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Form, function and descriptive analysis in archaeology

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Résumés

Français English
L'histoire du archaeological computing est liée au progrès du champ de l'analyse descriptive des matériaux archéologiques. Cet article porte sur les liens entre l'avancée des méthodes et théories archéologiques, et les langages descriptifs utilisés pour ordinateurs. À partir des enseignements de J-C Gardin, nous allons aborder le problème de la formalisation des données en archéologie. À partir d'une approche contextuelle à l'interprétation des données archéologiques, nous nous pencherons sur le rôle des computer applications pour représenter et explorer la complexité des comportements sociaux cachés dans des données stratigraphiques. Les systèmes de gestion des données de fouilles sont considérés comme des instruments stratégiques pour aborder le potentiel d'analyse et d'interprétation des contextes archéologiques. De ce point de vue, les questions de standards et de définition des vestiges, en particulier mobiliers, deviennent centrales. Un aperçu des tentatives effectuées à travers l'Europe constitue un point de départ pour évaluer des tendances actuelles. De plus, nous nous penchons ici sur les critères les plus pertinents pour la création de dictionnaires servant à l'identification des éléments fonctionnels des vestiges mobiliers, afin d'appréhender au mieux possible les contextes archéologiques. Le recours à des développements récents en archéométrie et en études pluridisciplinaires pour l'identification de la fonction des vestiges mobiliers présentent clairement de nouveaux enjeux pour l'analyse descriptive en archéologie.

The history of Archaeological Computing is strictly linked with the progress in the field of descriptive analysis of archaeological materials. Central to the arguments developed in the paper is an examination of the relationships between advance in archaeological methods and theory and development of descriptive language used in computer applications. Starting from the lesson of J.-Cl. Gardin the paper will investigate the main steps relating to the problems of data formalisation in archaeology. Focusing on contextual approach to the interpretation of archaeological data, attention will paid to the role of computer application in representing and exploring the complexity of social behaviour hidden in stratigraphic datasets. The management systems for excavation data are seen as strategic instruments for realising the potential of the means of analysis and interpretation of contexts. In this regard, the problem of which standards to adopt in the definition of finds, in particular portable items, becomes central. The theoretical framework required in order to achieve this aim is discussed. A survey of various experiences

realized by scholars in Europe represents the starting point for an assessment of present – day trends. Moreover, the paper discusses the most suitable criteria for the creation of dictionaries (structures for cataloguing) aimed at evidencing the functional aspects of portable finds, as an instrument for the best interpretation of contexts. References to recent developments in multidisciplinary, archaeometric, research aimed to detect the functions of ancient artefacts open new scenarios: a new challenge for descriptive analyses in archaeology.

Texte intégral

1   1 - The history of Archaeological Computing is strictly linked with the progress in the field of descriptive analysis of archaeological materials. Central to the arguments developed in the paper is an examination of the relationships between advance in archaeological methods and theory, and development of descriptive language used in computer applications.

2   2 - The lesson of J.-Cl. Gardin is the starting-point for the investigation on the main steps relating to the problems of data formalisation in archaeology.

3   We are referring to the early years of his career, when he founded the Centre mécanographique de Documentation Archéologique, which later became CADA.

4   Paola Moscati has recently reconstructed with great care this first phase of Jean Claude Gardin activity, using data from the archives of the Maison Ginouvès in Nanterre (Moscati 2013).

5   It is clear from this research the framework of great attention towards these early experiences and the active involvement of important figures of European archeology. Gardin and his group develop a refined system of coding morphological elements. They establish procedures aimed at an 'objective' representation of artifacts.

6   This representation is based on the separation between the constitutive elements: it is therefore analytic and also international (see quotation from Gardin 1959 in Moscati 2013: 11). The formalization of the data reflects the need to overcome the traditional and generally descriptive approach to cataloguing, searching for new ways to interpret the information. In the works by Gardin it appears connected (from the beginning of the Sixties) to the possibility of adopting more complex elaborations, by using mathematical -methods. The documentary analysis is used to implement an automatic classification of data, by employing statistical methods in archeology.

7   It is therefore placed at the basis of a line of research that has massively characterized the history of research in the years 70s and 80s (Moscati 2013 and in this volume) , those who have been defined the golden years for mathematics and computer (Djindjian 2009). These mathematical-statistic applications are a field of fundamental importance for the history of Archaeological Computing.

