic papers used for the data assembly process. The idea beyond the design of this database is to be flexible, making it adaptable to every kind of context as much as possible. It is shaped in way to contain no obligatory fields and the minor number of pre-compiled fields and valors. The main form will contain a progressive number which will be the main key to set the relationships. Then, the following fields will be site name, site ancient name, site introduction, site profile/essay, archaeological research type (intensive excavations, test trench, emergency excavation, survey, etc.), site context/typology (settlement, necropolis, sacred place, etc.), historical references when available (e.g., Od. 1.1-5), site quality status (looted, excavated, not excavated, destroyed, damaged, etc.), coordinates (X, Y, Z), nation/region/province/district, vicinity datum,[1] general geographical site setting (plain site, hill site, mountain site, coast site, etc.), photos and drawings. In different forms and always related with the main one through the progressive number, which will serve as the identification number for each site, are stored all data that require specific treatment like chronology, material classes, C^{14}, and bibliographical references. The chronology form will provide the site dating in absolute, relative and local chronology. Material classes form will provide a complete view about the archaeological materials found in the given site without going in the detail of the single object. The bibliographical references form will provide all the bibliography that was used to create the given data entry, and in case of digital resources there will be provided a link to the relative paper (monographs, conference acts, etc.). A database shaped in such way represents the best solution to respond to specific aims, providing a complete archaeological data set about a specific territory both in micro and macro scale, and giving a precise, rich, and complete information set about a given site which is the base for any further specific study. There will be an easy and effective integration between old and recent archaeological data, greatly facilitating bibliographical research work and easily joining with a GIS environment and other databases. The adaptability and flexibility of the database will be granted by avoiding as much as possible the obligatory fields and pre-filled fields. In this way it will be possible to use this tool theoretically in every spatial and chronological context. The advantage of such a setting is that it allows the a union between different data sets belonging to different, even distant both in space and time, areas while also giving the chance of complex queries, join data analyses, and specific queries on small/medium/large scale.

Tool structure, the GIS environment

The second element is a GIS environment. The GIS environment is shaped in way to further support the database and enhance its potential. The data that compose the web environment are, of course, both vector and raster. The dataset will include SRTM[2] files, aerial photographs, satellite imagery, topographic maps of different scale (an effort will be made on acquiring the most detailed and complete sets) of different production and periods (e.g., the Russian charts from the Cold War and the WWII German, Italian and American charts), nautical charts of different scale, land register charts, geological maps, maps/charts/photos/drawings from the publications, historical charts, and historical atlas charts. Concerning the vector data, there will be hydrographic data, political and administrative boundaries, road and railway tracks, modern cities/towns/villages, and pilot charts maps.

---

[1] For vicinity datum is intend a datum which will supply the name and coordinates of the closest center to the archaeological site (ex.: for the site of Mycenae it will be Mykines). This datum could be extremely important in case there will be sites for which will be impossible to provide its coordinates, in this way there will be possible to, at least, use the site data for generic analyses and then it will be not one of the “lost data”.

[2] http://www2.jpl.nasa.gov/srtm/srtmBibliography.html

Tool structure, the web environment

Finally, the third block: the web environment. This part of the system is the central point of the program. Thanks to this element both the database and GIS projects will be available open-source. The web environment will be not only a mere shell for the elements described above, but much more. The web environment will contain for each project work unit (e.g., the Dodecanese, Troad area, etc.) a paper that will illustrate the general outcome of the work done on this area. In this context, it will be used as a hypertext technology,[3] which will improve the solidity and the efficiency of the contents. Of course, the related metafile will be provided for each project work unit. WebGIS[4] applications will also be available in a different section to allow the consultation of both GIS and database data. It will be possible to consult only the database, which will be hosted in another section of the web environment. There will also be established a download area where one can download the data free from copyright laws. Another important section will be the "link" zone, in which useful links will be provided to other online resources and sites which could have important information and help the researcher in his/her work. It will also be possible to have another section for students and researchers to upload their thesis (B.A., M.A., Ph.D.) and/or research works, in this way the outcome and efficiency of the tool will be remarkably improved.

