

La campagne dans la ville

**Formes et fonctions des activités agro-pastorales
dans la ville pré-classique (protohistoire égéenne
et occidentale)**

Country in the city

**Forms and functions of agro-pastoral activities in
Mediterranean pre-Classical cities (Aegean and Western
Mediterranean Protohistory)**

Colloque international, Marseille, MuCEM, 16-17 octobre 2014



Christopher Wilhelm Eckersberg, *Vue du Forum romain*, huile sur toile, 1814

Programme scientifique

Durant la Protohistoire (à l'âge du Bronze dans le monde égéen, au premier âge du Fer en Méditerranée occidentale), l'espace méditerranéen est marqué par le développement de sites d'habitats importants, proto-urbains et urbains. Depuis le début du XX^e s., la recherche archéologique s'est concentrée sur l'analyse des manifestations artistiques, monumentales ou ostentatoires des communautés égéennes et sur les formes d'acculturations des sociétés indigènes de Méditerranée nord-occidentale. Pourtant, le développement urbain comme celui des Etats s'est appuyé sur des systèmes de production agro-pastoraux, qui forment la toile de fond de ces civilisations. Dans le monde égéen, ces systèmes agraires et leurs relations avec les villes ont le plus souvent été considérés au prisme des systèmes palatiaux du Bronze moyen et récent, selon un modèle centre/périphérie faisant avant tout de la ville (et surtout de la ville palatiale) un pôle de concentration et de consommation de la production agricole. Dans le monde celtique ou ibérique, les activités agro-pastorales sont encore trop souvent perçues comme des pratiques « traditionnelles » s'opposant à celles des formes urbaines des sociétés coloniales.

Ces visions persistent alors que les études paléoenvironnementales, qui ont peut-être souffert dans le monde égéen d'un développement moins rapide et moins systématique que dans d'autres régions méditerranéennes, font aujourd'hui preuve d'une vivacité remarquable (voir le colloque *Physis* qui s'est tenu à Paris en décembre 2012). De même, l'essor de l'archéologie extensive et des opérations préventives menées sur de grandes surfaces permettent de mieux saisir la mise en valeur des terroirs mais aussi la gestion des productions et leur transformation dans les agglomérations.

Elles demeurent néanmoins limitées pour l'essentiel à deux types de travaux : la publication de données brutes et, à l'opposé, la production de synthèses qui retracent l'histoire des paysages, de l'agriculture et de l'alimentation sur des échelles chronologiques et géographiques importantes.

On s'intéressera dans le cadre de ces rencontres aux traces laissées par les activités agro-pastorales dans les villes, tant dans le cadre des modes de subsistance que dans le développement de pratiques spéculatives. Il s'agit ainsi non seulement de préciser nos connaissances sur l'économie agricole, mais aussi d'éclairer la nature des villes préclassiques. La définition de l'urbanité pour ces périodes ne reposait sans doute pas sur une opposition claire avec le monde rural, et on tentera d'interroger le cloisonnement qui sépare, en raison peut-être d'une vision trop présentiste du passé, l'urbain et le monumental d'un côté, le rural et l'agricole de l'autre. Il s'agit donc de faire se rencontrer deux domaines importants de la Protohistoire qui vivent ensemble mais qui pourtant s'ignorent encore largement.

Quel espace était dévolu à des activités de production agricole (présence de jardins ou de champs, de lieux d'égrenage des céréales comme les aires de battage ou de lieux de stabulation animale) dans les villes et dans leur proche périphérie, et comment les identifier ? On peut penser qu'une partie de la population urbaine était paysanne et pratiquait l'agriculture comme activité dominante. Quelles sont les traces laissées par les étapes de la production, les structures de stockage alimentaire et de transformation (mortiers, meules, pressoirs) dans les maisons urbaines ? Que révèlent-elles des stratégies domestiques et communautaires quant à l'allocation des produits agricoles ? Peut-on parler d'autoconsommation ou de commercialisation, et quel sens exact donner à ces termes ?

Les lacunes documentaires sur les étapes initiales de la production agricole obligent les archéologues à s'intéresser aux phases finales du processus, notamment au stockage. Dans le monde égéen, on considère habituellement que les denrées et produits agricoles, céréales, légumineuses, vin, huile et autres étaient conservés dans des récipients en céramique. Il ne s'agira pas d'établir une typochronologie de ces formes céramiques, un exercice préalable indispensable mais insuffisant pour comprendre les stratégies des communautés. Nous tenterons plutôt d'évaluer les capacités de stockage qu'ils révèlent. On s'interrogera également sur la présence, certainement sous-estimée, d'autres contenants de stockage en terre crue ou en matériaux périssables. Pour la Méditerranée occidentale, où ces pratiques sont peut-être mieux connues, ont tentera de développer une approche quantitative et de l'associer aux variations démographiques et aux activités marchandes. Ces rencontres ont donc, d'une part, un objectif méthodologique, visant à mettre en évidence les apports des approches paléoenvironnementales ou d'autres méthodes récemment développées (tracéologie) pour répondre à ces questions, mais aussi pour en susciter de nouvelles. D'autre part, ce premier état des lieux a pour but d'apporter un éclairage original sur les villes protohistoriques, souvent considérées comme des moules architecturaux vides et/ou les théâtres de rituels, en contribuant à redonner vie aux activités tissant de multiples liens entre les sociétés urbaines et leur environnement rural. Ces rencontres seront consacrées à la Protohistoire méditerranéenne pré-classique, où les questions envisagées se posent avec une acuité particulière dans l'aire égéenne mais aussi en Méditerranée nord-occidentale, et l'accent sera mis sur les travaux récents et les données nouvelles. A l'échelle de l'espace méditerranéen, elles doivent aussi permettre d'envisager un dialogue interrégional approfondi tant sur les objets de l'étude, que sur les méthodes et les concepts.

