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What is a Digidactic Archive? New Didactic Tools for Epigraphy, Paleography and Philology in Florence

Abstract. **What is a Digidactic Archive? New Didactic Tools for Epigraphy, Paleography and Philology in Florence.** Digital and interactive tools have been recently improved in building up Virtual Galleries for Archaeological Museum Collections, but have been also positively applied to the Epigraphic, Paleographic and Philological Research. The topic of this study will be the analysis of the results of projects hosted by local cultural Institutions, as University, Museums and Libraries in Florence. With the aim to outline an overall picture of this dynamic research field, we created Digidactic as a neologism to explain the recent trend in adopting Digital resources for the didactic of Antiquities.
Keywords. Digital tools for Education; Aegean Bronze Age; Epigraphy, Paleography; Philology.

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1. Introduction. When Antiquities and Digitization meet up

Digidactic is a neologism we created to better explain the recent trend in adopting Digital resources for Didactic purposes. Such a trend revealed interesting applications to Humanities and, in particular, to the wide horizon of studies of the Ancient World. Digital and interactive tools have been recently improved in building up Virtual Galleries for Archaeological Museum Collections, but have been also positively applied to the Epigraphic, Paleographic and Philological research.

With the aim to outline an overall picture of this dynamic research field, we will describe the main research lines and case-studies devoted to the creation of Digidactic Archives and Museums. The topic of this study will be the analysis of the results of projects hosted by local cultural Institutions, as University, Museums and Libraries in Florence. In fact, it is worth noting that an interesting series of scientific and educational researches has shown a peculiar attention to the development of these new approaches in this area.

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* §§ 1, 2a are by L. Bombardieri; §§ 2b, 2c and 4 are by A.M. Jasink; 3a is by F. Michelazzo; 3b is by G.A. Cecconi, 3c is by C. Bianca, 3d is by R. Miriello.

This joint paper will focus upon projects directly dealing with Philological and Epigraphic aspects, where analogous digital tools have been applied to traditionally different research fields (from Bronze Age Aegean Epigraphy to Medieval and Renaissance Paleography).
Recent activities of the @egean – Laboratorio di Civiltà egee at the University of Florence will be described in the following first section of this paper, particularly drawing the attention to the Epigraphic and Philological resources available for the study of Bronze Age Aegean Cultures (FIG. 1). The contribution of Florentine Philological research to the creation and development of digital resources devoted to Classical and Post-Classical periods will be analyzed in the second section of this work.

The above described issue will be here extensively discussed, while a further parallel paper will focus on the analysis of Digidactic Museums and Antiquities Collections in Florence (see Bibliography).

Figure 1. Home page of @egean [http://aegean.sns.it]

2. Digital resources for the Epigraphy of Bronze Age Aegean:

the recent research activities of @egean – Laboratorio di Civiltà egee at the University of Florence [http://aegean.sns.it]

2a. Fonts for Cretan Hieroglyphic and Ideograms in Linear B scripts

During the last years, while only a few Aegean scripts fonts were available for download on-line (e.g. Linear A and B Syllabaries in particular[1]), the full creation of an original collection of specific Aegean Bronze Age scripts fonts has been planned within the research core activity of the @gean Lab in Florence.

Thanks to the joint work of graduate students under the technical and scientific supervision of the @geanLab staff it has been possible to create a series of five brand new fonts for Cretan Hieroglyphic and Linear B for Win and MacOs X, currently free to be downloaded on a dedicated section of @gean web portal (www.aegean.sns.it/dbas).

Cretan Hieroglyphic fonts have been originally named minosigns 01 to 04 (FIG. 2).

minosigns01 (32.96 KB) is the font of Engraved Hieroglyphis Signs, and it is based on the original proposal by A. Evans (Evans, Scripta Minoa, Oxford 1909).

minosigns02 and **minosigns03** (respectively 41.87 and 24.40 KB) are fonts of Engraved and Inscribed Hieroglyphic Signs, originally defined *maigres signes* and *gras signes*, by J.-P. Olivier and L. Godart within the CHIC (Corpus Hieroglyphicarum Inscriptiones Cretae, Paris 1996) .

minosigns04 (22.85 KB) collects and lists the Engraved Symbols on Hieroglyphic seals, which can be eventually considered as variants of script signs or signs not numbered in CHIC.

Lastly, a font of Ideograms in Linear B script (**LinearB Ideograms**, 80 KB) has been added to the downloadable series of AegeanLab.

The Laboratory sessions and joint work allowed us to improve the applied method within a positive work in progress. At the end, we can outline the main work steps and application problems we faced in creating the collection of Aegean scripts fonts we planned.

First step is to determine whether to create your font digitally (on a tablet, in your font editing software) or traditionally. For those who can digitally create a font, typically you will have a stylus pen with your mousepad and can draw the digital letters freehand using the stylus. If you are relying on traditional methods, you can use good paper and a black marker.