Dealing with the past

as anticipated before, the tool is extremely effective for the recovery of old data. This recovery takes place by both database and in GIS. In GIS, the recovery takes place in three steps: acquiring, working, and join. The first step, acquiring, consists in the search, finding and acquiring of hardcopies in the old publications, old field documents, diaries, notes and every kind of document that contains data related to the entry. Once this corpus is established, there will be the digitalization phase in which all these documents will be scanned in the best quality format possible. The same path will be used to recover old materials that will be used in the GIS environment, but here the digitalization criteria will be strict: at least 300 dpi and in TIFF format. After the data is acquired, it will be possible to start the working process. This data corpus will be reworked without altering the data. As a first step there will be a skimming operation: data that will be worked to fit in the database and data that will be integrated in the GIS environment. Then, the data that will be addressed to the database will be worked through that could be called "furnace paper." A "furnace paper" is an operation that consists in the study of old material and, attending some basic directives (focusing on wide concepts like what/where/when), the reorganization of data in a paper containing modern data. This operation will produce three remarkable outcomes: first, the old data will be regenerated because they will be processed by an oriented and actual mind frame which allows the discarding of the useless information and set the good old data in way to make them useful. Second, in this way the data will be ready for the final standardization which will occur during the data entry process. Third, the old data, now regenerated, will be joined together

[3] Bolter J.D., Joyce D. 1987

[4] Pinde F., Jiulin F. 2011

with the new data, creating a totally new and complete information set that finally will be ready to be transformed in a database data pool. The old data that was assigned to being integrated in the GIS environment follow a slightly different process, which begins with georeferentiation. After that, there will be elaborated vector files of the data that will be considered important or that, otherwise, would be lost (e.g., writing in languages which are not English or difficult-to read handwriting). Once the data is processed in this way, they will be ready to be joined together with new data sets. Joining old and new data in GIS together with the GIS data should also produce positive outcomes of interest in the management and protection of archaeological heritage. In fact, having the opportunity to overlap plenty maps and charts of different typologies and periods and joining them with vector data and finally put those in relation with archaeological data, could give us important information about how to protect archaeological contexts and also to understand how it was damaged in the past.

In the end of this whole process, it will be possible to use again old data which previously were considered lost. The value of the new data will be enhanced because of this integration but also because they will be available open-source.

A study case

As a testing subject for the system attention was focused on the Dodecanese archipelago, Greece. This group of islands is located on the south-eastern margin of the Aegean Sea. Together with Crete, they constitute a "belt" which divides the Aegean Sea from the eastern Mediterranean. The major islands of the archipelago are Rhodes and Kos. Its particular localization, a "doorway," between central and eastern Mediterranean but also between the Aegean, Anatolian and near eastern worlds, makes this archipelago an interesting study area.[5] The islands have a long story which start from the prehistoric times and continued without interruption to today. The period which was taken under exam was between the late Middle Bronze age and Early Iron Age (1700-900 B.C.E. circa). As a first step, it was created the so-called "furnace paper" and then a prototype of the database which contains the data collected in the paper was created. So far this prototype contains 140 entries. The first aim of this phase was to create a solid data pool about post WWII data. At the same time, the work on the GIS environment started: essentially it concerned data collecting and the processing of SRTM files, modern nautical charts, and topographic charts. The topographic scale of this material is various and it depends essentially on the production, which is not often uniform. After this first step, the collecting of old data started. The priority will be given to the material which will be destined to the GIS environment. In this way and charts from the WWII period and before made by different military topographic offices (American, German, and, most importantly, Italian) were collected. Also, It was possible to find a very old chart set (1837) about Turkey which contains some Dodecanese islands[6] and also old nautical charts. A great issue related to the search and acquiring of the old materials, both for GIS and

[5] http://dbas.sciant.unifi.it/CMpro-v-p-73.html

[6] Paton W.R., Myres J.L., Weller F.S. 1897

database matters, is the great data dispersion, mainly between Italy and Greece, which makes everything more difficult. In fact, most of the GIS data and some materials which will be worked for the database come from the library of the University of Chicago and IGM Institute of Florence (Italy). The high effectiveness of this method emerged also in this working progress phase and such results, which must be considered partial because the inclusion of old data is needed. The partial outcome of such method was presented in the research seminary about insularity at the VU University (Amsterdam) and later on also in a lecture at the University of Florence (Italy)[7].