English

During the Bronze Age and Early Iron Age, important proto-urban and urban settlements emerge in the Mediterranean. Since the beginning of the 20th century, archaeological research has mainly focused on these communities' architectural (especially monumental), cultural, artistic and ideological achievements, and on acculturation modalities of the indigenous societies of the North-Western Mediterranean. However, urban and state development was based on the strength of agricultural and pastoral production systems that formed the basis of the Aegean civilisations. These agrarian systems and their relations to the cities have essentially been looked at through the prism of Middle and Late Bronze Age palatial systems and tackled with the centre/periphery model. In that view, cities – and especially palatial ones – were regarded only as gathering and consumption centres of agricultural production. In the Celtic and Iberic worlds, agricultural and pastoral activities are often still regarded as “traditional” practices, in opposition to those of the urban colonial societies.

Most of the literature still agrees upon that picture, whereas environmental studies, which have maybe suffered in the Aegean from a later and less systematic development than in other areas/periods, are now vivid (as seen at the *Physis* conference held in Paris on December 2012). Environmental studies are nevertheless limited to production of rough data and, conversely, to syntheses on landscape, agriculture and diet history taken at large geographical and chronological scales. In addition, the growth in the Western Mediterranean of extensive archaeological research and the development of large scale rescue excavations allow a better

view of land use, as well as of the production management and the transformation processes within the settlements.

The aim of the conference is to focus on the evidence for agricultural and pastoral activities in Protohistoric cities, in order to enhance our knowledge of the agricultural economy, and to discuss the nature of these urban settlements. Urbanism, at that time, could probably not have been strictly opposed to rurality: special attention will be paid on the compartmentalisation between the urban and monumental on the one hand, and the rural and agricultural on the other, maybe due to a presentist view of the past. Eventually, the meeting will be an opportunity to consider two important but until now separate issues in Mediterranean studies side by side.

What were the places for agricultural activities inside the cities and in their immediate vicinity, in terms of quality and quantity (gardens, fields, threshing floors, cowsheds, etc.)? How can we identify them? We can assume that a part of the “urban” population was mainly involved in agricultural activities. What is the evidence left in urban dwellings by activities at different stages of production, by storage structures and by transformation processes (mortars, querns, presses)? What do they tell us about domestic and community strategies regarding agricultural product allowances? Can we use terms like auto-consumption or market and what sense should they be given?

Lacunae in the primary documentation concerning the very first steps of the agricultural production (harvesting tools especially) force archaeologists to focus on the last phases of the chaîne opératoire, particularly on storage structures. It is held that food products in the Aegean world were mainly stored in ceramic vessels. The aim is not to reassess the typochronology of these vessels, but rather to evaluate the storage capacity that they represent. Special attention will be paid on the existence of probably overlooked forms of storage structures, made of perishable materials or of mudbrick. In the Western Mediterranean, where such features and processes are well assessed, attention will be paid on quantitative approaches taking into account demographic variability and trade activities.

On the methodological front, the conference aims to highlight the major contributions of environmental or technical studies (e.g. traceology) to the considered scientific issues, and their ability to raise new questions. On the other hand, this first encounter aims to bring the Protohistoric cities under a new light. A late tendency was to consider them as empty architectural moulds, and/or as scenery for ritual ceremonies; the idea here is to rekindle our view of the different activities that were drawing multiple ties between urban societies and their rural environment. Bringing these issues into focus is of particular importance within the field of Aegean studies, as well as in the North-Western Mediterranean area. At the Mediterranean scale, the symposium aims to start up an inter-regional dialog, as well on archaeological data as on methodological and conceptual frameworks.

Comité d'organisation / Organizing Committee

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Lieu / Place

Musée des civilisations de l'Europe et de la Méditerranée (MuCEM), Institut Méditerranéen des Métiers du Patrimoine (I2MP), entrée Fort Saint Jean (Tour du Roy René), 201 quai du port, 13002 Marseille

Salle / room : « Salle séminaires I2MP »



LES ACCÈS

1. Entrée basse fort Saint-Jean : 201, quai du Port.
2. Entrée Panier : parvis de l'église Saint-Laurent.
3. Entrée J4 : 1, esplanade du J4.

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T (15 minutes de marche environ) :
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T. Whitelaw (UCL, London)

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Programme

Jeudi 16 octobre

9h15-9h45 Accueil des participants

9h45 Introduction (**R. Orgeolet**, AMU)

La campagne dans la ville : l'Occident méditerranéen

10h15 **N. Alonso** (Université de Lleida), **G. Pérez Jordà** (CCHI, Madrid)
Élites et paysans dans les cités ibériques (VIe-IIe siècle av. n. è.) : stockage et transformation des produits agricoles

10h55 **C. Cammas** (Inrap)
Traces micromorphologiques et géochimiques des activités de parage et de traitement des végétaux en contexte urbain à l'âge du Fer

11h35 Pause

12h15 **N. Rovira**, Université de Montpellier, **N. Alonso**, Université de Lleida
Lattara : modes d'acquisition et de gestion des ressources végétales entre le Ve et le IIe siècles avant notre ère

12h55 Discussion

Stockage et denrées végétales, de l'Egée à l'orient méditerranéen

14h30 **J. Patrier**, ANR ARCHIBAB et UMR 7192
Le stockage alimentaire en milieu urbain au Proche-Orient ancien au II^e millénaire av. J.-C.