8   Even the logicist approach developed by Gardin during a long-term program, started in the 70s, is deeply imbedded in these early experiences (Gardin 2002).

9   I would, however, follow the documentary analysis trend in a more specific field, that of documentary systems, taking up some observations that I had the opportunity to do about 10 years ago, in a number of "Archeologia e Calcolatori" dedicated to the problem of the communication language in information technology.

10   The documentary systems – databases – owe much, as it is known, to the experiences promoted by Gardin in the years 50s and 60s. One of the objectives that he intended to achieve with the first projects was to create electronic files for storing large amounts of information about objects, according to the tradition of the great international corpora that have made the history of archeology (Moscati 2013: 9).

11   It is not a coincidence that France is the European country most involved, since the early 70s, in an impressive database projects aimed at cataloguing homogeneous groups of archaeological documents or inventorying the major museum collections (for a summary: Ginouvès 1987; Moscati 1987; Guimier-Sorbets 1990; Guermandi 1993).

12   And it is in the 70's that the debate about scientific language continues its development. The problem comes from the need to satisfy one of the main requirements of computer applications: to ensure the accuracy and uniqueness in the

process of acquisition and transfer of information. The proposal, put forward by R. Ginouves in a famous article on 'Revue archéologique' (Ginouvès 1971), to introduce the term 'archaeography' to indicate the descriptive phase of archaeological discussion, came from the need to create new tools, especially linguistic, for archaeologists of classical education approaching informatics.

13   3 - The work done by the 'Centre de recherche sur les Traitements Automatisés en archeology Classique' (TAAC), under the guidance of R. Ginouves first and then AM Guimier Sorbets, has been a reference point in the development of descriptive systems for the construction of a standardized language, to be used not only in computer applications, but also in the practice of 'traditional' cataloguing (Guimier-Sorbets 1987; 1990).

14   One of the most important examples of this kind of applications can be indicated in the 'Dictionnaire de l'architecture méthodique grecque et romaine' (Ginouves & Martin 1985 ; Ginouvès 1992, 1998), a basic tool for the analysis and the study of classical architecture, which has the advantage of clearly illustrate the rich and complex terminology of the monumental achievements, identifying the semantic field of technical terms of architecture and specifying the correspondences in the major modern languages.

15   The dictionaries produced under the auspices of the TAAC, however, do not cover all the areas of classical archaeology because, as it can be easy to understand, of the considerable efforts that projects of this kind entail. Moreover, despite the sensitivity to the problem has always been, in theory, quite common, the initiative of the French colleagues substantially has not been followed in other European countries. The creation of terminological dictionaries able to solve the problems of classifiers and descriptive analysis of all sectors of archaeology remained, thus, substantially rejected.

16   The idea of making the descriptive language homogeneous first of all comes up against the difficulty of identifying common criteria in the choice of the terminology to be adopted. We can consider the case of the definitions for the ceramic forms, a topic of particular interest for the archaeologists of the classical world, given the predominant presence of pottery in archaeological contexts.

17   There isn't yet a commonly accepted vocabulary to indicate the forms, despite the proliferation of databases and computer applications on ceramics. The maximum of 'homogeneity' visible in this field is to refer to widely available classification systems, but valid for the various single classes of production (see discussion in Semeraro 2004).

18   4 - In recent years the problem of formulating and adopting descriptive standards of universal diffusion seems to have become somehow secondary.

19   I think the reasons are to be searched most of all in the most recent methodological developments of archaeological disciplines.

20   In fact, from a chronological point of view, the research on the 'homogenisation' of the descriptive language coincides with a phase of the history of archaeology strongly marked by the 'generalizing' instances of the New Archaeology (see critical assessment in Trigger 1996).

21   In the significant loss of interest for universally valid descriptive systems one can somehow see a side-effect of the trend that currently pervades the theory of archaeological research, and that focuses attention on the variability of human and social behaviour in the various contexts. The contextual method, however, involves a much stronger attention towards the analytical procedures of excavation data. In order to understand and to represent the complexity of the behaviours reflected in the archaeological record is required a refinement in the systems of description and representation of stratigraphic sequences. The problem of descriptive standards therefore can't be regarded as surpassed but it should be proposed in new forms.