Summing up

As we saw, the archeological research addresses questions that the analysis of the recent or less recent data cannot solve. The old data are essential for that solving. But the old data are not useful if they will be analyzed and/or worked then processed using a conventional approach. For this reason, it is of utmost importance to study and develop specific tools and a data analysis approach that enables us to break this "wall" between us and the old data. Fulfilling these needs, the above methodological approach was designed and, so far, is revealing fruitful. The tool also could fulfill secondary, but not less important, requisites: simplicity, availability and flexibility. Those are the "condition sine qua non" to create a real effective and useful tool that will produce a significant outcome.

Acknowledgments

I would like here sincerely thank you to Prof. B. Ridderhof of VU University (Amsterdam, The Netherlands), Prof. A.M. Jasink of Università di Firenze (Florence, Italy), Christopher Winters, Tate Paulette and Mike Johnson of the University of Chicago (Chicago, US) for their extremely precious help and suggestions.

[7] http://dbas.sciant.unifi.it/CMpro-v-p-73.html

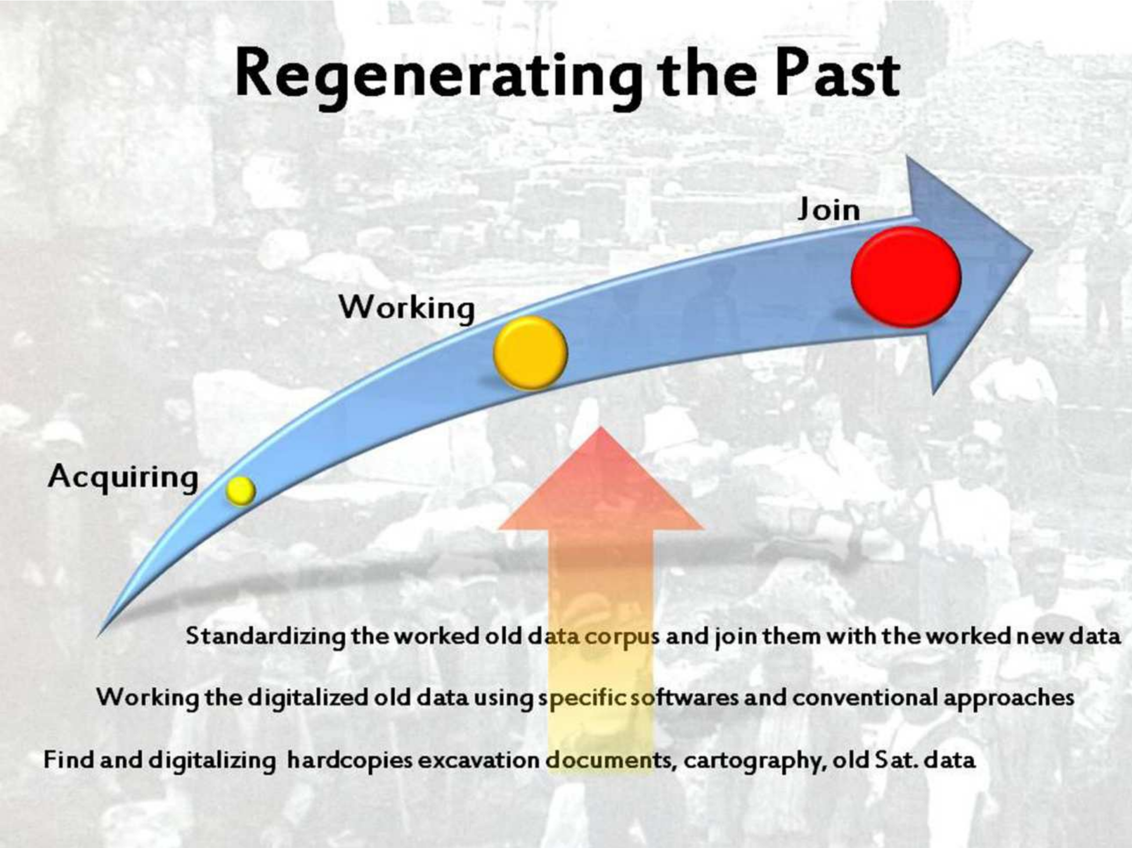

Fig. 1 – Methodology used for regenerate old data

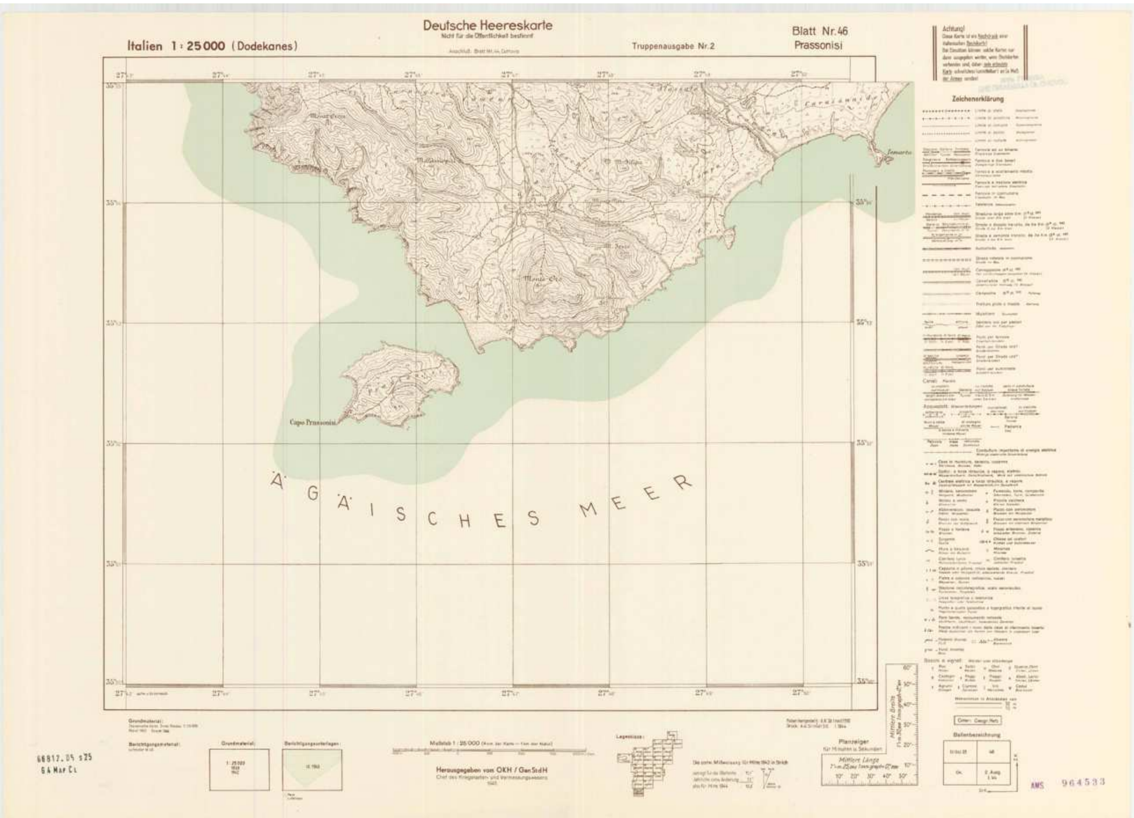

Fig. 2 – A German topographic chart from the WWII period

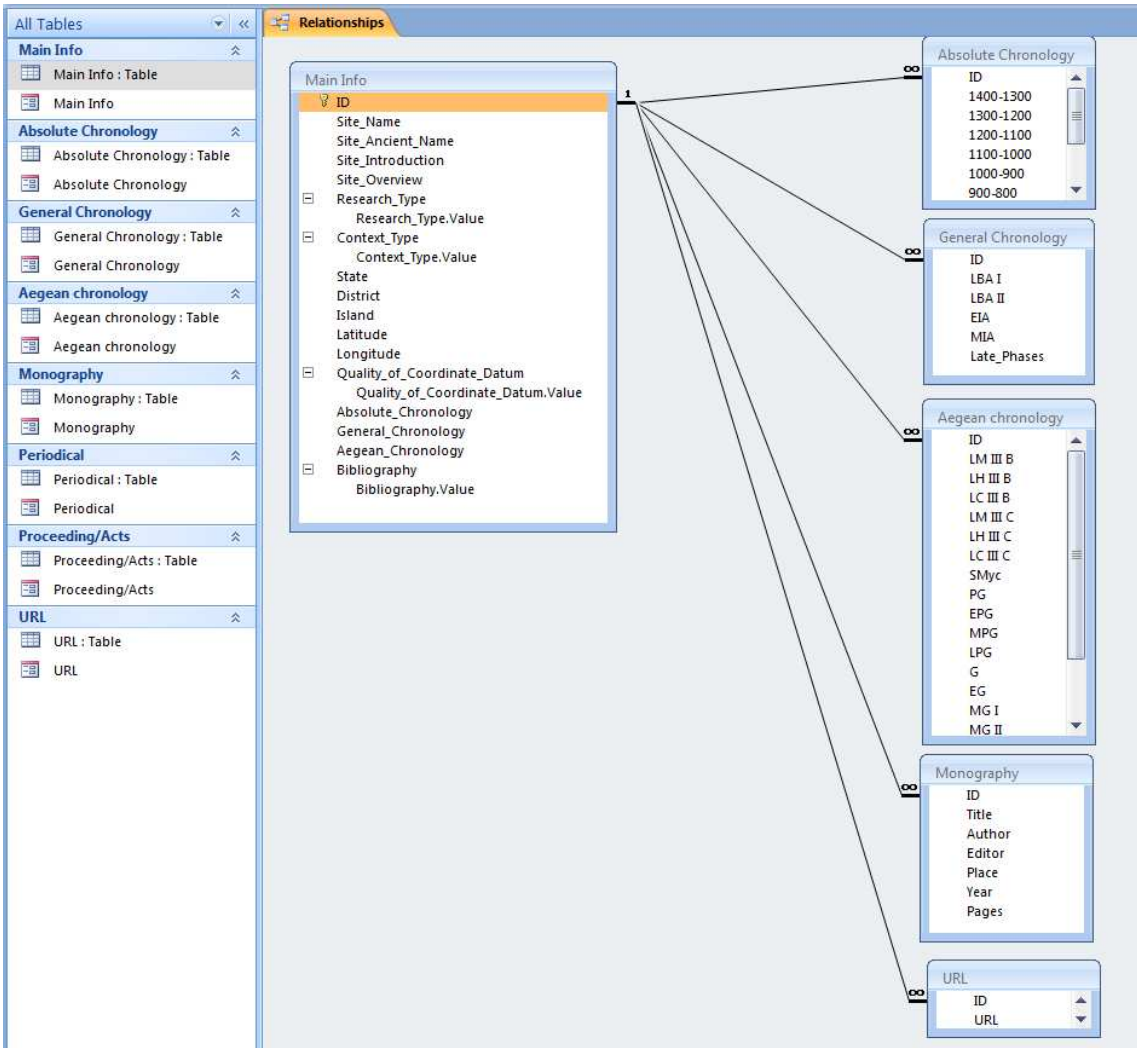

Fig. 3 – Structure of the preliminary database

References

BOLTER J.D., Joyce D. 1987: Bolter J.D., Joyce D., "**Hypertext and creative writing", in "**HYPERTEXT '87 Proceedings of the ACM conference on Hypertext", New York 1987, pp. 41-50

PATON W.R., Myres J.L., Weller F.S. 1897: Paton W.R., Myres J.L., Weller F.S., "Map of part of Karia / based on Kiepert's map with additions from the surveys of Messrs", Royal Geographical Society London, 1897

PINDE F., Jiulin F. 2011: Pinde F., Jiulin F., "Web GIS: Principles and Applications", ESRI, Incorporated, 2011

Imprint:

Proceedings of the 18th International Conference on Cultural Heritage and New Technologies 2013 (CHNT 18, 2013)

Vienna 2014

http://www.chnt.at/proceedings-chnt-18/

ISBN 978-3-200-03676-5

Editor/Publisher**:** Museen der Stadt Wien – Stadtarchäologie

Editorial Team: Wolfgang Börner, Susanne Uhlirz

The editor's office is not responsible for the linguistic correctness of the manuscripts.