We tried both possibilities drawing out the signs from original photos taken form seals, sealings or clay tablets. In case of traditional hand-drawing,

1. See in particular http://fontyukle.net or http://fontpalace.com for Linear B fonts download in TruType format. See also the information of dedicated sections within Mnamon, Lila Project, Scuola Normale di Pisa (with no options for fonts download).

the sign was scanned at least a 200 dots per inch (dpi) setting. After the scanned image is made, we eventually have cleaned up dirt and dust, if any.

Second step is to turn the obtained image file into a vector image using a graphic editor and then copy it in vector data through a font editor.

Font editing software comes in a variety of strengths and works on a variety of platforms. All of these programs operate on the same principles, differing in specifics, interface, and levels of options and power.

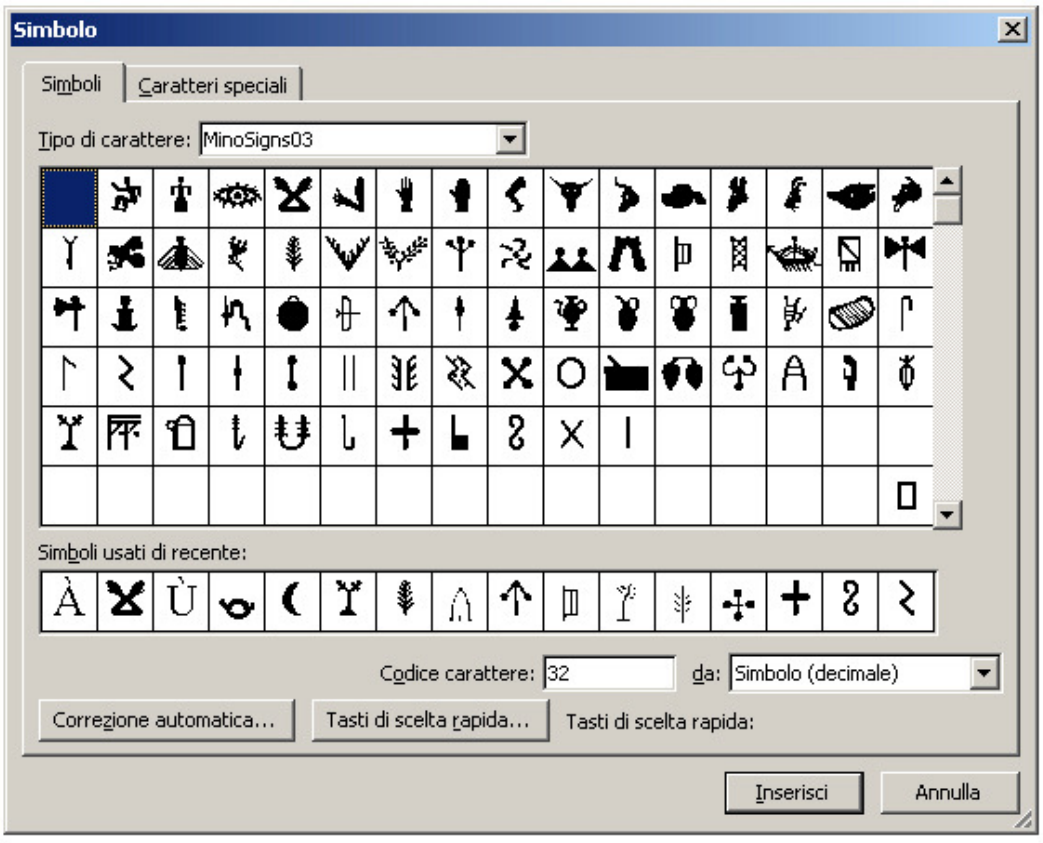

Figure 2. Font of Cretan Hieroglyphic script [MinoSigns 03]

During the Laboratory sessions we tried starting with TypeTooland then upgrade to FontLab Studio once the limitations of TypeTool[2] become an issue.

Third step is kerning, i.e. adjusting of your spacing between the characters to make them proportional among them as well as with the other commonly used fonts, since we must consider that the script line will be often included within a text typed in a standard 'modern' font.

Fourth step is to export the typeface that was created. Several web resources can be available to perform this operation on-line. Some of the web

2 TypeTool from FontLab is a more entry-level product for Win and MacOS. FontLab Studio has similar performances ad FontForge but it is free and open-source. Nevertheless, installing FontForge for Win is not simple. FontForge is available for PC, Mac, and Linux. (for Linux users, FontForge is the only possibility).

sites may eventually charge you to create and export your font, while others will let you do it for free[3].

Once created, the fonts have been uploaded on the dedicated section and make them visible from the homepage of the @gean web portal, as well as for Google indexes.

Last step (the only one for the users) is to download and install the Fonts onto their PC or Mac. Most computers allow you to do this through the fonts folder on your computer's control panel. Some computers will allow you to simply drag and drop your font file into the font folder. Other computers and operating systems require to take the additional step of actually installing the font.

In conclusion, the final aim of the work was to create a flexible digital tool on a user friendly on-line platform. The easy download of fonts is basically intended for simplifying the composition of scientific texts, requesting the use of normalized scripts signs for Aegean Bronze Age epigraphs.