15h10 **K. Christakis**, Université de Rethymno
The neglected "fields" of proto-urban living: a view from Bronze Age Crete

15h50 Discussion

16h10 Pause

16h30 **A. Sarpaki**
Connections of the town of LC I Akrotiri with the countryside: archaeological coupled with environmental indicators which could throw some light on this dialogue

17h10 **E. Margaritis**, Université de Cambridge
The town and the country: modes of production and consumption of wine and olive oil in prehistoric Crete

17h50 Discussion

Vendredi 17 octobre

La campagne dans la ville : la Crète et le continent grec au Bronze Moyen et Récent

- 9h30 **M. E. Alberti**, Université de Sheffield, **M. Pomadère**, Université de Picardie
Pratiques agro-pastorales et stockage dans la ville de Malia du Bronze Moyen au Bronze Récent
- 10h10 **T. Whitelaw**, University College London
Feeding prehistoric Knossos: exploring the political, economic and logistical implications of urbanisation on Crete
- 10h50 Pause
- 11h10 **K. S. Shelton**, University of California, **L. A. Kvapil**, Butler University, **G. C. Price**, University of Florida, **J. S. Meier**, University of Connecticut
Beyond City and Country at Mycenae: urban and rural practices in a subsistence landscape
- 11h50 **D. J. Pullen**, The Florida State University
Agricultural Self-Sufficiency and Mycenaean Kalamianos on the Saronic Gulf
- 12h30 Discussion

Pratiques agro-pastorales et urbanisation dans le Nord de l'Egée

- 14h30 **D. Thumm-Doğrayan**, Université de Tübingen, **P. Pavúk**, Université de Bratislava, **M. Pieniążek**, DAI Istanbul
Troy and Country
- 15h10 **S. M. Valamoti**, Université de Thessalonique
Settlement space and agricultural practices in Neolithic and Bronze Age northern Greece: an archaeobotanical investigation
- 15h50 **E. Nitsch**, Université d'Oxford, **A. Gardeisen**, CNRS, Lattes.
Land use and dietary practice at Bronze Age Archontiko, Northern Greece: an Integrated Stable Isotope Study of Human, Faunal and Botanical Remains
- 16h30 Discussion
- 16h50 Pause
- 17h10 Conclusions (**D. Garcia**, AMU, **J. Zurbach**, ENS)
- 18h30 Cocktail offert aux participants du colloque

Communications

Pratiques agro-pastorales et stockage dans la ville de Malia du Bronze Moyen au Bronze Récent

Agro-pastoral practices and storage in the city of Malia in Middle and Late Bronze Age

Maria Emanuela Alberti, Intra-European Marie Curie Fellow, Department of Archaeology,
University of Sheffield - Maia Pomadère, U. de Picardie-Jules Verne

On s'accorde généralement sur l'idée que le développement de la ville de Malia au Minoen Moyen s'est appuyé sur la richesse agricole de son environnement immédiat. Pour le Minoen Moyen II, les données archéologiques issues des fouilles et de la prospection font état d'une ville densément construite, atteignant alors son extension maximale. Les principales manifestations de l'agriculture *dans* la ville sont alors le stockage à différentes échelles, ainsi que des pratiques de transformation liée à la consommation alimentaire et à l'industrie textile dans le cadre domestique ; les activités de production, l'élevage ovin devaient alors surtout prendre place dans la campagne entourant la ville.

L'espace urbain et son dynamisme artisanal semblent ensuite décroître au Bronze Récent. Nous nous interrogerons sur ce changement de faciès de la ville maliote de la période proto- à la période néo-palatiale en nous fondant sur les indices disponibles, en particulier dans le secteur « Pi » récemment fouillé, et replacé dans le contexte urbain plus large. Bien que l'on soit encore en attente de certains résultats pour ce secteur (micromorphologie par exemple) et que les données soient souvent lacunaires (pour les fouilles anciennes), deux pistes seront explorées : d'une part, la « ruralisation » de Malia, en termes urbanistiques, se manifeste-t-elle également dans le mode de vie des Maliotes (mode de transformation des produits agricoles, mode de stockage) à partir du MM III/MR I ? Nous nous interrogerons d'autre part sur un apparent paradoxe maliote : malgré l'idée largement acceptée de sa richesse agricole, les capacités de stockage agricole dans la ville sont relativement faibles, notamment pour la période néopalatiale. Si divers facteurs d'explication peuvent être avancés, on peut penser que les lieux d'approvisionnement étaient proches et d'accès faciles.

Les évolutions et continuités seront ainsi replacées dans le cadre de stratégies de production et de consommation variées, en partie liées aux évolutions économiques et politiques à plus grande échelle.

English

It is generally agreed upon that the development of the city of Malia during the Middle Minoan period is based on the rich agricultural resources of its nearer environment. For Middle Minoan II the archaeological evidence, based on excavations and field survey, show a densely built-up city which reaches its widest extension in that period. The main evidence of agricultural activity *within* the town is storage on various levels as well as processing for food preparation and textile manufacture in domestic contexts. The agricultural production and the breeding of sheep must have taken place at that time above all in the countryside, outside the city.

The urban space and its dynamic craftsmanship seem to decline in the Later Bronze Age. We intend to discuss this change in the physical appearance of the city of Malia between the

protopalatial and neopalatial periods on the basis of the available evidence and in particular of the findings in the recently excavated area “Pi”, which have to be integrated in the wider urban context. Even if we still have to wait for certain results concerning this area (as far as the micromorphology is concerned, for example) and the documentation is often incomplete (about earlier excavations), there are two considerations to be explored: one question is, whether the progressive “rural” character of Malia in terms of urban development finds a correspondence in the life-style of the inhabitants of the city (ways of transformation of agricultural produce, ways of storage) from MM III/LM I onwards. On the other hand we want to consider the question of an apparent contradiction in the evidence from Malia: although its agricultural wealth is widely accepted, the capacity of storage within the city is relatively low, especially in the neopalatial period. Various reasons can be given, and above all one could consider that the places to find supplies were near and easy to reach. Continuity and change are in this way linked to the diverse strategies of production and consumption, which are partly embedded in the wider economic and political context.

