

# POSTGRADUATE RESEARCH

## Abstracts of Recently Awarded Ph.D. Theses

**G. Iannone:** *Problems in the study of ancient Maya settlement and social organization: insights from the 'minor centre' of Zubin, Cayo, Belize.* Ph.D.

For over a century archaeologists have attempted to formulate a realistic model for ancient Maya social organisation. A review of the current literature indicates that, although significant progress has been made towards achieving this goal, fundamental methodological and theoretical weaknesses remain. The most detrimental shortcomings can be summarized as follows: (1) settlement pattern studies in the Maya area have tended to focus too much on the polar extremes of the settlement continuum, and thus have not produced adequate data representative of all levels of the settlement hierarchy; (2) the limited nature of excavations, apart from those conducted in the larger centres, has hindered our ability to compare material culture assemblages from the various settlement levels, (3) these restricted excavations have also failed to furnish us with a comprehensive diachronic perspective, something which is required for an understanding of social relationships., (4) Mayanists have often employed interpretative schemes and associated terms in an uncritical fashion.

As a result of these weaknesses, our reconstructions of ancient Maya social organisation often slight the archaeological data in favour of the more inclusive ethnohistoric or ethnographic descriptions. This dissertation will address the aforementioned problems through a detailed analysis of a small "minor centre" located in the upper Belize River valley. This site, known as "Zubin", was the focus of three seasons (1992-1995) of detailed archaeological excavations conducted by the author. These investigations were designed to generate a multifaceted and diachronically sensitive data base from a site representative of the least understood segment of the ancient Maya settlement continuum. It was felt that explorations at this level would provide insights relevant to a more complete understanding of social organisation.

In addition, with the new perspective provided by the Zubin project, I evaluate the various models proposed for ancient Maya social organisation. In doing so I touch on the various weaknesses inherent in the study of this topic, and outline a program of analysis that should facilitate the formulation of a more realistic characterization of ancient Maya society.

**R. Coates-Stephens:** *Building in Early Medieval Rome, AD 500-1000.* Ph.D.

The thesis concerns the organization and typology of building construction in Rome during the period 500 ~ 1000 AD. Part I - the organisation - contains three chapters on: (1) the finance and administration of building; (2) the materials of construction-, and (3) the workforce (including here architects and architectural tracts). Part 2 - the typology - again contains three chapters on: (1) ecclesiastical architecture; (2) fortifications and aqueducts; and (3) domestic architecture.

Using textual sources from the period (papal registers, property deeds, technical tracts and historical works), archaeological data from the Renaissance to the present day, and much new archaeological survey-work carried out in Rome and the surrounding country, I have outlined a new model for the development of architecture in the period. This emphasises the periods directly preceding and succeeding the age of the so-called "Carolingian Renaissance", pointing out new evidence for the architectural activity in these supposed dark ages. At the same time I have discovered and presented physical evidence for the important papal rebuilding of the city's fortifications and water-supply during the eighth and ninth centuries. A thorough re-examination of over one hundred years of archaeological publications has provided data for a new outline of the city's early medieval habitation.

A picture emerges of an increasingly independent, centralized building administration run by the Church of Rome, breaking away very early from the ambit of Byzantium, and almost entirely uninfluenced by developments in Carolingian Europe. The eclipse of papal authority at the end of the ninth century led to an increasingly vital sector of private architectural patronage. At the same time, however, building techniques never departed radically from those of the Early Christian, or indeed Late Roman, periods.

**C. Merideth:** *An archaeological survey for ancient tin mines and smelting sites in Spain and Portugal within the mid-central Iberian geographical region.* Ph.D.

The subject of the thesis is an archaeometallurgical survey which I undertook in mid-Central Western Iberia in the years 1992-1995. The area covered by the survey consisted of geographical regions in both Spain and Portugal. The time-range covered spanned the Copper Period, approximately 2000 BC, through to the Roman Period, 4th Century AD.

The main theme was to assess surface evidence that cassiterite ores in the Mid-Central region of Iberia had been mined, smelted and used in bronze production in antiquity.

The first task was to evaluate the available historical and geological literature and to compile from the literature a list of cassiterite mining sites for actual field survey visits.

The primary season of field survey work consisted solely of trying to establish the precise location of the listed cassiterite sites and then to document any archaeometallurgical surface evidence present at these sites.