We are finally particularly pleased to record positive feedbacks from colleagues and students, who have used our Cretan Hieroglyphic and Linear B fonts in the last years.

2b. Statistic and Data analysis of Cretan Hieroglyphic script signs: DBAS-CHS DataBase.

DBAS-CHS has been the first database created inside the DBAS project - an acronym for Data Bases about Aegean Subjects - started in 2005 and become subsequently a section of @egean. This database has two main purposes:

1. The online consultation of the Minoan seals on which Hieroglyphic script-signs are depicted, giving an immediate overall view of each seal, visualizing and analyzing its main features. A complete digital archive of the Hieroglyphic seals corpus is offered, which may be implemented according to new discoveries and studies; it furnishes provenance, shape, material, context of finding and description of the single symbols appearing on the faces of the seal. The main object of this consultation is the seal itself.

3 See http://fontstruct.com/. FontStruct let you create for free and give you TrueType fonts that you can easily use with either a Mac or a Windows application. See differently YourFonts (http://www.yourfonts.com) where a small fee is charged to make a font. Online tutorials about how to construct your own font can be found at [http://www.youtube.com/watch?v=xNtnjkw2FGY "How to Create your own TrueType Font for Free"] and [http://www.youtube.com/watch?v=4snowyz35SA "How to Create Your Own Fonts for Free"].

2. The creation of a research system related to the signs carved on the different seals: starting from a single sign – and not from a single seal, as in the previous consultation – we may ask the database for specific queries about the whole range of data connected to script-signs.

It is particularly this second aspect of DBAS-CHS – that we are going to discuss below – which represents a main tool for "digidactic" aims. Beyond its employment in scientific researches, it may be used to help students and scholars to understand the significance of Hieroglyphic signs and stimulate queries about them. Hieroglyphic script has not been deciphered and interpreted, and statistic data about signs is fundamental to undertake every attempt of interpretation (FIG. 3).

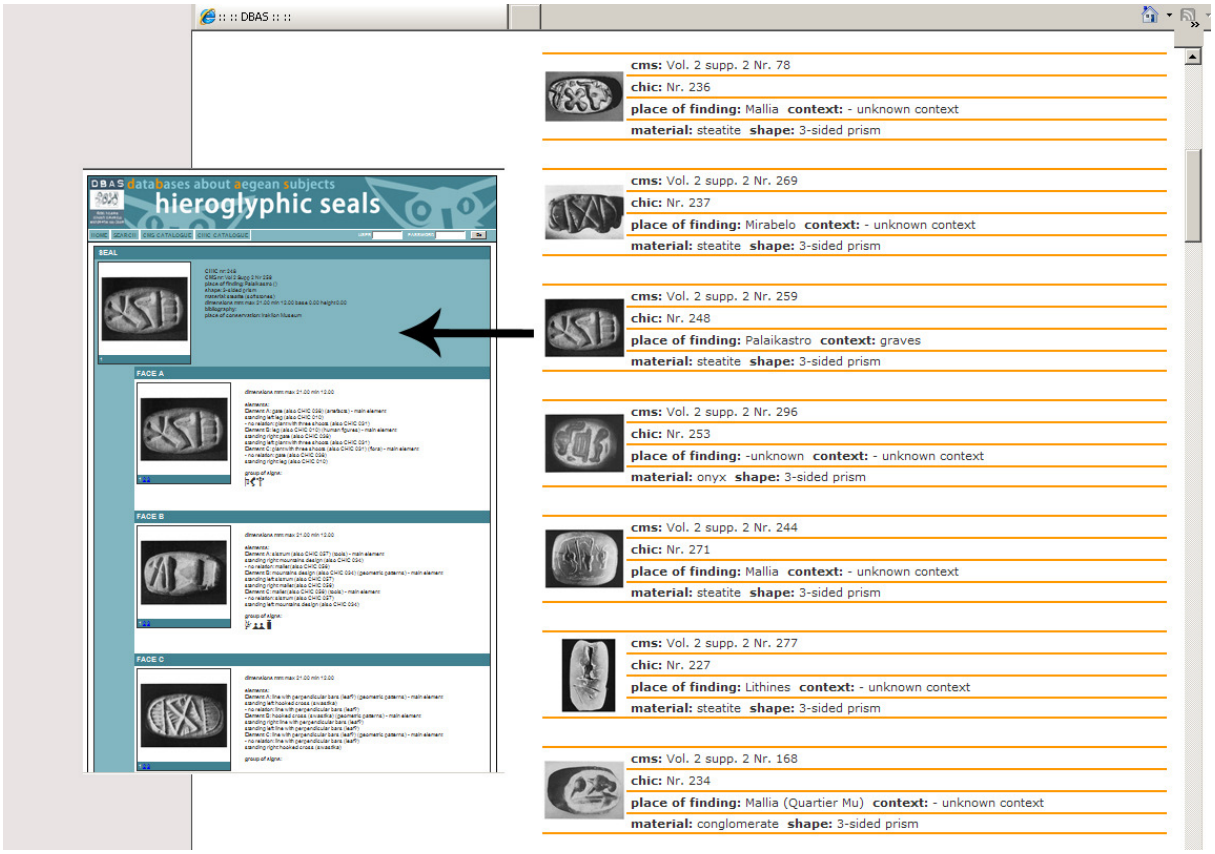

Figure 3. Data-base on Cretan Hieroglyphic seals [DBAS-CHS]