Élites et paysans dans les cités ibériques (VIème-IIème siècle av. de la n. è.) : stockage et transformation des produits agricoles

Elites and peasants in the Iberian cities (VI-III centuries B.C.): storage and transformation of agricultural produce

Natàlia Alonso, U. Lleida - Guillem Pérez Jordà, CCHI, Madrid.

L'une des caractéristiques qui définissent la culture ibérique (VI-II siècles av. n.è.) est le développement et la création de structures sociales complexes, pour lesquelles on suppose un type d'organisation étatique. Ce processus a été déterminé de façon différente pour les territoires faisant partie du monde ibérique. Pourtant, des établissements de grande et de moyenne taille cohabitaient avec de plus petites agglomérations. L'agriculture et l'élevage étaient les deux bases qui permettaient non seulement d'assurer la subsistance des différents groupes, mais aussi les deux pierres angulaires de la création de la richesse.

Dans ce processus d'agrégation et de stratification sociale, une série d'innovations se sont produites permettant, ou facilitant, ces nouvelles formes d'organisation. Pour ce qui concerne l'agriculture, deux de ces nouveautés ont été le fer et l'arboriculture, liées aux contacts des Ibères avec des groupes originaires de la Méditerranée orientale. Mais les Ibères ont non seulement assimilé des éléments d'autres cultures, mais encore ont développé leurs propres innovations, comme l'utilisation de meule rotative pour la mouture des céréales.

Cette contribution vise à analyser le rapport des villes ibériques avec l'activité agricole, à partir notamment de deux des productions les plus caractéristiques de l'agriculture ibérique, les céréales et le vin. On considère que ces villes sont, en fait, « des grands villages ou des grands centres ruraux », en ce que leurs habitants conservent l'agriculture comme l'une des activités principales. Il s'agit pour eux d'assurer leur survie, tandis que le contrôle de la terre et de ses produits sont l'une des bases de la l'inégalité. Il y en a plusieurs exemples permettant de constater le contrôle par les groupes sociaux dominants de certaines de ces productions.

On peut définir des différents types d'associations des structures de transformation de produits agricoles documentées dans les sites ibériques: (1) les pièces avec des structures de stockage et de mouture des céréales (grandes meules sur support bâti); (2) celles où il faut ajouter des fours à pain à ces deux activités; (3) autres où on ne détecte que la structure de mouture et le four ; (4) et finalement la où la transformation de céréales à été documentée en association avec la production de vin.

En outre on prendra en considération l'échelle de ces productions : une petite échelle et, pour la première fois dans la protohistoire péninsulaire, une plus grande échelle, dans le cadre de ces nouvelles formes d'organisation socio-économique du monde ibérique.

English

One of the defining characteristics of Iberian culture (VI-II centuries B.C.) is the creation and development of complex social structures, for which a certain form of state organisation is assumed. This process was variously settled for the territories which were part of the Iberian world. But in general there is a combination of big or middle sized settlements and smaller ones. The agriculture and the breeding were the two basic activities which allowed not only to ensure the subsistence of the various groups of population, but they were also the two cornerstones of creation of wealth.

In the process of formation and development of social groups one can find a series of innovations, which have permitted or facilitated these new forms of organisation. In regard to agriculture two of these innovations were the introduction of iron and of arboriculture, which were both linked to contacts of Iberians with groups coming from the Eastern Mediterranean. But they have not only taken up and integrated elements from other cultures, they have also developed their own innovations, like the use of rotation for grinding cereals.

Our contribution wants to study the relations between iberic cities and agricultural activity on the basis of the two characteristic crops of the local agriculture, i.e. cereals and wine. We assume that those cities are in fact big villages or big rural centres in so far as their inhabitants continue to exercise agriculture as one of their principal activity. This does not only ensure their subsistence, but the control of the land and its produce are one of the main reasons for social inequality. There are several examples which allow us to discover how some of these productive activities were controlled by dominant social groups.

The evidence from iberic archaeological sites allows us to discern different types of combined structures for the transformation of agricultural products: (1) rooms including structures for storage and for grinding cereals (big stone mills on built-up foundations); (2) other rooms where bread ovens supplement the aforementioned structures; (3) others where we find only the installations for grinding and the oven; (4) finally rooms which combine the processing of cereals with wine production.

Furthermore, we will consider the importance of these productive activities: a small scale production at the beginning and then, for the first time for Iberic protohistory, a production on larger scale in a context of new forms of social and economic organisation in the iberic world.

Traces micromorphologiques et géochimiques des activités de parage et de traitement des végétaux en contexte urbain à l'âge du Fer

Micromorphological and geochemical traces of animal pens and of processing plants in urban context in Iron Age

Cécilia Cammas, Inrap, UMR ASM, Unité de Micromorphologie d'AgroParisTech, 78850 Thiverval-Grignon.

Dans les sites urbains protohistoriques et historiques, souvent occupés de manière quasi continue, les sols sont nettoyés et entretenus, il ne reste alors que peu de traces d'activités *in situ*. Pour aller plus loin, la micromorphologie et la géochimie sont des méthodes qui peuvent nous aider à discriminer des activités enregistrées dans les sédiments, et difficilement visibles ou interprétables dès le terrain.

Les micro artéfacts sont incorporés au moment de l'occupation dans les sols moyennement consolidés comme les sols en terre crue. De petites dimensions, ils ne sont pas évacués au cours de nettoyage et de l'entretien des espaces, par conséquent ils nous renseignent sur les activités en place. Par exemple, à Lattes, les grains de basalte retrouvés dans les sols d'occupation témoignent de l'utilisation de meules (seuls éléments en basalte sur le site). Ils ont été identifiés à l'intérieur et à l'extérieur des maisons, ce qui suggère une certaine souplesse dans la distribution spatiale des activités. A Lattes également, d'épaisses couches de phytolithes ont été discriminées en lame mince. Leur présence témoigne de l'apport de résidus végétaux de type céréales et graminées. La micromorphologie permet de préciser si la disparition de la matière organique de ces végétaux s'est faite sous l'effet de la décomposition ou de la combustion, à cette échelle, des résidus en connexion témoignent de l'altération de fibres végétales en place. L'approche conjointe de la micromorphologie et de l'étude des phytolithes par un spécialiste permet de proposer toute une gamme d'interprétations : des activités en place ou la réutilisation de résidus de battage (enveloppe de grains) pour aménager les sols, par exemple.