After the first field survey season, I then undertook laboratory analytical examination of important selected samples of slags, metals and minerals using primarily SEM/EDS analysis. The laboratory work was done to provide positive identifications of relevant surface finds.

During 1993 and 1994, further survey field trips were completed and more surface material was collected from Logrosan, Golpejas, Valdeflores, Area Catraia Do Buraco and Torre Romana Centumcellas for laboratory analysis.

In 1994 and 1995, the predominantly prehistoric cassiterite mining and production site, El Cerro de San Cristobal, Logrosan, was planned on a scale of 1:500 in both surface details and contours.

**M. T. Serpico:** *Mediterranean resins in New Kingdom Egypt: a multidisciplinary approach to trade and usage.* Ph.D.

Resins were widely used in ancient Egypt for a variety of purposes, including as incense, as varnish, in cosmetic and ritual preparations and in mummification. However, as Egypt had virtually no internal sources, these resins would have been obtained through trade. Although Egypt's contacts with the south for resin are well-known, little is known of the Mediterranean resin trade. This study took a multidisciplinary approach, incorporating not only archaeological information, but also botanical data, chemical residue analysis and microscopic examination of pottery fabrics to find evidence of this trade.

Each of the above mentioned usages was studied. Resins and resinous products subsequently identified included pistacia resin and pitch, Pinaceae resin, including coniferous pitch, cedar resin and cedar-scented products. These usages indicated a high level of demand for Mediterranean resins. Study of amphorae imported from Syria-Palestine to the site of Tell el-Amarna indicated a strong link between resin trade and Canaanite storage jars. The study of the distribution of these jars, in Egypt, Israel and on the contemporary shipwreck at Ulu Burun, Turkey, provided valuable information on Mediterranean resin trade.

**F. Massagrando:** *A Spatial study of aspects of the Roman settlement of Spain through the use of Geographical Information Systems.* Ph.D.

This thesis explores the use of computer, and in particular GIS (Geographic Information Systems), techniques to study the development of the Roman rural settlement in three areas of Spain: the Guadalquivir Valley, the region of Tarragona and the Maresme. The project has two aims, the first consists of finding a viable way to study the archaeological data from non-systematic surveys, which have been collected over a period of years and stored in archaeological units. The second aim of the project is to assess to what extent GIS can be used to perform such a sort of archaeological study.

Firstly, the data used in the study are presented and the way in which this information was stored and manipulated in digital format is described and discussed. The computer hardware and software used are described. Some of the problems encountered with this approach are highlighted and the solutions implemented are presented.

Secondly, the analysis of the archaeological data concerning the Roman rural sites in the three study areas, carried out using GIS and statistical software, is presented in detail. For each area the shape of the rural settlement pattern at different periods is investigated in relation to environmental and socioeconomic factors. Multivariate statistical techniques are used to study the pottery assemblages of the rural sites. The information derived from the analysis is then used to create models of the development of each area.

In the concluding chapter the resulting models are compared and the differences and similarities in the development of the three areas observed. The advantages and disadvantages of using GIS with archaeological non-systematic survey data are discussed and assessed. Finally, a series of considerations on the main differences between the approach described in this thesis and earlier comprehensive works dealing with data from several separate areas are presented.

**F. Bewer:** *A Study of the technology of Renaissance bronze statuettes - the lost-wax casting of Giambologna (1529-1608) models.* Ph.D.

This study presents tools useful for understanding the processes by which Renaissance copper-alloy statuettes were made. Part I gives an overview of the literature on the technological study of bronze sculptures produced between the late fifteenth and early seventeenth centuries in Europe. It includes modern studies that draw from technological research done on monumental Renaissance casts and statuettes as well as on archaeological bronzes.

The brief description of copper alloys and of the lost wax processes in Part II provides the background for the technological investigations that follow. This part also covers the primary sources on Renaissance casting techniques and materials. Part III is a guide to the evidence one might find in a technological examination and follows the format of the worksheet devised for this study. Part IV consists of an overview of the analytical tools and methods used to gather the data for this research. Visual and radiographic examination, polarized light microscopy and X-ray fluorescence analyses proved the most valuable.