Another point of interest is that in our database are considered not only those symbols that traditionally – according to CHIC classification – have been already recognized as Hieroglyphic signs, but also "iconographic" symbols attested next to the ratified script-signs: these latter are analysed at the same level of the first ones and allow a new kind of search based on the association patterns between these two types of elements. As we already noted "the results, verifiable on a statistic ground, may offer new hints about recurring series of

symbols, possible different interpretations of the so-called variants of each symbol and, most of all, may clear up a conceivable script value for some symbols, till now considered as iconographic" (Jasink, Bombardieri, Marino 2009: 252).

It is obvious that it has been easier to construct this Database having previously created our series of fonts, and especially **minosigns4**.

Entering into details, the search referring to single - script and iconographic – symbols, is organized into three main queries:

a) we may obtain the complete occurrence of a single element within the whole corpus of symbols, with the display of a table which specifies not only the Numbers of CHIC where the symbol is found and its function (main or secondary, according to its position and dimension) but also its statistics, i.e. the item found and the item percentage with respect to the other symbols;

b) we may ask the relation between a symbol and the symbols occurring on the same face of a seal: a second table lists all the symbols in question, the number of occurrences together with the selected symbol, and the percentage of their relations;

c) we may choose two symbols, and a table appears with the single statistics about both elements and a list of the seals which present a relation between the two symbols. A total combination and the matched relation complete the table.

The output is very satisfactory since it provides a list of all the elements related to the selected one, the detailed relations between two elements and the percentages with respect to the total processed combinations.

The input and consultation interfaces are programmed in the PHP language (Hypertext Preprocessor). The user has a disposable field for dedicated queries based on SQL (Structured Query Language), that is a special-purpose programming language designed for managing data held in RDBMS (Relational Database management System).

2c. DBAS-LASV: a DataBase on Linear A inscriptions on Minoan Libation Tables.

This Database is still a work in progress, but the content is just ready. It deals with the Linear A inscriptions which appear on the so-called "libation tables", stone vessels found in Minoan cultic areas, especially sanctuaries on the mountains but also within and next to Minoan palaces. The study has been made as a master degree thesis by dr. Chiara Margheri, and with the help of the team of DBAS she is inserting all the data within a database. First of all we will obtain a series of tables, each one referred to an inscription and associated with

images (photo, drawing, both of the inscription and of the supporting "table"): the query may be carried out according to number, provenance, type of context, and similar. A more specific query concerns single signs and groups of signs of the inscriptions.

2d. Selected publications of @egean research project

Jasink, A.M., Baldi, M., Bombardieri, L., Carminati, F, Gonzato, F. 2006 - "Collecting Databases about Aegean Subjects on-line (DBAS Project)", *Kadmos XLI* : 173-186

Bombardieri, L., Gonzato, F., Jasink, A.M. 2007 - "New reaserch tools for the Aegean Studies. The DBAS project on-line", *do-so-mo. Fascicula Mycenologica Polona* 7: 81-92

Jasink, A.M., Bombardieri, L., Marino, M. 2009 - "The Ahhiyawa Question and the Cretan Hieroglyphic Seals: two Databases in the DBAS project" in (F. Pecchioli Daddi, G. Torri, C. Corti eds) *Central-north Anatolia in the Hittite period: New Perspectives in light of recent Research*, Acts of the International Conference held at the University of Florence (7-9 February 2007), Roma: 249-257, pl. XXX-XXXII

Bombardieri, L. 2009 - "The Data Base on Cretan Hieroglyphic seals (DBAS-*CHS*)", in A.M.Jasink, *Cretan Hieroglyphic Seals. A new classification of symbols and ornamental/filling motifs*, Pisa-Roma: 197-207

Jasink, A.M., Tucci, G.,.Bombarbieri, L. (eds.) 2011 - MUSINT. *Museo interattivo delle Collezioni egee e cipriote in Toscana. Ricerche ed esperienze di museologia interattiva*, (= Periploi 3), Firenze

Jasink, A.M. 2011 - "Il patrimonio egeo-cipriota e l'archeologia pubblica" in (G. Vannini ed.) *Archeologia pubblica in Toscana. Un progetto e una proposta*, Workshop 12 luglio 2010, Firenze: 119-124, Firenze

C.Faralli, A.M.Jasink 2012 - "DBAS web portal: on-line data bases on Aegean Subjects", in *Proceedings of the 38th Conference on Computer Applications and Quantitative Methods in archaeology*, Granada April 2010 (*CAA* 2010)

Jasink, A.M., Tucci, G., Cini, D. 2012 – "MUSINT: a virtual habitat for relocated archaeological artifacts", in (W.Borner, S. Uhlirz, L. Dollhofer eds), *Proceedings of the 16th International Conference on Cultural Heritage and New Technologies*, November 14 – 16, 2011, Wien, Wien: 185-200.