En ce qui concerne les organisations sédimentaires, dans le cas d'épaisses couches brun foncé, ou encore brun jaune, la micromorphologie a permis d'identifier des couches de parage en ville, localisées le long d'îlots d'habitation. La présence d'animaux à sabots dans les villes peut aussi être attestée par des traces de piétinement spécifiques. Les caractères des coprolithes présents dans les couches archéologiques peuvent permettre de reconnaître les espèces ayant fréquenté les différents espaces urbains.

Des pistes de recherche, encore peu exploitées sur l'âge du Fer dans le sud de la France, existent également. Les analyses de phosphore total (analyse de routine en pédologie) et des analyses de phosphore adaptées à l'archéologie (phosphore total, organique et inorganique, ainsi que les rapports entre les différentes formes du phosphore) peuvent être pratiquées pour aider à déterminer des zones de parage. Les analyses moléculaires (analyse des lipides) peuvent également permettre de détecter la présence de déjections (coprostanols, coprostérols), et des espèces animales peuvent être déterminées. L'expérience acquise ces dernières années nous montre que les analyses chimiques et moléculaires ne doivent plus être déconnectées de leur contexte macroscopique et microscopique. Ainsi, le projet Micromorphologie et Géochimie des Matières Organiques des Sols archéologiques (Inrap, UPMC) a été inscrit dans les Projets d'Activités Scientifiques de l'Inrap et démarré en 2013. Il vise à englober différentes approches pour mieux comprendre les processus de dégradation de matière organique, et ce afin d'identifier l'origine des apports, ainsi que les activités humaines et animales qui les ont produites.

English

In protohistorical and historical urban sites, which are very often occupied almost continuously, the floors are regularly cleaned and maintained and there are in consequence only very few traces of activity *in situ*. Micromorphology and geochemistry are scientific methods which can go

further and can help us to ascertain activities, which are inscribed in the sediments and not easily discernable or understandable during excavation.

Microscopic artefacts are incorporated in more or less strengthen floors like clay floors during occupation. As they are of small size they are not removed during cleaning and maintenance of spaces, and in consequence they can give us clues on *in situ* activities. In Lattes, for example, the grains of basalt found on the occupational surfaces are clear evidence of the use of mills (which are the only objects in basalt on the site). They have been found inside and outside of houses, and the fact suggests a certain flexibility in respect to spatial distribution of activities. Also in Lattes thick strata of phytoliths could be differentiated into thin layers. Their evidence shows vegetal residue of either cereal or herbal origin. The micromorphology allows us conclusions on whether the destruction of the organic matter is a result of decomposition or of combustion, because the connected residues give evidence of *in situ* alteration of vegetable fibers. The concomitant studies of micromorphology and phytoliths by specialists allow us to present a number of interpretations on, for example, the *in situ* activities or the reuse of residues of threshing (grain husks) for building the floors.

In regard to sedimentary organisations and in presence of thick dark brown or yellow-brownish strata, micromorphology has allowed the identification of layers of animal pens in cities along the blocks of dwellings. The presence of ungulates in cities can also be attested by specific traces of their hooves. The quality of coproliths in archaeological strata allows us to determine the species which were present in different places within the cities.

There are some other scientific methods which are still rarely applied in regard to research on the Iron Age in the South of France. The analysis of total phosphorus (commonly used in pedology) and the analysis of phosphorus, which has been adapted to archaeological needs (total phosphorus, organic and inorganic, as well as the relations between different forms of phosphorus), could lead to determine the areas of animal pens. Molecular analysis (analysis of lipids) can also allow to discover the presence of excretions (coprostanol, coprosterol) and one can determine animal species. The experience acquired these last years has shown us that chemical and molecular analysis should not be seen independently from its macroscopic and microscopic context. The research project Micromorphologie et Géochimie des Matières Organiques des Sols archéologiques (Inrap, UPMC), which has been launched in 2013, has been integrated in the current scientific projects of Inrap. The aim of the project is to combine different approaches in order to better understand the process of degradation of organic matter. Doing this one can identify the origins of various existing traces as well as the human and animal activity which produced them.

The neglected “fields” of proto-urban living: a view from Bronze Age Crete

Kostis S. Christakis, U. Rethymno.

The urban centres that emerged in Crete during the second millennium BCE have been described as dependent on the surpluses provided by the countryside. The agricultural and pastoral wealth of the island and the riches of its seas are considered the most tangible evidence of the subsistence abundance enjoyed by Bronze Age Cretans.

The present contribution examines artifacts and ecofacts concerned with production, processing and storage of staples and food preparation and consumption from elite and ordinary domestic units. Testimonies were excavated in the major urban centres of the island and dated to the last phase of the Neopalatial period (1480-1425 BCE). The attempt proposed here is not ‘urbanocentric’ but integrates information from the countryside in its purview without presumptions of urban-rural polarities.

The emerging pictures question long-established narratives on the organization of Cretan Bronze age subsistence economy. It could be argued that access to cultivable land and subsistence goods were determined by complex political, economic and social factors. There is a great diversity of operational alternatives around which Cretan proto-urban economies were organized, including market-based exchange systems.

The town and the country: modes of production and consumption of wine and olive oil in prehistoric Crete

Evi Margaritis, U. Cambridge.