22   5 -The current theoretical developments in archaeology put at the centre of the process of interpretation the need to contextualize the archaeological data, ie to read them in the dense network of relationships and deductible items in the stratigraphic excavation. The contextual approach involves a strong valorisation of the functional aspects, both practical and symbolic, in the analysis of the documents.

23   In the case of ceramics, one of the classes of materials most widely attested in stratigraphic deposits, the adoption of a contextual perspective has gradually led to deep changes in the way of conceiving the analysis. The study of pottery is configured today as an important instrument for the reconstruction of important social practices such as those relating to the method of preparation and consumption of food.

24   The traditional typologies appear in many ways unsuitable to support this kind of approach. They reserve little attention, in general, to functional aspects while they are mainly oriented towards the definition of morphological and decorative features. This lack is evident in the terminology used to indicate variations in the forms. When defining the tableware, terms such as 'dish' or 'bowl' are used without paying attention to the technical, practical function. The terms derived from the greek lexicon are often used with little attention to the real correspondence with the forms identified in archaeological contexts.

25   Using a comparison borrowed from linguistics is as if each typology represents a language in itself, with its own grammar and its own system of linguistic codes.

26   6 - Computer applications in archaeology can positively contribute to reset the problem of descriptive language, with the aim to acquire a closer relationship with the methodological and theoretical issues. I refer in particular to the systems for the management of excavation data because, in a contextual methodological perspective, they constitute the most appropriate tool for the analysis and interpretation of contexts.

27   We must refer to the formalization by searching in the 'objective, analytical and international description' (see *supra*) a way to characterize objects in terms of function.

28   The project carried out in the Unisalento Computer Science Lab for Archaeology brings back the tradition of descriptive analysis based on the dimensional parameters, in order to realize cataloguing facilities aimed to highlight the functional aspects of the vessels. It's a cataloguing system based on anthropological and ethnographic approaches, from which comes a deeper awareness of the wide range of variability in the possible functions, practical and symbolic, that can be associated with the use of pottery (see Appendix in Semeraro 2004).

29   We refer, of course, to the so-called 'primary' function of the object: many ethnographic studies have highlighted the phenomenon of a multi-varied use for the same shape (see -comments in Rice 1987; Recchia 2000), but it is also true that the choices made by the artisan at the time of the manufacture of a container are in some way affected by the primary function for which it is intended.

30   The theme of the secondary function is emerging with more evidence thanks to the applications of archaeometrical analysis, such as chemical analyses of organic residues preserved in the vessels. It is an approach in many ways still experimental but which is gradually spreading and is an important tool for research innovation and a better understanding of the -contexts (Notarstefano 2012). The classification and data management systems must take into account this aspect.

31   7 - The management system of excavation data, like many current systems, is web – based (Semeraro 2008). It was conceived as an instrument to make available to scholars the analytical data of excavation, descriptions, notes, measures, etc.

32   The reference to the role of the management of excavation data for the documentary analysis of the contexts allows us to refer to another fundamental aspect of the lesson of Gardin that accompanies the recent history of Archaeological Computing. I refer to the 'logicist program' in its practical aspects, in particular the application of the program in the field of scientific publications (Gardin, Roux 2004).

33   As he has emphasized on several occasions, the electronic supports permit to separate the two components of the scientific discourse: the basic data (documentaries, explicative) and the inferences (narrative discourse). The proposal to assign to electronic support (computer) new forms of publication starts from this aspect, in the sense that they allow to use all the instruments of navigation of hypertext applications or the Web. In such a proposal is retrieved, in my opinion, a dimension present from the beginning, that is to say, ever since he saw in the 50s in the 'mechanization' of the data a way to set the construction and diffusion of scientific knowledge. To such

systems was assigned the analytical knowledge of the basic data, described in an objective manner, as it has been said, leaving the task to expose the 'cognitive' aspects to the scientific discourse.

34   Dealing with this duality is of particular importance in the case of the management of excavation data. They can indeed be seen as the instruments through which all analytical data can be available to a wider public, assigning the narration, the reconstruction of the excavation, to texts easier to read. And this is the direction where it appears more important to move in the future: a publishing system that allows to exploit the opportunities of the web, in order to respond to the "inflation of the publications" (Gardin, Roux 2004), and to the consequent need to think about new forms of data transmission, according to the philosophy to which Gardin has devoted much of his teaching.

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