Jasink, A.M., Bombardieri, L., Dionisio,G., Tucci, G., Cini, D., Nunziati, W. 2012 - "MUSINT Project: towards a digital interactive archaeological Museum", in (V. Cappellini ed.) *Proceedings of EVA 2012 Florence*, Firenze 9-11 maggio 2012, Firenze: 113-118

Bombardieri, L., Jasink, A.M 2012 - "Risorse e Tecnologie digitali per una Protostoria egea e cipriota. Un nuovo orizzonte attraverso banche dati digitali e musei interattivi nell'ambito delle Civiltà Egee. Progetto DBAS e

progetto MUSINT a confronto", *Archeomatica* N°4, Anno III, dicembre 2012: 6-13

Jasink, A.M, Kruklidis, P. 2013 - "Urban and extra-urban cult buildings in the Aegean world: from the excavation to the 3D reconstruction", in *Proceedings of the 17th International Conference on Cultural Heritage and New Technologies,* November 14 – 16, 2012, Wien, Wien: 1-14

Jasink, A.M. 2013 - "Experiments on Aegean virtual Museology", in *Proceedings of the 16th Symposium on Mediterranean Archaeology*, 1st-3rd March Florence 2012, Oxford 2013: 1177-1182

Bombardieri, L., Jasink, A.M. 2014 - "Lo sviluppo di Digidactic tools nella didattica tradizionale ed interattiva: casi studio di collezioni archeologiche toscane", *Archeomatica* N°2, Anno V, giugno 2014: 22-26

3. Digital tools for Epigraphy, Paleography and Philology: a few Case-studies from Florence Cultural Institutions.

3a. A digital Ancient Greek-Italian Dictionary

Digital resources can prove very useful in the teaching of languages, especially those like Greek and Latin, which, compared to modern ones, present additional difficulties because of no longer being spoken and referring to socio-cultural realities different from ours.

Of course, one thinks immediately of multimedia (texts accompanied by images, sounds, etc.). But there is another aspect, more subtle and profound, which pertains to semantics (a linguistic dimension much more complex and elusive than phonetics, morphology and syntax): the possibility that new lexicographical tools can help users – and especially inexperienced ones – in reconstructing the complex network of relationships which connect the elements of a text, thus realizing the formation of the meaning.

From this point of view, traditional paper dictionaries suffer from fixity (users are forced to follow the path of lexical analysis offered by the book) and atomization (users are forced to analyze words in sequence, one by one). Only in small part are these problems solved with the CD usually attached to the volume, which essentially reproduces the printed edition, with only a few marginal additional features.

These considerations led to the idea of a Greek (and maybe, in perspective, a Latin) dictionary in digital format which, thanks to the potentialities of informatics, would activate more "dynamic" paths of analysis, closer to the relationships of sense arising among the components of an utterance; a tool highlighting the fundamental semantic oppositions (positive/negative, deliberate/not deliberate etc.) and the contextual conditions under which a polysemic word gains one or another of its possible meanings.

This operation is part of a larger project of renovation of classical languages didactics. From it a new handbook originated (F. Michelazzo, *Nuovi itinerari alla scoperta del greco antico. Le strutture fondamentali della lingua greca: fonetica, morfologia, sintassi, semantica, pragmatica*, Firenze University Press 2006) which has given good results both for university "absolute beginners" and – the paradox is only apparent – for future teachers. The dictionary is meant to be the extension and completion of this volume, from which it takes and applies the methodological approach (with a constant attention to semantic and pragmatic-contextual phenomena) and to which it furnishes the necessary lexical basis. This will make it easy to go from one word to the illustration of the phenomenon characterizing it; and in the theoretical treatment of a phenomenon it will be easy to deduce from the dictionary the words involved and the relative exemplification.

Once completed and become operational, this "integrated package" (handbook + dictionary) will be employed in kinds of "didactics in the distance" (which several universities are promoting), and will prove interesting for high school teachers too: they will have the opportunity both of easily selecting words and phrases with certain characteristics, and of cooperating in the implementation of the system, enriching it with didactically useful materials, in a sort of collective "work in progress".

The realization of the project is proceeding on a dual track: on the one hand, the collection of linguistic data (prof. Francesco Michelazzo with collaborators); on the other, the development of computer procedure (prof. Paolo Nesi's collaborators, Department of Information Engineering – DINFO – University of Florence) (FIG. 4).

Gli esempi che seguono intendono dare un' idea, pur sommaria, di trattazione di parole problematiche, e in particolare della possibilità di codificare le situazioni di polisemia attraverso l' individuazione – anche con apposita simbologia – di alcune fondamentali opposizioni semantiche; p.es.