Archaeobotanical studies provide fundamental information on both the production and the consumption of wine and olive oil in prehistoric Crete, along with other strands of evidence. By-products of the vine and olive are present in archaeobotanical assemblages at various stages of the crop processing sequence, located in both rural settings and also within town limits. This paper will focus on the *chaînes opératoires* of wine and olive oil production, as identified in the archaeological record. It discusses the impact of taphonomic and preservation issues on these specific plant remains, and how these affect the presence of the by-products of production or consumption in rural and urban sites. The paper will also examine how the production of wine and olive oil is organised both in the country and also in urban settings, as well as the human and animal resources needed both for the production of wine and olive oil and also the cultivation of grapes and olives. Different case studies such as Mochlos, Gournia and Papadiokambos are used to illustrate these key issues in order to develop specific archaeological interpretations and illuminate the dialectic and symbiotic relationship between the countryside and the urban centres of Minoan Crete.

Land use and dietary practice at Bronze Age Archontiko, Northern Greece: an Integrated Stable Isotope Study of Human, Faunal and Botanical Remains

Erika Nitsch, U. Oxford- Armelle Gardeisen, CNRS, Lattes.

Erika Nitsch, Stelios Andreou, Aurélien Creuzieux, Armelle Gardeisen, Angeliki Karathanou, Daphne Nikolaidou, Aikaterini Papanthimou, Chryssa Petridou, Sevi Triantaphyllou, Soultana Valamoti, Anastasia Vasileiadou and Amy Bogaard.

During the Early Bronze Age in the Aegean, scholars have argued for the development of social complexity based on evidence such as tiered settlement organisation, appearance of communal buildings associated perhaps with administrative practices, craft specialisation and settlement nucleation. It has been suggested that the latter phenomenon, which culminated in the creation of fairly large conurbations, especially in the context of the palatial systems of the southern mainland and Crete in the later Bronze Age, will have both necessitated and enabled extensive land use regimes. It is possible that in the southern mainland and Crete it developed alongside, or even replaced, the intensive 'garden' farming practices of the Neolithic, whereas in the north, where larger settlements and complexity can be safely documented only from the Late Bronze Age onwards, intensive forms of cultivation could have persisted. This study is designed to test the above models using stable carbon and nitrogen isotope analysis to help reconstruct the wider crop, animal and human ecology at Early Bronze Age Archontiko and Late Bronze Age Toumba Thessalonikis. The aim is to explore potential diachronic patterns of change in the nature of crop and animal management strategies, and the relative importance of cereal and pulse crops compared to animal products in the human diet and how these may be associated with the phenomenon of urbanization.

Le stockage alimentaire en milieu urbain au Proche-Orient ancien au II^e millénaire av. J.-C.

Julie Patrier, ANR ARCHIBAB et UMR 7192, Paris, et chercheuse associée UMR 7044, Strasbourg.

Le thème du colloque, « La campagne dans la ville », m'a fait m'interroger sur la question du stockage des denrées alimentaires en milieu urbain. L'objectif de cette communication sera tout d'abord de présenter les dispositifs de stockage (magasins, silos, etc.) mis en place dans les villes d'Anatolie centrale et de Syrie du Nord au II^e millénaire av. J.-C. comme Kaneš (l'actuelle Kültepe) à l'époque paléo-assyrienne, la capitale hittite Hattuša (l'actuelle Boğazköy) ou bien encore Mari à l'époque paléo-babylonienne. Ces dispositifs sont attestés tant par les vestiges archéologiques que par les textes. Les installations intérieures dont ils ont pu être dotées (banquettes, étagères, etc.) et les contenants (céramiques, vanneries, etc.) seront également évoqués. On envisagera aussi la question de leur fonction précise grâce aux données fournies par les tablettes cunéiformes écrites en akkadien et en hittite notamment, mais aussi grâce aux restes archéo-botaniques et archéo-zoologiques. Dans les villes, ces vestiges concernent autant les grandes institutions (palais et temples) que les habitations privées. On s'interrogera aussi sur une possible différenciation entre les dispositifs de stockage des campagnes et ceux des villes (particulièrement en ce qui concerne les greniers). Enfin, on tentera de montrer dans quelle mesure ces installations reflètent les systèmes économiques en vigueur aux époques abordées.

English

The subject of this conference, 'Country in the city', has induced me to focus on food storage in urban contexts. The first aim of my paper will be to present the different types of buildings for storage (warehouses, silos etc.) which we find in the cities of Central Anatolia and Northern Syria during the Second Millennium B.C., for example in Kanes (today Kültepe) during the paleo-assyrian period, in the Hittite capital Hattusa (today Bogazköy) or of course in Mari during the neo-babylonian period. These buildings are attested by archaeological evidence as well as by texts. I shall consider installations inside the buildings, with which they are eventually equipped (benches, shelves etc.) and shall also talk about containers (ceramic vessels, baskets etc.). The question of their precise use will be treated with the help of details given in texts on cuneiform tablets, mainly written in akkadian or hittite language, but also on the basis of archaeobotanical and archaeozoological data. These remains in cities are to be found in the context of big institutions (palaces and temples) as well as in private houses. The eventual difference between installations for storage in the country and in cities will also be discussed (above all in regard to granaries). At the end I shall try to show, to what extent all these installations reflect the actual economic system of each period.

Agricultural Self-Sufficiency and Mycenaean Kalamianos on the Saronic Gulf

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The Saronic Harbors Archaeological Research Project (SHARP) has focused on the walled Mycenaean harbor town of Kalamianos, near Korphos on the Corinthian coast of the Saronic Gulf, and its hinterland during fieldwork from 2007–2010. A unique set of circumstances has preserved for us on the surface the town plan and a large number of buildings of a Late Bronze Age (LH IIIA2–B date, ca. 1375–1200 BC) town. One of our hypotheses is that the Mycenaean settlement at Kalamianos was a deliberate foundation, built in a relatively short period of time, when this region was a contested periphery in a competition between the venerable Saronic state at Kolonna on Aigina and the expanding state of Mycenae.