Part V presents the technological reports of fourteen Renaissance bronzes of various attributions now in the Huntington Art Collection, San Marino, California. The examination of these sculptures served to refine the methodology and worksheet, a sample of which is presented in Appendix C. The study also provides important material for Part VI: the case study on bronze casts after models by Giovanni Bologna, also known as Giambologna (1529-1608). Generations of sculptors used, reproduced and adapted the Medici court sculptor's style, models and moulds, creating hundreds of statuettes that need to be reassessed. Part VI presents the reports of forty of these bronzes, that range from documented pieces by Giambologna and contemporaries of his to later unattributed reproductions. The technological data gathered, when brought together with stylistic analysis and documentary evidence may shed more light on how and by whom the statuettes were made.

**G. Chandler:** *Development of a field petrographic analysis system and its application to the study of socioeconomic interaction networks of the Early Harappan Northwestern Indus Valley of Pakistan.* Ph.D.

To meet a requirement for conducting petrographic analysis of archaeological ceramics in the field, a light-weight, portable, and easily obtainable kit which permits on-site excavation decisions and allows analysis in countries which restrict or prohibit the export of cultural artefacts was developed. A high-quality field microscope was modified for petrography and tested with a lightweight saw and seven cold-curing resins. The entire kit, containing all equipment and materials necessary to prepare and analyse 100 standard thin sections, weighed about five kilograms. It was used in field applications in the Northwest Frontier Province and the Punjab of Pakistan; and Kilisetepe, Turkey. The data obtained from the Pakistan evaluation were used for the second part of the thesis. This involved preparation and analysis of 175 thin sections of Early Harappan Period (ca 3500 to 2650 BC) ceramics from four sites in Pakistan. Selections were made from seven morphological pottery types common to Early Harappan levels at the sites of Rehman Dheri, Harappa, Tarakai Qila and Lewan. Kiln wasters and/or locally produced pottery were examined in thin section for comparison. Mineral inclusions were identified using standard petrographic techniques, and a textural analysis based on the quartz inclusions was conducted. Size, angularity, sphericity and weathering of inclusions were recorded and examined graphically and statistically and compared with available local and regional geological data. The results were used to examine localized ceramic technologies at the sites and the extent of intersite interaction with respect to ceramic production and technology amongst craftspeople at the sites during the Early Harappan period. Close similarities amongst mineral suites observed at each of the sites and a lack of detailed geological survey data complicated provenance analysis, so the thesis provides an example of petrographic techniques which can be employed in such situations. No evidence of trade in ceramics amongst the sites was revealed. Results suggested that Rehman Dheri and Harappa independently developed fairly sophisticated ceramic industries, as there appeared to be two independent groups of fabric types from the two sites. Tarakai Qila and Lewan fabrics fit with three of the Rehman Dheri types, suggesting less developed ceramic industries which may have been influenced by innovations from Rehman Dheri. The use of data from the portable kit demonstrated its efficacy in field situations.

**A. Morgan:** *The pre-Columbian pottery figurines of the central coast of Peru.* Ph.D.

The aim of this thesis is to study a hitherto neglected pre-Columbian Peruvian artefact: the pottery figurine. The term figurine refers to a human representation, which is not a vessel or part of a vessel. Also included are ceramic litters carrying figurines.

The material recorded from collections and/or publications, constitutes a Corpus of 1571 specimens from the Central Coast of Peru, dating from the Preceramic to the

Inca period. The figurines are classified into groups, using stylistic, iconographic and technical criteria, with recourse to known pottery styles.

On the basis of this classification, the figurine groups have been used to throw light on cultural processes in the area. It has thus been possible:

- to trace outside influences - like the presence of Nascoïd figurines in the Rimac valley at the end of the Early Intermediate Period;
- to establish stylistic units, hitherto only guessed at in the published literature - like the existence of an Ancón sub-style at the end of the Middle Horizon and the early part of the Late Intermediate Period, or a Chillón sub-style towards the end of the Late Intermediate Period
- to confirm and illustrate various previous models - like the nature of the interaction between sectors of the Central Coast during the three Horizon phases.

In addition the figurines are examined in relation to figurines from other areas of Peru.

An attempt has also been made to establish the possible functions of the figurines through a detailed description of all available contexts, a thorough search of the chroniclers for relevant references to such objects and some research into comparative ethnographic data.