⇔ presenza di un' opposizione semantica
↓↑ opposizione semantica attivo/passivo
☺ opposizione semantica positivo/negativo
⚠ rischio di interpretazione errata (falsi amici ecc.)

Selezionando, nella maschera di ricerca, le caratteristiche desiderate, si potranno scaricare dal dizionario tutte le parole che presentano un determinato fenomeno (semantico, sintattico, morfologico), rendendo così più facile la sua comprensione.

1. κ α τ α σ τ ρ ο φ ή

classe semantica: nome

radice: str$^{e}/_{o}/_{\circ}$p^{h} «ruotare»

⇔ κ α τ ά = [1]«sotto» oppure [2]«arrivo al punto finale»
⇔ ☺
⚠

* da κ α τ ά [1] = «conquista, assoggettamento»
* da κ α τ ά [2] = ☺«esito, conclusione» (non necessariamente negativa) di una vicenda, della vita ecc. – ☹«catastrofe»

2. ἀ β λ α β ή ς

classe semantica: aggettivo

radice: blab «danneggiare»

⇔ ↓↑

* ↑«innocuo»
↓«indenne, incolume»

3. π α ρ α δ ί δ ω μ ι

classe semantica: verbo

radice: d$^{\bar{o}}$ /ŏ «dare»

⇔ ☺

* «trasmettere, tramandare»
* ☺«dare, consegnare»
☺«affidare»
☹«abbandonare, tradire»
* «concedere» τ ι ν ι τ ι ~inf.

Figure 4. Sample entries from *Digital Ancient Greek-Italian Dictionary*

3b. The EDR-project Etruria (Epigraphic Database Roma) [http://www.edr-edr.it/Italiano/index_it.php]

The international project EAGLE (Electronic Archive for Greek and Latin Epigraphy) is part of an European financed project (Eagle-Europeana). It aims to digitize the entire epigraphic heritage of the Greek and Roman world (published documents from archaic times to late antiquity). The schema of the data and their inclusion in the database is much more articulated and rich than previous ones; it is constantly updated and made through a complex system of checks among cataloguers, regional and central supervisors (FIG. 5).

EAGLE is organized for the moment around four major research team, based in Italy, Germany, Spain, but there will be an extension of the framework of collaborations. It is a system of federated databases.

The material of Urbs-Rome and Italy is based on a project called EDR (Epigraphic Database Roma). Further to the deliberations approved in Rome in 1999 by the Commission "Épigraphie et Informatique" of the Association Internationale d'Épigraphie Grecque et Latine (AIEGL), EDR was launched as an experimental project aimed at creating a unified database for ancient epigraphy. In 2003 EDR became an independent structure following up AIEGL's decision to gather under the same portal a number of single databases, all having common features, instead of creating just one extensive base. This resolution marked the birth of EDR as an independent databank.