In this paper I take up the opportunity presented by Kalamianos to ask questions about Mycenaean architecture, the organization of the political and agricultural economy, and the self-sufficiency of the region. If Kalamianos was a deliberate foundation, then the question arises whether agricultural production was one of the criteria used in the organization and construction of the town. Of particular interest is the large amount of space within the enclosing circuit walls of Kalamianos. Structures occupy less than one-half of the enclosed space: only approximately 3.5 hectares of the total 7.2 hectares contained within the walls are occupied by buildings and adjacent spaces. A portion of this “empty” space has low terrace walls, some of which are identified as Mycenaean, and some areas were quarried for the nearby buildings, but much seems “empty.” A threshing floor that may date to the Late Bronze Age, found within the circuit wall, would indicate agricultural processing. Is, then, the area within the walls sufficient to supply the food needed for the urban settlement? Would Kalamianos, as apparently did Gla, have served as a center for storage and consumption for a larger region? What is the degree of centralized control over agricultural production and distribution in the Kalamianos region?

Our regional survey around Kalamianos has documented other locations of Mycenaean activity, including what seem to be natural routes of transportation and communication, but limited areas of agricultural potential. A second nearby settlement, smaller in size than Kalamianos but intervisible, is well situated to take advantage of upland resources, both agricultural and pastoral. Thus we can consider the regional system of one urban settlement, with its surrounding rural settlements, routes of transportation and communication, and both land and sea resources in order to more fully model agricultural and pastoral production. A diachronic comparison to the settlement pattern of the Early Bronze Age period, extensively documented in our survey work, provides a complement to the Mycenaean evidence.

***Lattara* : modes d'acquisition et de gestion des ressources végétales entre le Ve et le IIe siècles avant notre ère**

Núria Rovira, U. Montpellier - Natàlia Alonso, U. Lleida.

Au cours des sept siècles d'occupation de la ville portuaire de *Lattara* (Lattes, Hérault), l'alimentation végétale est diversifiée et fondée sur des céréales, des légumineuses et des fruits. L'utilisation de végétaux est également avérée dans d'autres domaines de la vie quotidienne (construction, textiles...), mais aussi dans des activités cultuelles durant l'époque romaine.

Parmi tous les produits végétaux identifiés dans la ville, quelle est la part des productions locales et des importations ? Et par rapport à ces premières, existe-t-il des paysans à *Lattara* ? Peut-on identifier des activités agricoles dans un cadre urbain ? Comment connaître l'origine des denrées végétales ? Nous abordons ces questionnements par l'étude croisée des données issues d'analyses archéobotaniques, notamment carpologiques, ainsi que du mobilier associé à la production (structures et instruments), le stockage (récipients et structures), le transport (amphores et autres récipients), la transformation (structures et instruments) et la consommation (vaisselle et instruments) de produits végétaux. Dans l'impossibilité de réaliser une telle étude pour toute la ville et pour ses différentes phases d'occupation, nous limitons cette analyse aux périodes comprises entre le Ve et le IIe siècles avant notre ère. Ce choix a été ainsi dicté soit par la disponibilité d'analyses archéobotaniques (surtout Ve-IVe siècles), soit par la représentativité du mobilier et des espaces fouillés (IIIe-IIe siècles). Les modes d'acquisition et de gestion des ressources végétales à *Lattara* semblent *a priori* assez stables au cours du temps. Quelques différences ou variations sont cependant aperçues tant d'un point de vue spatial (maisons, quartiers) que chronologique concernant la distribution et la composition des assemblages carpologiques et des mobiliers associés à des activités manipulant des végétaux.

English

During the seven centuries of occupation of the harbour city of *Lattara* (Lattes, Hérault) we can observe diversified consumption of plant foods based on cereals, vegetables and fruit. The use of plant resources is also attested in other contexts of daily life (building, textiles etc.) as well as in religious activity in Roman times. What is the share of local produce and imported goods among all plant products which can be found in the city? And are there peasants in *Lattara* who produce the local goods? Can we identify agricultural activity within the urban context? How can we recognize the origin of plant foods? We shall approach these questions by way of a combined study of details, which come either from archaeobotanical analysis or from material connected with production (built-up structures or tools), for their storage (containers and built-up structures), for transport (amphora and other vessels), for transformation (built-up structures and tools) or for consuming plant foods (dishes or tools). As it is hardly possible to study all these details for the entire town and for all its different phases of occupation, we shall limit our analysis to the different periods between the 5th and the 2nd centuries B.C. This choice was stringently required by the availability of archaeobotanical data (above all for the 5th and 4th centuries B.C.) and by the representativeness of the installations and archaeological material (3rd and 2nd centuries B.C.). The ways of acquisition and of management of plant resources in *Lattara* seem to remain *a priori* relatively stable during this period. But we can notice some differences and variations in space (houses, districts) and in time, concerning the distribution and composition of carpological assemblages and materials for processing crops.

Connections of the town of LC I Akrotiri with the countryside: archaeological coupled with environmental indicators which could throw some light on this dialogue

Anaya Sarpaki (Rethymno).

If any Prehistoric town in Greece could provide evidence of the interconnection between the urban core and its countryside, the site of Akrotiri immediately comes to mind due to the 'pristine' conditions of simultaneous burial of all of its finds. Everything except the most valuable possessions, such as jewellery and metals, were left in situ, to be covered by a layer of pumice which sealed and preserved all archaeological and bio-archaeological finds. The discussion in this paper will revolve around the data, pertaining to this site which, we believe, could throw some light on this dialogue.