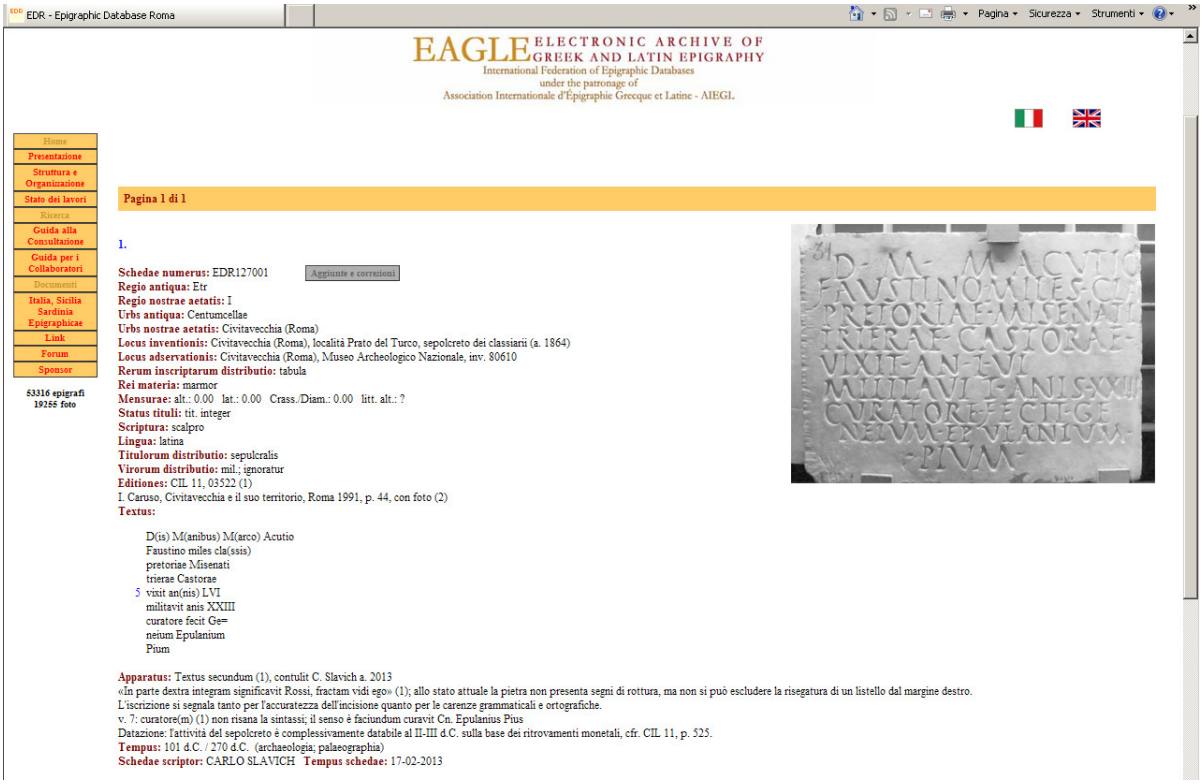

Figure 5. Sample entry from *EDR- project Etruria (Epigraphic Database Roma)* [http://www.edr-edr.it]

Since 2010, Prof. Giovanni A. Cecconi coordinates a research group formed by a group of young scholars working on the inscriptions of Roman Etruria and (partly) Aemilia. The dossier is composed at least by six thousands documents, without calculating the unpublished documentation, itself noteworthy from a numerical point of view. Until now, the inscriptions studied and uploaded online is about four thousand and five hundreds.

Among the elements to be considered:

1) "decentralization "; scholars who work on documents know adequately for biographical or professional reasons the areas of their competence , and this is essential for Italy (and in Etruria), where historical, historiographical and antiquarian traditions are very strong; here a thorough knowledge of topographical territories is needed, and so are the contacts with museums, private collectors, parishes etc. so to have the opportunity to carry out autopsies of the pieces.

2) the cataloguers have been mostly volunteers although a PRIN 2010-2011 funding allows some of them to have incentives and to advance the detection and study of evidence more quickly.

3) the project while proceeding with caution and apparent slowness is more reliable than other similar databases, such as (albeit very important) EDCS-Clauss Slaby, which already contains the entirety of the current Latin epigraphic heritage but where–sometimes one can find inaccurate information and, above

all, the information is still restricted to a few essential data. After some negotiation, in the due course and after necessary organizative and technical adjustments also EDCS-Clauss Slaby will possibly come to be a part of the EAGLE project.
4) at the current stage EAGLE contains much more than 150,000 records of Latin inscriptions from all over Latin West; specifically EDR about 74,000, for Rome and Italy (excluding the Christian inscriptions of Rome, which fall within the federated project Bari-EDB) out of a total of about 150,000.

The opportunity to benefit from European funding (the EAGLE project has recently received funding Europeana, which however has partly different high-technology characteristics which are especially aimed to the exploitation of all the photographic documentation, usage via Smartphone and other didactical projects) will determine the greater or less rapidity of the end of the project at least for the Latin part, which currently is expected to take another at least a decade (less for Italy) and a few decades if considered all Greek epigraphy . The extreme care with which data are inserted is due to the very articulated wealth of information about single inscriptions (a real complete series of information, paleographical, epigraphical, historical, museographical etc.).

Finally, the data are constantly emendable, making the project a system whose already high reliability is expected to increase gradually .

To understand the contribution of this project to the advancement of the ancient historical, archaeological and epigraphic evidence is sufficient to use the simple search form on the site EDR.

3c. How to utilize the digitalisation: a 'MOOC'-based project for Renaissance Philology

Petrarch, as known, represents the starting point for Italian Humanism, and especially gave birth to the modern Philology, that is a focus research on written patrimony, trying to approach as more correctly as possible the original text fixed by the author. In particular, Florence, with its history and with its spectacular monuments of art, captures the carefulness of scholars and not scholars.

The Renaissance Philology, luckily, is not a rigid field of studies, but it can draw to the wide heritage of archives and libraries, because, as Paul Oskar Kristeller argued since 1938, the edition of texts is the most important priority for the knowledge of a culture and of the history of this culture. New technologies of digitalisation can offer advantages balancing a gain of time reliable results. Under this perspective, many European libraries (e.g. the Staatsbibliothek of München) have digitalized some of their manuscripts, incunables and maps. Among the Florentine cultural institutions, the Archivio di

Stato uploaded on its website a large collection of documents, for free consultation; the Medicea Laurenziana Library has also digitalized some manuscripts; some of the old book-bindings the Riccardiana Library has been equally digitalized (cf. R. Miriello, in this paper); the Association "I manoscritti datati d'Italia" has put on the website some pages of manuscripts of various copyists. And also the University of Florence promoted the project "Impronte digitali", with the aim to digitalize the most important archival documents kept in its libraries historical collections.

Actually, how can one use all this material? This ongoing project aims to organize a MOOC (=massive open online course) series of lessons in Philology and Culture of the Renaissance, which can eventually use a new digital technology. By definition, a MOOC-based project is an open course. Only at the end of the course, the student or a long life learning person can gain an attestation, after being examined (and paying the fees). It is obvious that this is a challenging course needing a teaching team. The University, which has also the mission of the society of knowledge, may eventually organize single courses or whole courses in MOOC modality.