Beyond City and Country at Mycenae: urban and rural practices in a subsistence landscape

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Approaches that explicate the role of cities as participants in the agrarian systems of the Late Bronze Age Aegean frequently subscribe to paradigms that strongly dichotomize urban and rural populations, and thus inherently contrast the activities which take place within them. Specifically, center/periphery models typecast urban centers as places of consumption, while characterizing the rural periphery as producers of resources for urban centers. This theoretical separation of consumers and producers can lead to a myopic understanding of the networks at play and the roles of the players involved, thus preventing the construction of grander narratives that might reconcile economic and social activities evidenced in the material remains.

The purpose of this paper is two-fold: to redefine how we conceptualize urban centers, and to utilize this definition to refine our notions of subsistence activities at the Late Bronze Age palatial settlement of Mycenae. Our definition of urban, in this case, is informed by an investigation of subsistence practices enacted at Mycenae which cross a range of social and political spheres and which transcend binary divisions, such as urban and rural or palatial and non-palatial. Primary production activities, such as sowing and harvesting crops or herding livestock, illustrate the united nature of this landscape in that a series of decisions regarding the management of land and other resources were certainly made at the administrative level by officials who may not have been actively involved in farming or herding; yet production itself took place outside the main administrative center. At the same time, less regulated activities carried out beyond the Cyclopean walls, such as the acquisition of wild game and the gathering and household cultivation of edible plants and aromatics would have resonated in and out of the urban core. Such activities may also have set the stage for the circulation and exchange of goods across socio-political boundaries as well as market-type activities that might have taken place in houses which functioned independently or semi-independently of the palace center. Our ultimate aim, therefore, is to illustrate that it is more informative to look beyond the urban center as a bounded entity and see the landscape as one of highly integrated social and economic interests with effects extending beyond our perceived confines of city and country.

Troy and Country

Diane Thumm-Doğrayan (Tübingen) – Peter Pavúk (Prague) – Magda Pieniążek (DAI Istanbul).

The past 30 years have been a period of intensive interdisciplinary research at the site of ancient Troy. Thanks to the work of many specialists, a wide range of data is now available, both on Troy itself, but also on its surrounding landscape. We would thus like to further develop the reconstruction of the changing resource management patterns and the effect of human impact on the environment. As a tell-settlement, Troy permits the study of economic system for each stratum separately. The information on storage strategies, archaeobotanical and archaeozoological data, the availability of other resources and the settlement structure display recognizable patterns and allow now for a new reconstruction of local developments.

After a period of considerable isolation at the end of the EBA and at the beginning of MBA interregional contacts of Troy galvanized during the time of Troy VI Early (ca. MH III-LH I), what may speak for certain transformations within Trojan polity. However, it was the time of Troy VI Late (ca. LH III A) when the most monumental architecture was erected and far reaching trade contact were established. This trend continued during the next period, when the biggest amount of foreign goods as well as the local production of ornaments took place.

The type and extent of food storage are considered important aspects for the investigation of economic structures of a society. Underground storage facilities made of stone or mud-brick, as well as storage pits, have been found in several occupation horizons at Bronze Age Troy. Pithoi, used as storage containers, were common in almost all settlement phases since the very beginning of the occupation, with a striking peak in Late Bronze Age Troy VIIa (LH IIIB). At that peculiar time, a huge amount of pithoi was installed in storage magazines, both within the citadel and the lower town. The find situation of these pithoi, especially within the newly built magazine rooms along the internal side of the citadel wall in VIIa, shows a new character of storage strategy at Troy and points to a centralized storage system. This rearrangement of storage appeared simultaneously with certain changes in agricultural praxis.

Essential for the understanding of political and economical organization of Troy in relation to its hinterland in the lower Scamander plain, as well as in relation to other areas in the Troad, are the now available results of a regional survey, carried out by members of the Troia-Projekt. For the 2nd Millennium, it was possible to combine a traditional typological pottery evaluation, based on previously developed detailed knowledge of the typo-chronological development at Troy itself, with chemical analysis of the clay (NAA). The combined results indicate, for example, chronological fluctuations in the settlement structure, as well as the existence of two almost separate LBA exchange networks: one in the northern Troad related mainly to Troy, and one in the southern Troad.

Settlement space and agricultural practices in Neolithic and Bronze Age northern Greece: an archaeobotanical investigation

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A large body of archaeobotanical data retrieved from various neolithic and bronze age sites in northern Greece provides the basis for an exploration of intra-settlement organisation in relation to agricultural practices. Starting from the first farming communities of the 7th millennium B.C. and ending in the 2nd millennium B.C., the interplay of landscape modification, scale of crop husbandry, plant processing and storage, food preparation, and disposal practices is explored through this large body of data. The contribution of these activities in the shaping of intra-settlement space and their evolution through time are explored on a selection of sites. Charred plant remains from extended/flat settlements as well as tell sites provide a valuable analytical tool linking the landscape to the settlement through time, in a region where the interplay of human activity and natural vegetation may have led to trajectories different to those of the south where the later notions of 'city' and 'country' in later periods seem well defined.

Feeding prehistoric Knossos: exploring the political, economic and logistical implications of urbanisation on Crete

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Our understanding of Cretan prehistoric geography is patchy, though an increasing number of published surveys are beginning to document densely occupied lowland landscapes, supplementing the early surveys in more marginal landscapes. On-going surveys and re-assessments of earlier excavated data at the major palatial centres have started to document the development of these centres, with implications for the scale of their agricultural hinterlands and political territories, and their development through time. While Malia and Phaistos expanded to occupy about 50 hectares in the Protopalatial period, Knossos alone appears to have continued to expand through the Neopalatial period, reaching a maximum of a square kilometre. This paper will explore the political, economic and logistical implications for its hinterland of supporting a large and dense urban population, as well as a centralised palatial institution. It aims to define some of the basic parameters involved in moving the country into the city, in terms of basic subsistence resources.