The use of innovative technologies applied to humanities (from digitalization of documents to the creation of dedicated digital learning resources) is a fruitful approach and may produce positive consequences.

In fact, the Renaissance has been defined as the "Hercules' crossroad" which speaks us of the laborious birth of the modern age; unfortunately, at the present situation the teaching platforms for Secondary School in Italy offer a reduced level of information about the literature of the Humanism; at the same time, Italian Universities have decided a gradual elimination of the majority of Mediaeval and Renaissance Philology or Humanistic Literature courses. This evidence lead us risking to reduce the university educational offer to a secondary school (already reduced) level. It is clear that complaints are not useful in this situation, but it seems necessary to create new roads and especially to try to follow them.

3d. Catalogue on-line of Medieval and Renaissance Bindings of the Riccardiana Library of Florence.
[http://www.riccardiana.firenze.sbn.it/main.php?Lang=IT]

There is still a lot to be investigated, discovered and studied in a systematic way about the history and upon the structure of bindings in Italy and particularly in Florence.

The Riccardiana Library of Florence, with the particular nature of the library (almost "library of libraries") and with its valuable collection of books

gathered tanks to the Riccardi family's bibliophile passion, contains manuscripts coming from many private renaissance collections of extraordinary interest.
Legature on-line is a project in progress and provides descriptions of intact or restored Medieval and Renaissance bindings, still bearing some traces of the ancient structure, for a total of 320 pieces. The second step of the project will be devoted to the cataloguing of the printed book bindings, incunabula and 16th century printed books.

The record contains a concise external description of the codes (author, title, century, folios material, dimensions, foliation) and the structural elements (bands, boards, headbands, materials of the covers, clasps, straps, etc.), even decorative (typology of leather decoration, technique of decoration: "dry / a gold / color", etc.), of their bindings. There are also three fields: one dedicated to information on the restoration, documented in the archive of the Library, the second dedicated to bibliography and the third dedicated to notes, where additional explanations or details for which there are no fixed spaces (for example: scribe's signatures, illuminators, etc.) are listed, in order to make the on-line catalogue as much comprehensive as possible while providing the users a number of information without increasing the burden of the description (FIG. 6).

For a friendly consultation, amenable also for non-specialists, the database has numerous possibilities of access to documents, identified by the MS-number and traceable through the traditional indication of Author-Opera, in most common normalized forms and in their variants as well. The other fields of alternative query (date, location, binding typologies, wooden boards or quadrants, covers, decoration typologies, bands, headbands, cuts) have a curtain with an interrogation wizard by typologies, which allows a full search-text for all fields not strictly related to the binding, but useful for the packaging material and the history of the manuscript (for example: owners, stationers, etc.).

The description can be displayed, as well as in the format 'record', with the description divided into strings, even in the most compact descriptive format, in order to provide a precise, complete and modern tool for consultation.
In the context of the archeology of the book this catalogue is the first that has each record to support moving 3D digitized images, with the possibility to rotate the 3D object and zoom any part of binding and the details of the decoration by a special zoom and a resizable lens. The decorated leather of the covers may be viewed by the option of negative viewing of the image to get a better view of the decorative elements.

In addition there is a useful Glossary of technical terms, in alignment by the census of medieval bindings promoted by the Central Institute of Pathology of the Book in Rome.

Presently, the database consists of 118 records, with 115 of them re-proposed in a book by the same author, obtained from the same electronic

database (*Al primo sguardo… Legature riccardiane*, I, edited by Rosanna Miriello, Firenze, Polistampa, 2008 - *Biblioteca Riccardiana*).

Figure 6. Sample entry from *on-line catalogue of Medieval and Renaissance Bindings of the Riccardiana Library of Florence* [http://www.riccardiana.firenze.sbn.it].

4. Conclusions

A DigiDactic approach to the advanced studies in Humanities reveals useful potentialities. Digidactic can be rightly considered as a merging new definition of Digital+Didactic; significant development trends can eventually be highlighted both in the application of digital tools for research purposes and didactic tools for educational platforms.

The above discussed case-studies, as well as the recent experience of @egean Laboratory at the University of Florence, confirm the relevance of these methodologies within an array of fields, traditionally considered un-related with each others.

As to the creation of new digital tools, the actual development is towards the implementation of interactivity factors, thus strengthening the performances of an immersive experience and a deeper relation between the virtual document and the user. The MUSINT Project, promoted by the @egean Lab team, with the support of Regione Toscana, and dedicated to the Aegean and Cypriote

Archaeological Collection in Tuscany, represents an example in the creation of this kind of new virtual exhibition galleries.

On the other hand, the development of new educational approaches can be easily implemented in the didactics for primary and secondary schools. In this vein, @egean Lab. has also recently promoted a fruitful exchange with the Polo Didattico di Montelupo Fiorentino, in order to improve possible new teaching paths in ancient history, mythology and material culture.

Both the research lines need to be obviously updated in the next years, as an ongoing process of gradual development of new tools and methodologies.